2006

Virginia Commonwealth University Bulletin All Courses [2006]

Virginia Commonwealth University

VCU courses

Monroe Park and MCV campuses

2006-07

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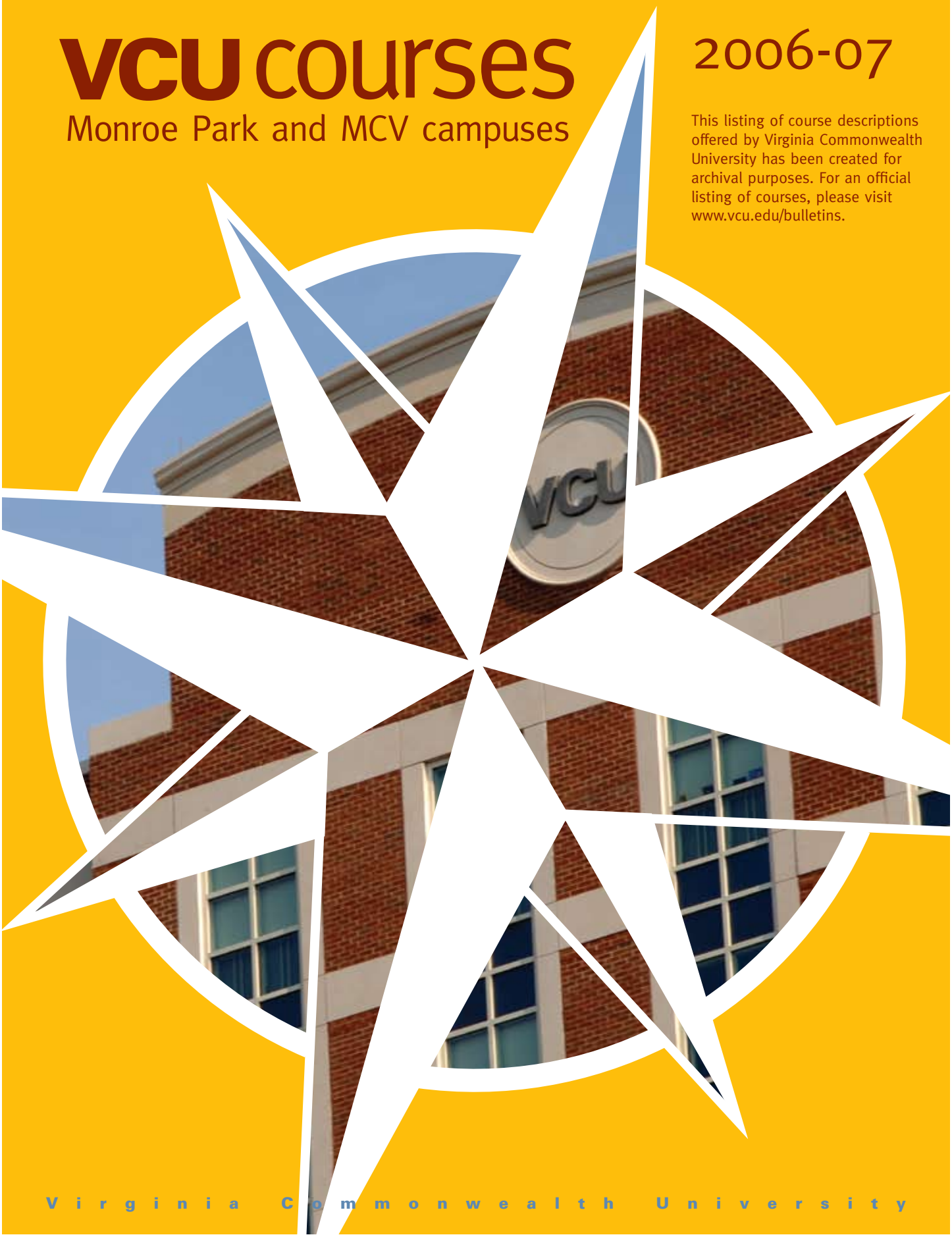

Virginia Commonwealth University

University College

University College(UNIV)

UNIV 101 Introduction to the University

Semester course; 1 lecture hour. 1 credit. Designed to orient new students to the traditions, purposes and expectations of a university education. Students will assess their expectations and evaluate their academic strengths and goals. Through lectures, guest speakers and individual projects, students will learn of VCU resources designed to help them solve problems and to achieve a rewarding and successful academic program. This course is required for students admitted conditionally to VCU; it is recommended for all first-year students.

UNIV 102 MINDSET for Academic Success

Semester course; 1 lecture hour. 1 credit. Restricted to freshmen on warning after their first semester, sophomores on warning or probation and students readmitted from academic suspension. Through group activities and individual meetings with the instructor, students identify reasons for their academic difficulties and learn a new MINDSET (defined as habits and attitudes) for achieving academic success. The instructor will carefully monitor the students' progress in all their classes. The goal of the course is to assist students to return to good academic standing by the conclusion of the semester.

UNIV 103 Education and Career Planning

Semester course; 3 lecture hours. 3 credits. A career decision-making course for individuals focusing on the process of career planning. Through guest speakers and interviews with working professionals, students will discover all the educational and career options that exist. Through in-class activities, computer assessments and group projects, they will learn how to make informed decisions about their educational and career goals.

UNIV 151 Focused Learning Workshop in BIOL 151

Semester course; 3 workshop hours. 1-2 credits. Corequisite: BIOL 151. Designed to assist students in improving their understanding of complex biology material. Will supplement the BIOL 151 class lecture. Course assists students with integrating how-to-learn with what-to-learn for BIOL 151. Includes both discussion and study-skills strategies. Students required to complete homework assignments and to demonstrate mastery of specific study techniques. In addition to the semester-long 2-credit offering, a 1-credit course is opened to students after the first BIOL 151 exam.

UNIV 152 Focused Learning Workshop in BIOL 152

Semester course; 3 workshop hours. 1-2 credits. Corequisite: BIOL 152. Designed to assist students in improving their understanding of complex biology material. Will supplement the BIOL 152 class lecture. Course assists students with integrating how-to-learn with what-to-learn for BIOL 152. Includes both discussion and study-skills strategies. Students required to complete homework assignments and to demonstrate mastery of specific study techniques. In addition to the semester-long 2-credit offering, a 1-credit course is opened to students after the first BIOL 152 exam.

UNIV 291 University Special Topics

Semester course; variable hours. 1-4 credits. May be repeated with different content. Specialized topics in subject and competency areas related to the core curriculum program not provided by an existing course or program. May be multidisciplinary. Graded as pass/fail or normal letter grading at the option of the instructor.

UNIV 391 University Special Topics

Semester course; variable hours. 1-4 credits. May be repeated with different content. Specialized topics in subject and competency areas related to the core curriculum program not provided by an existing course or program. May be multidisciplinary. Graded as pass/fail or normal letter grading at the option of the instructor.

College of Humanities and Sciences

African American Studies(AFAM)

AFAM 103 Introduction to African-American Studies

Semester course; 3 lecture hours. 3 credits. Using an interdisciplinary approach, this course will familiarize students with important events, developments, personalities and other phenomena that help facilitate the study and understanding of African Americans from their African past to their present existence.

AFAM 104/SOCY 104 Sociology of Racism

Semester course; 3 lecture hours. 3 credits. The course will explore the direct and indirect ways in which racial attitudes are acquired, their effect on individuals and society, and the institutional and ideological manifestations of racism as a "faith system," as exploitation and as a form of human conflict. The central focus of interest will be on black-white relationships.

AFAM 105, 106/HIST 105, 106 Survey of African History

Semester courses; 3 lecture hours. 3, 3 credits. A survey of African civilization from prehistory to the present, emphasizing the events, ideas and institutions that have shaped, influenced and defined Africa's place in the world. First semester: To 1800. Second semester: 1800 to the present.

AFAM 121, 122/DANC 121, 122 Tap Technique I

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Beginning study and training in the principles of tap technique with emphasis upon style, body alignment, spatial patterning, flexibility, strength and kinesthetic awareness to move the body in the style required for tap dancing.

AFAM 126, 127/DANC 126, 127 African-Caribbean Dance I

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Dance based on the movements and rhythms of Africa and the Caribbean.

AFAM 151, 152/DANC 151, 152 Jazz Dance Technique I

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Prerequisite: DANC 102 or permission of instructor. Study and training in the principles and concepts of jazz technique. Emphasis on body alignment, flexibility, balance, rhythmic awareness and mastery of isolated movements of body parts. The course includes the exploration of the relationship between jazz music and jazz dance.

AFAM 200/ANTH 200/INTL 200 Introduction to African Societies

Semester course; 3 lecture hours. 3 credits. This course introduces the student to the African continent, its peoples and cultures. It covers such general characteristics as the physical and geographical features, climate, topography, traditional economies, languages, religions, social systems and other cultural features that are traditional to its people.

AFAM 204 Africa in Transition

Semester course; 3 lecture hours. 3 credits. Prerequisite: AFAM 200 or permission of instructor. The impact of modern social change upon the traditional aspects of African life. Various aspects of social change as it applies to Africa today will be explored.

AFAM 206/SOCY 206/WMNS 206 African American Family Relationships

Semester course; 3 lecture hours. 3 credits. Focuses on the African American family from the 1940s to the present. Examines the values and the interpersonal/role relationships that are involved in forming and maintaining African American families in the contemporary United States. Topics include dating and sexual relationships, marital relationships, parent-child relationships and relationships with members of the extended family.

AFAM 208 African-American Social Thought

Semester course; 3 lecture hours. 3 credits. Prerequisite: AFAM 103. This course exposes students to the rich chronicle of the experiences and views of Africans in the United States that has been preserved in the writings of scholars, activists and creative artists. The course introduces students to this body of thought selecting a number of social critics and creative writers whose texts address persistent themes that have shaped African-American life.

AFAM 250/MHIS 250 Introduction to African-American Music

Semester course; 3 lecture hours. 3 credits. An introductory survey of black involvement with the development of music in America from 1607 to the present. African-American musical styles will be studied from many aspects including their African roots and contemporary popular expression.

AFAM 302/POLI 302 Politics of the Civil Rights Movement

Semester course; 3 lecture hours. 3 credits. The main objectives of the course are to introduce and examine the personalities and activities of the modern Civil Rights Movement. The course provides the historical background leading up to the peak years of the struggle for racial equality in America. It has special focus on the events of the 1960s and, particularly their implication for the current state of U.S. Civil Rights.

AFAM 303/THEA 303 Black Theatre

Semester course; 3 lecture hours. 3 credits. A study of the major developments in the evolution of black theatre through readings and studio performances in black-related and black-theatre dramaturgy.

AFAM 305/SOCY 305/WMNS 305 African American Family in Social Context

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or SOCY/AFAM/WMNS 206. A socio-historical examination of the development of the family system of Americans from Africa. Focuses on large-scale (macro level) processes such as changes in the major mode of economic production and in political systems and the corresponding changes in black family structure and functioning. Presents the theoretical material on African American families and social change that prepares students for further study of the family as a social institution and for the study of family policy. This course is designed to meet the needs of upper division social science majors.

AFAM 307/RELS 307/INTL 307 Black Religion

Semester course; 3 lecture hours. 3 credits. An analysis of the role of religion in the lives of blacks with an emphasis on African religions and philosophies, the black church in America, and the roles of the various faiths, sects and cults.

AFAM 308 Modes of Inquiry in African-American Studies

Semester course; 3 lecture hours. 3 credits. Prerequisite: AFAM 208. This course introduces students to the interdisciplinary processes whereby those working in the field develop their arguments and interpretations concerning the black experience. Students will develop increased skills in library research and an awareness of the importance of such methodologies as archaeology, oral history, case studies, participant observations, experiments and surveys. Student will be introduced to the need for critical analysis, the role of biases and frames of references and the reason why scholars working in the field often reach different conclusions with reference to issues of fact, interpretation and significance.

AFAM 314/ENGL 314 African-American Literature

Semester course; 3 lecture hours. 3 credits. An examination of the culture and literature of African Americans from their roots in Africa and the African Diaspora to the present day. Authors may include Wheatley, Jacobs, Wilson, Brown, Dubois, Hurston, Wright, Gaines and Morrison.

AFAM 315/ECON 315/INTL 315 Economic Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211. An introduction to the process of economic development including a survey of development theory and a study of the experience of both underdeveloped and developed countries. Economic policies and tools of economic planning for stimulating development will be presented.

AFAM 318/POLI 318/WMNS 318 Politics of Race, Class and Gende

Semester course; 3 lecture hours. 3 credits. A study of the racial, class and gender influences on the history and development of political values, conflicts, processes, structures and public policy in the United States.

AFAM 322/PSYC 322 Personality and Behavior of the African American

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. A study of personality factors, such as motivation, ego functioning, and the socialization processes with special emphasis on living conditions of African Americans.

AFAM 333/GEOG 333/INTL 333 Geography of Africa

Semester course; 3 lecture hours. 3 credits. A study of the land forms, climate, peoples, livelihoods, settlement patterns, and cultural groupings of sub-Saharan Africa.

AFAM 342/ANTH 342 African-American Art

Semester course; 3 lecture hours. 3 credits. Prerequisite: Advanced standing. A study of the art forms produced by Americans of African origin from the 17th-century to the present with an emphasis on contemporary trends in black art.

AFAM 343/POLI 343 Black Political Thought

Semester course; 3 lecture hours. 3 credits. An historical and sociological perspective on the political and social ideas of black thinkers from David Walker to the present.

AFAM 345/POLI 345 African-American Politics

Semester course; 3 lecture hours. 3 credits. In this course, students will discuss and analyze the dynamics of the black experience in the American political system. The status of African Americans in the United States and the struggle for racial equality will be examined, as will the manner in which American institutions have responded to these phenomena. Students will examine the race/class metric in African-American politics, particularly policies of Affirmative Action as a black progress strategy.

AFAM 350/MHIS 350/INTL 370 Studies in the Music of the African Continent and Diaspora

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. An in-depth examination of selected topics and issues in African-derived musical and cultural traditions.

AFAM 356/POLI 356/INTL 356 Government and Politics of Africa

Semester course; 3 lecture hours. 3 credits. Introduces students to the basic outlines of government and politics in Africa. The course will consider such topics as colonialism, elitism and nationalism and modernization strategies. Using the comparative approach, the course will primarily focus on West, East and Central Africa.

AFAM 357/POLI 357/INTL 357 Politics of Southern Africa

Semester course; 3 lecture hours. 3 credits. An examination of racial and political developments in the southern tip of Africa. While South Africa will be the primary focus of analysis, other countries in the region such as Zimbabwe, Angola and Mozambique will be studied.

AFAM 358/ANTH 358 African Art and Architecture

Semester course; 3 lecture hours. 3 credits. A study of African art and architecture from prehistoric times to the present. Special emphasis is placed on form, content, function and meaning, as well as the impact of African art on modern and African-American art.

AFAM 361, 362/HIST 361, 362 Americans from Africa

Semester courses; 3 lecture hours. 3, 3 credits. A study of the history and culture of blacks in the United States, designed to analyze some of the most important aspects of black life and the attitudes of the dominant society within which blacks lived. The second semester emphasizes the changing status, expectations and ideologies of black Americans in the 20th century. First semester: to 1877. Second semester: since 1877.

AFAM 363/ENGL 363/INTL 366 African Literature

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits in 200-level literature course (or equivalent). A survey of the literature of Africa with particular emphases on fiction and on West Africa. Some attention also will be given to orature.

AFAM 365/ENGL 365/INTL 367 Caribbean Literature

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 101-200. A survey of West Indian writings. Attention will be given to African, European and Amerindian influences, as well as to the emergence of a West Indian literary tradition.

AFAM 387/HIST 387 History of West Africa

Semester course; 3 lecture hours. 3 credits. A study of the transformation of West African societies from early times to the present, with emphasis on the rise of states and empires, the introduction, spread and impact of Islam, the Atlantic slave trade and its effects, colonialism, African resistance and nationalism, and developments since independence.

AFAM 388/HIST 388 Africa: Social, Cultural and Economic History

Semester course; 3 lecture hours. 3 credits. A study of economic, social and cultural developments in Africa from the beginning of the nineteenth century to the present. Emphasis is placed on agricultural and industrial development, trade, Africa's involvement in the world economy, changes in labor systems, racial dominance, African initiatives and resistance, religion and social evolution and Africa in world affairs.

AFAM 389/HIST 389 History of Southern Africa

Semester course; 3 lecture hours. 3 credits. A study of the history and culture of the peoples of southern Africa. Deals with the areas that presently are the Republic of South Africa, Lesotho, Swaziland, Botswana, Namibia and Zimbabwe. Emphasizes the interaction among the various communities and ethnolinguistic groups in southern Africa.

AFAM 390/HIST 390/WMNS 390 Africa and the Americas: Slavery, Gender and Race

Semester course; 3 lecture hours. 3 credits. An examination of various aspects of slavery in Africa primarily, and selected parts of the African Diaspora including the United States, Canada and the Caribbean, with emphasis on African conditions of servility, the Atlantic slave trade and chattel slavery. The role gender and race played in slavery will be given particular attention.

AFAM 392/HIST 392 The Caribbean to 1838

Semester course; 3 lecture hours. 3 credits. An exploration of changes in the structure of Caribbean society from the late 15th century to 1838, with emphasis on the development of plantation slavery, social stratification, race, slave resistance, the Haitian Revolution, African cultural patterns and abolition.

AFAM 393/HIST 393 Akhenaten to Cleopatra

Semester course; 3 lecture hours. 3 credits. A survey of Egyptian history from the period of the Empire (New Kingdom, c. 1570 B.C.) through the Ptolemaic Age of Cleopatra (c. 30 B.C.). Particular areas of concentration will include the Amarna Period of Akhenaten and various aspects of Egyptian daily life.

AFAM 401/SOCY 401 African-Americans and the U.S. Health Care System

Semester course; 3 lecture hours. 3 credits. Prerequisites: AFAM 103, AFAM 305 or permission of the instructor. Explores issues surrounding the disparity in health status and health outcomes between African Americans and other groups in the United States. Students are required to participate in an experiential exercise designed to enhance learning.

AFAM 408 Seminar in African-American Studies

Semester course; 3 lecture hours. 3 credits. Prerequisites: AFAM 308, AFAM 416. Generally open only to students of senior standing who have completed 24 credits of African American studies. Involves the planning and execution of a major research project demonstrating the interdisciplinary processes through which those working in the field of African-American studies use diverse sources to develop their arguments and interpretations.

AFAM 413/ARTH 350 African and Oceanic Art

Semester course; 3 lecture hours. 3 credits. A study of the architecture, painting, sculpture and civilizations of the major art-producing tribes of West Africa and Oceania from the 13th century to the present.

AFAM 416/ANTH 416 The Origin and Evolution of the Idea of Race

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103 or AFAM 103 or permission of instructor. Explores the origins and social history of the "idea" of race from the Middle Ages to the end of the 20th century. Using both historical and anthropological scholarship, the course presents an analytical framework for race as a sociocultural phenomenon.

AFAM 420/ANTH 420/INTL 420 Women of Africa

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103 or AFAM 103 or permission of instructor. Looks at the traditional roles of women in African Societies and examines how women have coped in different environments. Focuses on the institutionalized aspects of similarities and differences in women's lives in pastoral and horticultural societies and those with mixed economies, and contrasts these with women's roles in large state societies of Africa and in the modern urbanized context.

AFAM 440/ARTH 440 Contemporary Art and Architecture of Africa

Semester course; 3 lecture hours. 3 credits. A study of the impact on African art and architecture of colonialism, urbanization and modernization. Special emphasis is placed on the search for a new identity by contemporary African artists.

AFAM 451/INTL 451/RELS 451 Religion, Racism and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: nine credits in religious studies, African American studies or international studies or some combination, or permission of instructor. Explores the complex history and contemporary relationships between religion, racism and social justice.

AFAM 474/MASC 474 Minorities and the Mass Media

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 101 or 290, or permission of instructor. Examines historical and contemporary issues associated with the presence and portrayal of selected minorities in/by mainstream mass media in the United States. Primary emphasis is placed on the examination of African Americans and Hispanic Americans. Asian Americans, Native Americans and women also are covered.

AFAM 491 Topics in African-American Studies

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for a maximum of 9 credits; 3 credits may be applied to the African American studies minor. An in-depth study of specialized areas of African-American studies.

AFAM 492 Independent Study

Semester course; variable hours. Variable credit. Maximum 4 credits per semester. Maximum total of 4 credits in all independent study courses. Generally open only to students of junior and senior standing who have acquired at least 12 credits in African American studies courses. Determination of the amount of credit and permission of the instructor and coordinator must be procured prior to registration for the course.

American Studies(AMST)

AMST 195 Richmond

15 contact hours. 1 credit. A series of mini-courses dealing with aspects of Richmond's literary and historical importance from the city's beginning to the present.

AMST 391 Topics in American Studies

Semester course; 3 lecture hours. 3 credits. May be repeated once for credit. Selected issues or problems in American civilization with materials drawn from such areas as history, the social sciences, philosophy, literature, the arts and mass communications.

AMST 394 Perspectives in American Studies

Semester course; 3 lecture hours. 3 credits. Prerequisites: 6 credits in American-related courses. An introduction to the methods, significant works, and major trends in American studies. May be taken for American literature credit by English majors. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

Anthropology(ANTH)

ANTH 103/INTL 103 Introduction to Anthropology

Semester course; 3 lecture hours. 3 credits. A general survey of anthropology with emphasis on learning about and from global cultures, and on the four fields of anthropology.

ANTH 105/INTL 104 Introduction to Archaeology

Semester course; 3 lecture hours. 3 credits. A survey of archaeological sites, methods and theories from around the world, from the earliest human cultures, to the rise and spread of civilizations, to the modern era.

ANTH 200/AFAM 200/INTL 200 Introduction to African Societies

Semester course; 3 lecture hours. 3 credits. This course introduces the student to the African continent, its peoples and cultures. It covers such general characteristics as the physical and geographical features, climate, topography, traditional economies, languages, religions, social systems and other cultural features that are traditional to its people.

ANTH 301/BIOL 341 Human Evolution

Semester course; 3 lecture hours. 3 credits. Prerequisite: A "C" or better in ENGL 200. Introduces the range of human diversity as well as a broad understanding of evolution and evolutionary biology, particularly as it applies to hominid evolution. Specific topics include basic genetics, primatology, paleontology, and growth and development. Not applicable for credit toward the B.S. in Biology.

ANTH 302 Archaeological Theory

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 105 and a "C" or better in ENGL 200. Covers the basic theoretical perspectives and tools of archaeology, including analysis and interpretation of archaeological materials. Students will review the intellectual history of archaeology, applying a variety of theoretical approaches to archaeological data sets and sites.

ANTH 303 Archaeological Methods and Research Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 105 and a "C" or better in ENGL 200. Introduces the basic practices of archaeology, including planning, excavation, artifact analysis, documentary research, mapping, dating sites and artifacts, and interpretation and presentation of findings. Students will participate in an active field research program and will apply methods at an active site and lab.

ANTH 304/SOCY 304/WMNS 304 The Family

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or ANTH 103. The family in its social and cultural context. Analysis of child rearing, marriage, kinship, family crises and family change in various societies around the world.

ANTH 305/INTL 305 Comparative Perspectives on Cultures and Societies

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103. Examination of the theoretical, methodological and ethical problems that arise from anthropological comparisons of cultures.
Effective Fall 2006 ANTH 453/INTL 453 Comparative Perspectives on Cultures and Societies
Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103. Examination of the theoretical, methodological and ethical problems that arise from anthropological comparisons of cultures.

ANTH 310/FRSC 310 Forensic Anthropology

Semester course; 3 lecture hours. 3 credits. A comprehensive overview of forensic anthropology, including its development and the theory and methodology on which it is based.

ANTH 312/GEOG 312 History of Human Settlement

Semester course; 3 lecture hours. 3 credits. A cultural and historical geography of human migration and settlement over the earth. Topics may include agricultural and urban systems, exploration, colonization and imperialism, and changing relationships with the environment, during and since the middle ages.

ANTH 315 Anthropological Field Methods and Research Design

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103. Overview of quantitative and qualitative anthropological field techniques as well as the ethical dimension of anthropological fieldwork. Basics of research design, effective methodology and writing grant proposals.

ANTH 331 Public Culture: Anthropology Through Film

Semester course; 3 lecture hours. 3 credits. Explores how anthropology can contribute to a critical analysis of films as cultural representations. Class discussion will relate particular films both to the cultural context they depict and to the cultural context in which they were produced. Will also examine films as images that produce cultural meanings with the potential to affect the viewer's understanding of the world and comprehension of self.

ANTH 348/INTL 348 South American Ethnography

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. General ethnographic survey of both highland and lowland indigenous cultures of South America and cultural changes as a result of European contact.

ANTH 349/INTL 349 Rethinking a Continent: Latin America

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. This course surveys contemporary cultures of Latin America. It addresses historical sociocultural developments from an anthropological perspective and introduces concepts from social justice studies, development anthropology and applied anthropology.

ANTH 350/INTL 350 Rethinking a Continent: Europe

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. A survey of historical sociocultural developments from an anthropological perspective with an emphasis on integrative and disintegrative forces that have shaped cultures and identities in Europe. Introduces concepts from sociocultural anthropology, social justice studies and applied anthropology.

ANTH 375 Field Archaeology

Semester course; 3 lecture and 8 field and laboratory hours. 6 credits. Introduction to archaeological field and basic laboratory techniques. Archaeological data collection (excavation or survey) forms the core of the course.

ANTH 381/INTL 381 Modern Indentities: Nation Building

Semester course; 3 lecture hours. 3 credits. Critically explores how nation building and national identities have developed over the last two centuries among peoples across the globe. Class discussions will examine theoretical perceptions of these processes and focus on how they shaped and shape realities in different times and places.

ANTH 386/ENGL 386 Introduction to Folklore

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A survey of the basic forms of folklore including proverbs, riddles, ballads, folktales, legends, myths and games. The survey also will include approaches to collecting material and examining its literary, social and historical significance.

ANTH 391 Topics in Anthropology

Semester course; 3 lecture hours. 3 credits. Maximum 6 credits per semester; maximum total of 18 credits in departmental topics courses that may be applied to the major. Prerequisite: Permission of instructor. Seminar on current specialized areas of anthropological interest. See the Schedule of Classes for specific topics to be offered each semester.

ANTH 394/HIST 394 Historical Archaeology

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 105 and any history course. A review of historical archaeology, recognizing its contemporary emphasis on the spread of European cultures across the globe beginning in the 15th century. Methods and findings of archaeological research from the United States, Europe and Africa will be covered with special emphasis on the study of documents and artifacts related to the emergence and present state of the modern world. Students will participate in field research.

ANTH 403/BIOL 403 Primatology

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 301. Primatology investigates the taxonomic relationships among primates through comparative anatomy, comparative behavior and comparative biochemistry. Study of primate evolution, demography, subsistence, reproduction, social organization, communication systems and ecology. Not applicable for credit toward the B.S. in Biology.

ANTH 415/INTL 415 Economic Anthropology

Semester course; 3 lecture hours. 3 credits. Provides an overview of the anthropological approach to the "economic" in social life. Analyzes the role played by systems of reciprocity and exchange in ethnographic contexts. Concepts employed by anthropologists in the study of traditional subsistence economies are used to examine modern industrialized societies.

ANTH 416/AFAM 416 The Origin and Evolution of the Idea of Race

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103 or AFAM 103 or permission of instructor. This course is an exploration of the origins and social history of the "idea" of race from the Middle Ages to the end of the 20th century. Using both historical and anthropological scholarship, the course presents an analytical framework for race as a sociocultural phenomenon.

ANTH 420/AFAM 420/INTL 420 Women of Africa

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103 or AFAM 103 or permission of instructor. This course looks at the traditional roles of women in African Societies and examines how women have coped in different environments. It focuses on the institutionalized aspects of similarities and differences in women's lives in pastoral and horticultural societies and those with mixed economies, and will contrast these with women's roles in large state societies of Africa and in the modern urbanized context.

ANTH 425/RELS 425/INTL 425 Religion, Magic and Witchcraft

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. A survey of the nature and variety of beliefs outside of the major streams of religious thought. Among topics considered are myth, totemism, taboo and sorcery. Emphasis on understanding supernatural beliefs and practices in relation to culture and society.

ANTH 449/LING 449/ENGL 449 Introduction to Linguistics

Semester course; 3 lecture hours. 3 credits. An introduction to methods of language analysis, emphasizing the study of sounds and sound patterns, and units of meaning and their arrangements. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ANTH 450/ENGL 454/INTL 454 Cross-cultural Communication

Semester course; 3 lecture hours. 3 credits. A study of the dynamics of cross-cultural communication that applies linguistic tools to understanding cultural issues and solving communication problems.

ANTH 454 Anthropological Theory and Practice

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103; a minimum of six credits of 300-, 400- and 500-level anthropology courses; limited to seniors. A study of the connections between theoretical work that addresses understandings of culture and methodological practice centered on creating ethnography.

ANTH 455/INTL 455 Anthropology of Development and Globalization

Semester course; 3 lecture hours. 3 credits. Prerequisite: INTL 101. May be taken for a maximum of nine credit hours in three different world areas. Consists of a global study of the developing Third World with particular emphasis on rural populations, subsistence farmers, indigenous groups and small entrepreneurs. Focuses on development and globalization while providing insights into the peasantry as a class, women in peasant societies, changes in peasant societies and the peasantry as a player in the policies of the modern state.

ANTH 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 6 credits per semester; maximum total of 12 credits for all independent study and internship courses. Prerequisites: Determination of the amount of credit and permission of the instructor and the group coordinator must be procured prior to enrollment in the course; a minimum GPA of 3.0 in the major. Generally open only to students of junior or senior standing who have acquired at least 12 credits in the anthropology program.

ANTH 493 Internship

Semester course; 40 to 50 hours per credit at the placement site. Variable credit. May be repeated for a total of 12 credits, but the maximum total for all internship and independent study courses is 12 credits. Prerequisites: Determination of the amount of credit and permission of the instructor and the group coordinator must be procured prior to enrollment in the course; a minimum GPA of 3.0 in the major. Placement of the students will provide appropriate supervised work experience. The setting will vary depending on the nature of the internship and the student's goals. This course is designed to enhance the major's career pursuits for either graduate-level training or post-baccalaureate employment.

ANTH 497-498 Honors in Anthropology

Continuous courses; 3 lecture hours. 3-3 credits. Design and completion of a long-term research project in the major. The thesis project is the culmination of an advanced course of study within the anthropology program. Under the supervision of a faculty mentor, students must demonstrate a thorough understanding and use of anthropological research techniques and analysis, a knowledge of relevant literature, and sophisticated writing and research abilities. Students must apply to program for participation in honors thesis work. See Bulletin for eligibility criteria and application procedure.

ANTH 499 Senior Seminar

Semester course; 1 lecture hour. 1 credit. Prerequisites: Completion of 15 credits in anthropology at the 300 and 400 level or the equivalent in anthropology; senior standing. Focuses on self-assessment, compilation of a portfolio and curriculum vitae, career and graduate school preparation, and on lifelong application of skills and knowledge acquired in the program. Students will critically assess their experience in the anthropology program.

ANTH 551 Anthropology for the Museologist

Semester course; 3 lecture hours. 3 credits. A discussion and investigation of contemporary anthropological themes and questions and identification of how they can be depicted with museum materials. Students are expected to develop a research design for an exhibit.

ANTH 556/ENVS 556 Historical and Cultural Landscapes

Semester course; 3 lecture hours. 3 credits. Open only to seniors who have completed ANTH 302 or 303 and graduate students with permission of instructor. Students will study historical and contemporary landscapes as the products of the producers of human culture, with particular attention to riverine landscapes. Focus will be on the ways in which humans shape and respond to their ecosystems. Students will participate in an active field research program, including the archaeological recovery and analysis of historical landscapes.

Arabic Creative Expression(ARBC)

ARBC 301 Arabic Creative Expression

Semester course; 3 lecture hours. 3 credits. Prerequisites: FRLG 201-202 Foreign Languages: Arabic or equivalent. Conducted in Arabic. Designed to develop further all language skills: reading, writing, comprehension and speaking. Course is divided into two parts: (a) language skills (grammar, short stories and poetry) and (b) field project (interaction with native speakers). Both parts include lectures, guest speakers and practicing the language with native speakers from the student body and the community at large.

Biology(BIOL)

Courses at the 500 level listed in this bulletin are open to qualified seniors and graduate students only.

The following courses do not apply toward the major in biology: BIOL 101, BIOZ 101L, BIOL 102, BIOZ 102L, BIOL/ENVS 103, BIOZ/ENVZ 103L, BIOL 201, BIOZ 201L, BIOL 205, BIOZ 205L, BIOL/PHIS 206, BIOZ/PHIZ 206L, BIOL 209, BIOZ 209L, BIOL 217, BIOL 315 and BIOL 332.

A "C" grade or better in each prerequisite course (BIOL 151, BIOZ 151L, BIOL 152, BIOZ 152L or equivalent) is required for enrollment in all advanced biology courses (BIOL 218 or higher).

A "C" grade or better in BIOL 218 is required for enrollment in all courses for which it is a prerequisite.

A "C" grade or better in each prerequisite course (BIOL 101, BIOZ 101L, BIOL 102, BIOZ 102L, BIOL 151, BIOZ 151L, BIOL 152 and BIOZ 152L) is required for enrollment in BIOL 205, 206, 209 and 217.

Biology courses at the 500 level are open to qualified seniors and graduate students only.

BIOL 101 Biological Concepts

Semester course; 3 lecture hours. 3 credits. A topical approach to basic biological principles. Topics include molecular aspects of cells, bioenergetics, photosynthesis, cellular respiration, cellular and organismal reproduction, genetics and evolution, and ecology. Not applicable for credit toward the B.S. in Biology.

BIOL 102 Science of Heredity

Semester course; 3 lecture hours. 3 credits. Basic scientific principles of genetics and its impact on individuals and society. Draws together principles of biology, chemistry, mathematics, ethics and sociology. Topics include principles of inheritance, DNA structure and function, biotechnology and its impact on society, the nature of various genetic disorders, genetic screening and counseling, population genetics and the bioethics of genetic manipulation. Not applicable for credit toward the B.S. in Biology. Not applicable as a prerequisite for any biology course at the 200 level or above.

BIOL 103/ENVS 103 Environmental Science

Semester course; 3 lecture and 1 online recitation hours. 4 credits. Students are required to participate in the classroom lecture and in the online recitation via high-speed connection. Basic scientific principles of environmental processes. Draws together aspects of biology, chemistry, geology, physics and sociology. Among the topics covered are ecology, natural resources, air and water resources, energy and recycling, population biology and sustainable global societies. Not applicable for credit toward the B.S. in Biology. Not applicable as a prerequisite for any biology course at the 200 level or above.

BIOL 151 Introduction to Biological Science I

Semester course; 3 lecture hours. 3 credits. Prerequisites: Placement into MATH 151 and a grade of "C" or better in CHEM 100 or placement into CHEM 101 on the Chemistry Placement Test. Principles of plant biology including cell biology, physiology and evolution of plant diversity. Designed for biology majors. BIOL 151 may be taken after BIOL 152.

BIOL 152 Introduction to Biological Science II

Semester course; 3 lecture hours. 3 credits. Prerequisites: Placement into MATH 151 and a grade of "C" or better in CHEM 100 or placement into CHEM 101 on the Chemistry Placement Test. Principles of animal biology including genetics, physiology and evolution of animal diversity. Designed for biology majors. BIOL 152 may be taken before BIOL 151.

BIOL 201 Human Biology

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 101 or 103. Fundamentals of human biology, including the structure, function and disorders of human body systems, principles of human genetics and inheritance, human evolution, and the interaction of humans with the environment. Not applicable for credit toward the B.S. in Biology.

BIOL 205 Basic Human Anatomy

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: "C" or better in BIOL 101 and BIOZ 101L, or equivalent. Human specimens, models and interactive software are used to study human body structures; emphasis is on the skeleto-muscular aspects. Not applicable for credit toward the B.S. in Biology.

BIOL 206/PHIS 206 Human Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: A "C" grade or better in BIOL 101 and BIOZ 101L or equivalent. Functioning of the human body with emphasis on experimental procedures. Not applicable for credit toward the B.S. in Biology.

BIOL 209 Medical Microbiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: A "C" grade or better in BIOL 101 and BIOZ 101L or equivalent. General principles of microbiology and immunology to provide a thorough understanding of the host-microbe relationship in disease. Not applicable for credit toward the B.S. in Biology.

BIOL 217 Principles of Nutrition

Semester course; 3 lecture hours. 3 credits. Prerequisites: A "C" grade or better in BIOL 101 and BIOZ 101L or equivalent. An introduction to basic principles of nutrition and their application in promoting growth and maintaining health throughout the life cycle. Not applicable for credit toward the B.S. in Biology.

BIOL 218 Cell Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: A "C" grade or better in BIOL 151, 152 and BIOZ 151L, 152L or equivalent; CHEM 102 and CHEZ 102L or equivalent. A study of the molecular biology of the cell as it relates to gene expression, cell signaling, and cell growth and differentiation.

BIOL 291 Topics in Biology

Semester course; variable hours. Variable credit. A study of a selected topic in biology. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

BIOL 292 Independent Study

Semester course; variable hours. Variable credit. Maximum of 2 credits per semester; maximum total of 6 credits for all independent study courses (BIOL 292 and/or 492). Prerequisites: Eight credits in biology and an overall GPA of 3.0. Determination of the amount of credit and permission of the instructor and department chair must be obtained prior to registration for the course. Designed to allow students to accomplish independent readings of biological literature under the supervision of a staff member.

BIOL 300 Biotechniques Laboratory

Semester course; 1 lecture and 3 laboratory hours. 2 credits. Prerequisite: BIOL 218 or equivalent. Basic methods used in cellular and molecular biology focusing on laboratory methods and instrumentation, experimental design and data collection, analysis and presentation. Exercises may include: DNA and RNA amplification, isolation and analysis; molecular genotyping and DNA sequence analysis; DNA cloning; chromatography; electrophoresis; immunoassays; spectroscopy; cell and tissue culture.

BIOL 301 Comparative Vertebrate Anatomy

Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisite: BIOL 218 or equivalent. The evolution of vertebrate forms as demonstrated by anatomical studies of selected vertebrate types.

BIOL 302 Animal Embryology

Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisite: "C" or better in BIOL 218. Basic reproductive and developmental processes during animal embryonic development. Includes programming/packaging in the egg, cell-cell interactions and basic organogenesis. Cellular mechanisms and the role of differential gene activity in developmental processes and experimental work using living invertebrate and vertebrate embryos.

BIOL 303 Bacteriology

Semester course; 3 lecture hours. 3 credits. Prerequisite: "C" or better in BIOL 218. The morphological, biochemical, taxonomic, genetic and evolutionary characteristics of bacteria. Focuses on the structural, mechanical and biochemical adaptations employed by bacteria in their interactions with host cells and substrates.

BIOL 307 Aquatic Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent, BIOL 317, CHEM 102 and CHEZ/FRSZ 102L. The physical, chemical and especially the biological aspects of freshwater ecosystems.

BIOL 308 Vertebrate Histology

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: A "C" grade or better in BIOL 218. Microanatomy of vertebrate cells, tissues and organs and the relationship of structure to function. Laboratory work involves an in-depth study of vertebrate microanatomy at the light microscope level as well as an introduction to techniques used for the preparation of materials for histological study.

BIOL 309 Entomology

Semester course; 2 lecture and 6 laboratory hours. 4 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Field and laboratory work emphasized to illustrate insect diversification, diagnostic features, habitats and development patterns. A project is required and some independent work will be necessary.

BIOL 310 Genetics

Semester course; 3 lecture hours. 3 credits. Prerequisite: A "C" grade or better in BIOL 218. The basic principles of molecular and applied genetics of plants, animals and microorganisms.

BIOL 311 Animal Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: A "C" grade or better in BIOL 218. Physiological principles of animal cells, tissues and organs from the viewpoint of chemical and physical phenomena.

BIOL 312 Invertebrate Zoology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. A survey of the invertebrate animals with emphasis on environmental interactions. A weekend trip to a marine environment is required.

BIOL 313 Vertebrate Natural History

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. The natural history of vertebrates with emphasis on the species native to Virginia.

BIOL 314/FRSC 314 Introduction to Molecular Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151-152, CHEM 102 or equivalent. The fundamentals, principles, techniques and applications of cell biology and genetics. Emphasis is on nucleic acids and proteins. Not applicable for credit toward the B.S. degree in biology.

BIOL 315/ENVS 314/INTL 314 Man and Environment

3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. A comparative study of the ecology and natural history of human populations, including the environments as determining factors in the evolution of human institutions and technology, resources management and population crises; cultural traditions as mechanisms of population control; basic theory of population biology. Not applicable for credit toward the B.S. in Biology.

BIOL 317 Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. An introduction to the basic principles of ecology, including interactions among organisms and influences of the physical environment.

BIOL 320 Biology of the Seed Plant

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. The physiology, structure and adaptation of seed plants.

BIOL 321 Plant Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: A "C" grade or better in BIOL 218. A survey of the developmental changes that take place during the life cycle of lower and higher plants. Emphasis is placed on the control factors that are involved in regulating the ordered changes which take place during development.

BIOL 332/ENVS 330 Environmental Pollution

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent, and eight credits in biology. The pollution in the environment with emphasis on the procedures for detection and abatement. Not applicable for credit toward the B.S. in Biology.

BIOL 341/ANTH 301 Human Evolution

Semester course; 3 lecture hours. 3 credits. Prerequisite: A "C" or better in ENGL 200. Introduces the range of human diversity as well as a broad understanding of evolution and evolutionary biology, particularly as it applies to hominid evolution. Specific topics include basic genetics, primatology, paleontology, and growth and development. Not applicable for credit toward the B.S. in Biology.

BIOL 351/BNFO 301 Introduction to Bioinformatics

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 218 and MATH 200. Corequisite: CHEM 301. Introduction to the basic concepts, tools and possibilities of bioinformatics, the analysis of large bodies of biological information. The course stresses problem solving and integrative projects, making extensive use of exercises in class that draw on bioinformatics resources on the Web and on local servers.

BIOL 361 Biomedical Research

Semester course; 1 lecture hour. 1 credit. Pre- or corequisite: BIOL 218. An introduction to biomedical research projects.

BIOL 391 Topics in Biology

Semester course; variable hours. Variable credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. A study of a selected topic in biology. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

BIOL 392 Introduction to Research

Semester course; 2 lecture/demonstration hours. 1 credit. Prerequisites: ENGL 200, STAT 208 or 210, BIOL 151, 152, BIOZ 151L, 152L Introduction to Biological Science I and II and Laboratories, BIOL 218 Cell Biology; BIOL 310 Genetics; BIOL 317 Ecology and one of the following laboratory experiences: BIOL 300 Experimental Methods, BIOZ 310L Genetics Laboratory or BIOZ 317L Ecology Laboratory as well as junior/senior status. An introduction to the scientific process, including the mechanics of problem definition, information gathering and experimental design. Experimentation is discussed in context with methods of data collection and analysis; some basic research techniques are demonstrated. Aims are to prepare the student for future research experiences, and to have the student write detailed research proposals.

BIOL 401 Applied and Environmental Microbiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: A "C" grade or better in BIOL 218. The biology and chemical activities of microorganisms (bacteria, algae, virus and fungi) of industrial, pharmaceutical and agricultural importance.

BIOL 403/ANTH 403 Primatology

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 301. Primatology investigates the taxonomic relationships among primates through comparative anatomy, comparative behavior and comparative biochemistry. Study of primate evolution, demography, subsistence, reproduction, social organization, communication systems and ecology. Not applicable for credit toward the B.S. in Biology.

BIOL 415 Aquatic Macrophytes

Semester course; 1 lecture and 5 laboratory hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent; BIOL 410 or 411. Field and laboratory study of vascular plants or aquatic habitats; including collection and identification, and consideration of the ecology, morphology and economic value of aquatic macrophytes.

BIOL 416 Ornithology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent, and eight credits of biology or permission of instructor. Basic biology of birds, with emphasis on their role in the environment.

BIOL 417 Mammalogy

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent; 12 credits of biology and permission of instructor. Study of the characteristics, adaptive radiation and distribution of mammals, with emphasis on North American forms.

BIOL 431 Introduction to Marine Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent; BIOL 317 and CHEM 102 and CHEZ/FRSZ 102L. An introduction to physical, chemical and geological oceanography and a more detailed treatment of the organisms and ecological processes involved in the pelagic and benthic environments of the world's oceans and estuaries.

BIOL 435 Herpetology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent; BIOL 317 or equivalent. The evolution, ecology, structure, taxonomy and behavior of reptiles and amphibians.

BIOL 438/FRSC 438 Forensic Molecular Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 Genetics or equivalent; CHEM 302 Organic Chemistry II and CHEZ 302L Organic Chemistry II Laboratory. Provides an understanding of various DNA testing methodologies and their applicability to forensic science. Students will learn the skills necessary to evaluate the applicability of each method as it applies to particular case situations. Not applicable for credit toward the B.S. in Biology.

Effective Fall 2006 BIOL 438/FRSC 438 Forensic Molecular Biology
Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 or equivalent; CHEM 302 and CHEZ 302L. Provides an understanding of various DNA testing methodologies and their applicability to forensic science. Students will learn the skills necessary to evaluate the applicability of each method as it applies to particular case situations.

BIOL 445 Neurobiology and Behavior

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent; BIOL 317 or equivalent. The study of animal behavior stressing ecological, evolutionary and neurobiological approaches.

BIOL 450-451 Biology of Cancer I and II

Continuous courses; 3 lecture hours for fall semester, 1 lecture and 12 laboratory hours for spring semester. 3-4 credits. Prerequisite: "C" or better in BIOL 218, completion of BIOL 450 and instructor's permission to enroll in BIOL 451. An examination of the cellular, molecular and clinical aspects of cancer development, progression and treatment.

BIOL 455 Immunology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent; BIOL 310. A comprehensive introduction to the immune system of higher animals, emphasizing the molecular and cellular basis for antibody-medicated immunity.

BIOL 490 Research Seminar

Semester course; 1 credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Pre- or corequisites: BIOL 492 or 495, and senior status. Opportunity for students to develop skills necessary for effective oral presentation of their research work. Activities include a variety of seminar discussions and activities such as preparation of visual materials and statistical analysis of data. Students will make several oral presentations directly related to their specific BIOL 492 or 495 projects.

BIOL 491 Topics in Biology

Semester course; variable hours. Variable credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. A study of a selected topic in biology. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

BIOL 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 4 credits per semester; maximum total of 6 credits for all independent study courses (BIOL 292, 492 and/or 495). A minimum of 2 credits is required for the course to count as a laboratory experience. Prerequisite: One of the following courses: BIOL 300 Experimental Methods, BIOZ 310L Laboratory in Genetics or BIOZ 317L Ecology Laboratory, or permission of the chair of the Department of Biology. A proposal acceptable to the supervising faculty member and departmental chair is required. Projects should include data collection and analysis, learning field and/or laboratory techniques, and/or mastering experimental procedures, all under the direct supervision of a faculty member. A minimum of three hours of supervised activity per week per credit hour is required. A final report must be submitted at the completion of the project. Graded as pass/fail.

BIOL 495 Research and Thesis

Semester course; variable hours. Variable credit. Maximum of 4 credits per semester; maximum total of 6 credits for all undergraduate research in biology (BIOL 292, 492, 495). A minimum of 2 credits is required for the course to count as a laboratory experience. A minimum of 4 credits is required for Honors in Biology. Prerequisites: BIOL 392, permission of the supervising faculty member and a research proposal acceptable to the departmental chair. Activities include field and/or laboratory research under the direct supervision of a faculty mentor. A minimum of three hours of supervised activity per week per credit hour is required. Research projects must include experimental design and analysis of data. A written thesis of substantial quality is required upon completion of the research.

BIOL 496 Biology Preceptorship

Semester course; maximum 4 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Open to juniors and seniors who have completed 14 credits of biology (including the relevant core course) and have an overall GPA of 3.0 or better. Permission of instructor and departmental chair required prior to registration. Preceptors will conduct review sessions for students enrolled in one of the following biology core courses: BIOL 218, BIOL 317 or BIOL 310. Preceptorship cannot be repeated for the same course for biology credit. Preceptors will attend all class lectures, prepare course study/review material and lead three hours of review sessions each week under the guidance of the faculty adviser. A preproposal and final report are required. Graded as pass/fail.

BIOL 502/MICR 502 Microbial Biotechnology

Semester course; 3 lecture hours. 3 credits. Prerequisites: MICR/BIOC 503 or equivalent, and MICR/BIOC 504 or equivalent. Open to qualified seniors and graduate students only. Discussion of the application of basic principles to the solution of commercial problems. The course will cover the historical principles in biotransformations as related to primary and secondary metabolism, as well as recombinant DNA technology and monoclonal antibodies and products resulting from the application of recombinant DNA technology.

BIOL 503 Fish Biology

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: BIOL 317 or equivalent. Open to qualified seniors and graduate students only. Classification, behavior, physiology and ecology of fishes. Laboratories will emphasize field collection of fish and identification of specimens.

BIOL 504 Comparative Animal Physiology

Semester course; 3 lecture and 4 laboratory hours. 4 credits. Prerequisites: BIOL 218 and CHEM 301-302 and CHEZ 301L, 302L. Open to qualified seniors and graduate students only. Comparative physiology of animals with a molecular emphasis.

BIOL 507 Aquatic Microbiology

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisites: BIOL 303 and 307 or equivalents. Open to qualified seniors and graduate students only. This course will involve a practical approach to the methods used to culture, identify and enumerate specific microorganisms that affect the cycling of elements in aquatic systems and those that affect or indicate water quality.

BIOL 508 Barrier Island Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 317 or equivalent, or permission of instructor. A study of the physical factors affecting the formation of barrier islands, adaptations of plants and animals for colonization and persistence in these harsh environments, and how coastal ecological processes conform to general ecological theory. Examples and problems pertaining to Virginia and the southeastern United States are emphasized.

BIOL 510 Conservation Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 and BIOL 317 (or equivalents) or permission of instructor. Open to qualified seniors and graduate students only. Explores the accelerated loss of species due to increasing human population pressure and the biological, social and legal processes involved in conserving biodiversity.

BIOL 512 Plant Diversity and Evolution

Semester course; 3 lecture and 4 laboratory hours. 4 credits. Prerequisites: BIOL 218 and 310 or equivalents, or permission of instructor. Taxonomy, diversity and evolutionary history of vascular plants (including ferns, gymnosperms and flowering plants). Lecture emphasis on evolutionary relationships; laboratory emphasis on plant recognition and identification, especially of the Virginia flora, including some field trips to areas of local botanical interest.

BIOL 514 Stream Ecology

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: BIOL 317. Open to qualified seniors and graduate students only. A study of the ecology of streams and rivers. Laboratory emphasis is on the structure and functioning of aquatic communities in mountain to coastal streams.

BIOL 516/HGEN 516 Population Genetics

Semester course; 3 lecture hours. 3 credits. Genetic and ecological factors affecting normal and abnormal variation within and between populations of organisms.

BIOL 518 Plant Ecology

Semester course; 3 lecture and 2 laboratory hours. One three-day field trip is required. 4 credits. Prerequisite: BIOL 317. Open to qualified seniors and graduate students only. A lecture, field and laboratory course concerned with the development, succession and dynamics of plant communities and their interrelations with climate, soil, biotic and historic factors.

BIOL 520 Population Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 and BIOL 317 or permission of instructor. Open to qualified seniors and graduate students only. Theoretical and empirical analysis of processes that occur within natural populations, including population genetics, population growth and fluctuation, demography, evolution of life history strategies and interspecific interactions. Quantitative models will be used extensively to explore ecological concepts.

BIOL 521 Community Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 317 or equivalent. Open to qualified seniors and graduate students only. Theoretical and empirical analysis of the structure and function of natural communities, ecosystems and landscapes.

BIOL 522 Evolution and Speciation

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 310 or equivalent. Open to qualified seniors and graduate students only. Evolutionary principles, with emphasis on genetic and environmental factors leading to changes in large and small populations of plants and animals, and the mechanisms responsible for speciation.

BIOL 524 Endocrinology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 218 and CHEM 301-302 and CHEZ 301L, 302L or equivalent. Open to qualified seniors and graduate students only. Hormonal control systems at the organ, tissue and cellular level. Although the major emphasis will be on vertebrate endocrine systems, some discussion of invertebrate and plant control systems will be covered.

BIOL 530/HGEN 501 Human Genetics

Semester course; 3 credits. Prerequisites: BIOL 310 and CHEM 301-302 and CHEZ 301L, 302L or equivalents. Open to qualified seniors and graduate students only. Emphasizes a broad approach, at an advanced level, to human genetics. Explores topics including cytogenetics, pedigree analysis, gene mapping, aneuploid syndromes, inborn error of metabolism, neonatal screening, cancer, genetic engineering, behavior and intelligence, prenatal diagnosis and genetic counseling.

BIOL 532 Water Pollution Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 317 or equivalent and one year of general chemistry. A study of various forms of pollution in aquatic environments, including the basic principles and effects of water pollution on aquatic organisms and ecosystems, ecotoxicology, waterborne pathogens, invasive species, water pollution monitoring and environmental laws.

BIOL 540/BNFO 540 Fundamentals of Molecular Genetics

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 310 or consent of instructor. The basic principles and methodologies of molecular biology and genetics are applied to genome organization, replication, expression, regulation, mutation and reorganization. Emphasis will be placed on a broad introduction to and integration of important topics in prokaryotic and eukaryotic systems.

BIOL 541/BNFO 541 Laboratory in Molecular Genetics

Semester course; 1 lecture and 4 laboratory hours. 2 credits. Pre- or corequisite: BIOL 540 Fundamentals of Molecular Genetics or equivalent. Experiments are designed to apply advanced techniques and concepts of molecular biology and genetics using prokaryotic and eukaryotic systems. Emphasis will be placed on experimental design, integrating results throughout the semester, making use of relevant published literature, scientific writing and providing hands-on experience with advanced equipment and methodologies.

BIOL 545/LFSC 510 Biological Complexity

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: BIOL 310 and 317, CHEM 302, PHYS 202, MATH 200 or equivalents or permission of the instructor. Opened to qualified seniors and graduate students only. An introduction to the basis of complexity theory and the principles of emergent properties within the context of integrative life sciences. The dynamic interactions among biological, physical and social components of systems are emphasized, ranging from the molecular to ecosystem level. Modeling and simulation methods for investigating biological complexity are illustrated.

BIOL 548/LFSC 520 Bioinformatic Technologies

Semester course; 2 lecture hours. 2 credits. Prerequisite: BIOL 545/LFSC 510 or permission of instructor. Introduction to the hardware and software used in computational biology, proteomics, genomics, ecoinformatics and other areas of data analysis in the life sciences. The course also will introduce students to data mining, the use of databases, meta-data analysis and techniques to access information.

BIOL 550 Ecological Genetics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: BIOL 310 and BIOL 317 (or equivalents) or permission of instructor. Open to qualified seniors and graduate students only. Introduces the principles of ecological genetics, especially those with foundations in population and quantitative genetics, and illustrates conceptual difficulties encountered by resource stewards who wish to apply genetic principles. Explores various types of biological technologies employed by conservation geneticists and provides means for students to gain experience in analyzing and interpreting ecological genetic data.

BIOL 565 Advances in Cell Signaling

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 218 or equivalent. Topical course focusing on advances in cellular communication by cytokines, hormones and neurotransmitters. Each semester, the course focuses on a different topic. Past topics have included cancer biology, allergy and asthma, and autoimmunity.

BIOL 580 Eukaryotic Biotechnology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 and BIOZ 310L, or graduate standing in biology or related fields. Open to qualified seniors and graduate students only. Discussion of principles, concepts, techniques, applications and current advances in cellular and molecular biology aspects of biotechnology for animal and plant cells. The course will cover molecular construction of foreign genes; DNA cloning; technologies for DNA, RNA and protein analyses; nonvector and vector-mediated genetic transformation; gene regulation in transgenic cells; cell and tissue culture; cell fusion; and agricultural, medical and other industrial applications.

BIOL 585 Virology

Semester course; 3 lecture hours. 3 credits. Prerequisites: 16 credits in biology; a "C" grade or better in BIOL 218 or equivalent; eight credits in chemistry. Open to qualified seniors and graduate students only. A comprehensive introduction to virology encompassing viruses of vertebrates, invertebrates, plants and bacteria. Topics include physical and chemical characterization, classification, detection, replication, genetics, diseases, immunology, epidemiology and interactions of neuromotor disorders of infants and children. Critically surveys current theory and practice in neuromotor therapeutics for children and adults.

BIOL 591 Special Topics in Biology

Semester course; 1-4 credits. An in-depth study of a selected topic in biology See the Schedule of Classes for specific topics to be offered each semester and prerequisites. If several topics are offered, students may elect to take more than one.

BIOL 606 Quantitative Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 501 and STAT 543 or equivalent. Principles and applications of mathematical ecology at the community level, including experimental design; sampling techniques, assumptions and limitations; and the use of cluster analysis, gradient analysis and ordination to evaluate, summarize and compare large data sets.

BIOL 626 Physiological Ecology

Semester course; 4 lecture hours. 4 credits. Prerequisite: BIOL 317 or equivalent. This course examines the physiological adjustments and adaptations made by organisms in response to their environment.

BIOL 630 Patterns of Mammalian Reproduction

Semester course; 3 lecture hours. 3 credits. A comprehensive ecological and evolutionary study of specializations and adaptive radiation in mammalian reproductive anatomy, the reproductive cycle, seasonality of reproduction and factors affecting litter size and developmental state of neonates. Human reproductive biology is included when pertinent.

BIOL 654/ENVS 654/URSP 654 Environmental Remote Sensing

Semester course; 3 lecture hours. 3 credits. Prerequisite: URSP/ENVS 521 or equivalent. This course provides a basic and applied understanding on the use of digital remote sensor data to detect, identify and characterize earth resources. Students are required to demonstrate an understanding of the spectral attributes of soils, vegetation and water resources through various labs involving both image- and non-image-based optical spectral data.

BIOL 675 Physiology of the Cell

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: CHEM 301-302, CHEZ 301L, 302L and at least one of the following biology courses: BIOL 302, 303, 311 or their equivalents. Physiological principles of cellular function in bacterial, plant, and animal cells. The lecture topics include gases, electrolytes, radiations, temperature, membrane transport, bioelectricity and cell movements. The laboratory will stress investigative techniques.

BIOL 690 Biology Seminar

Semester course; 1 credit. May be repeated for credit. Presentations by faculty and visiting lecturers, and discussions of research and developments in biology and related fields. Graded as "S," "U" or "F."

BIOL 691 Special Topics in Biology

Semester course; variable hours. 1-4 credits. An advanced study of a selected topic in biology. See the Schedule of Classes for specific topics to be offered each semester and prerequisites. If several topics are offered, students may elect to take more than one.

BIOL 692 Independent Study

Semester course; hours to be arranged. Credits to be arranged. Determination of the amount of credit and permission of instructor, adviser and department chair must be obtained prior to registration for this course. A course designed to provide an opportunity for independent research in any area of biology outside the graduate student thesis area.

BIOL 693 Current Topics in Biology

Semester course; 1 lecture hour. 1 credit. May be repeated for credit. Designed to develop skills in preparing and delivering oral presentations in conjunction with an in-depth study of a current topic in biology. Students present talks and lead discussions on the selected topic.

BIOL 698 Thesis

Semester course; hours to be arranged. Credits to be arranged. Independent research by students in areas of systematics, environmental, developmental, behavioral, cellular and molecular biology, and comparative physiology.

Biology Lab(BIOZ)

BIOZ 101L Biological Concepts Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: BIOL 101. Laboratory exercise correlated with BIOL 101. Not applicable for credit toward the B.S. in Biology.

BIOZ 102L Science of Heredity Laboratory

Semester course; 2 hours. 1 credit. Pre- or corequisite: BIOL 102 (113). Laboratory exercises correlated with BIOL 102. Not applicable for credit toward the B.S. in Biology. Not applicable as a prerequisite for any biology course at the 200 level or above.

BIOZ 103L/ENVZ 103L Environmental Science Laboratory

Semester course; 2 hours. 1 credit. Pre- or corequisite: BIOL/ENVS 103. Laboratory exercises correlated with BIOL/ENVS 103. Not applicable for credit toward the B.S. in Biology. Not applicable as a prerequisite for any biology degree. Not applicable as a prerequisite for any biology course at the 200 level or above.

BIOZ 151L Introduction to Biological Science Laboratory I

Semester course; 3 laboratory hours. 1 credit. Pre- or corequisite: BIOL 151. Laboratory investigation of plant genetics, physiology and evolution, with an emphasis on formation and testing of hypotheses. Laboratory exercises will elaborate themes discussed in BIOL 151.

BIOZ 152L Introduction to Biological Science Laboratory II

Semester course; 3 laboratory hours. 1 credit. Pre- or corequisite: BIOL 152. Laboratory investigation of animal genetics, physiology and evolution, with an emphasis on formation and testing of hypotheses. Laboratory exercises will elaborate themes discussed in BIOL 152.

BIOZ 201L Human Biology Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: BIOL 201. Laboratory exercises correlated with BIOL 201 Human Biology. Exercises emphasize the structure, function and disorders of human body systems, principles of human genetics and inheritance, and human evolution and ecology. Not applicable for credit toward the B.S. in Biology.

BIOZ 206L/PHIZ 206L Human Physiology Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: BIOL/PHIS 206. Functioning of the human body with emphasis on experimental procedures. Not applicable for credit toward the B.S. in Biology.

BIOZ 209L Medical Microbiology Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: BIOL 209. Techniques to culture, isolate, and identify microbes with related topics such as water coliform tests, and antibiotics and disinfectant sensitivity testing. Not applicable for credit toward the B.S. in Biology.

BIOZ 303L Bacteriology Laboratory

Semester course; 4 laboratory hours. 2 credits. Pre- or corequisite: BIOL 303. Laboratory application of techniques and concepts in bacteriology. Emphasis is placed on techniques to isolate, culture and identify bacteria; genetics and molecular biology of bacteria; safety and aseptic protocols; assays for antibiotic and disinfectant susceptibility.

BIOZ 307L Aquatic Ecology Laboratory

Semester course; 3 laboratory hours. 1 credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Pre- or corequisite: BIOL 307. Laboratory and field studies of the biota of aquatic habitats and their relationship with the environment.

BIOZ 310L Laboratory in Genetics

Semester course; 4 laboratory hours. 2 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Prerequisite or corequisite: BIOL 310. Exercises and experiments are designed to demonstrate the laws of heredity using a variety of prokaryotic and eukaryotic organisms. Topics may include probability and statistics, cell division, particulate inheritance including X-linked examples, genetic mapping, chromatography, isolation and analysis of DNA, population genetics.

BIOZ 311L Animal Physiology Laboratory

Semester course; 3 laboratory hours. 1 credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Pre- or corequisite: BIOL 311. Experimental methods in physiology.

BIOZ 312L Invertebrate Zoology Laboratory

Semester course; 3 laboratory hours. 1 credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Pre- or corequisite: BIOL 312. A laboratory survey of the invertebrate animals, with emphasis on environment interactions. A weekend trip to a marine environment is required.

BIOZ 313L Vertebrate Natural History Laboratory

Semester course; 3 laboratory hours. 1 credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Pre- or corequisite: BIOL 313. Laboratory exercises focusing on the natural history of vertebrates, with emphasis on the species native to Virginia.

BIOZ 317L Ecology Laboratory

Semester course; 4 laboratory hours. 2 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Pre- or corequisite: BIOL 317. A field-oriented course that provides experience in ecological research, including experimental design, instrumentation, data collection and data analysis.

BIOZ 321L Plant Development Laboratory

Semester course; 4 laboratory hours. 2 credits. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Pre- or corequisite: BIOL 321. An experimental approach applied to a phylogenetic survey of developmental model systems. Observational and experimental protocols will be used to collect data and gather information. Problem solving skills will be utilized to analyze and present experimental results.

BIOZ 416L Ornithology Laboratory

Semester course; 3 laboratory hours. 1 credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Pre- or corequisite: BIOL 416. Techniques of identifying, counting and analyzing behavior of birds in the field.

BIOZ 438L/FRSZ 438L Forensic Molecular Biology Laboratory

Semester course; 3 laboratory hours. 1 credit. Pre- or corequisite: BIOL/FRSC 438. Provides comprehensive coverage of the various types of DNA testing currently used in forensic science laboratories. Students will have hands-on experience with the analytical equipment employed in forensic science laboratories. Students also will explore and practice expert witness testimony in a mock trial setting with crime lab analysts as the judge and jury. Not applicable for credit toward the B.S. in Biology.

BIOZ 491L Topics in Biology Laboratory

Semester course; variable hours. Variable credit. Prerequisites: BIOL 151, 152 and BIOZ 151L, 152L, or equivalent. Laboratory investigations in a selected topic of biology. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

Chemistry(CHEM)

A grade of "C" or higher is required in each prerequisite course: CHEM 100 (if required through placement test), CHEM 101, CHEM 102, CHEM 301 and CHEM 302. In chemistry laboratories each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory, upon withdrawal or for other reasons, will incur a charge, billed from the Student Accounting Department.

CHEM 100 Introductory Chemistry

Semester course; 3 lecture and 1 problem session hour. 3 credits. Prerequisite: Students must be eligible to take MATH 131 or higher. A course in the elementary principles of chemistry for individuals who do not meet the criteria for enrollment in CHEM 101; required for all students without a high school chemistry background who need to take CHEM 101-102. These credits may not be used to satisfy any chemistry course requirements in the College of Humanities and Sciences.

CHEM 101-102 General Chemistry

Continuous courses; 3 lecture and 1 recitation hour. 3-3 credits. Prerequisite: CHEM 100 with a grade of "C" or higher, or high school chemistry and a satisfactory combination of Math SAT score and high school GPA. Pre- or corequisite: MATH 151. Prerequisite for CHEM 102: CHEM 101 with a grade of "C" or higher. Fundamental principles and theories of chemistry, including qualitative analysis.

CHEM 110 Chemistry and Society

Semester course; 3 lecture hours. 3 credits. The basic principles of chemistry are presented through the use of decision-making activities related to real-world societal issues. Not applicable for credit toward the B.S. in Chemistry.

CHEM 112 Chemistry in the News

Semester course; 3 lecture hours. 3 credits. The basic principles of chemistry are used to interpret newspaper and magazine articles of current interest relating to chemistry in manufacturing, the global environment and medicine. Not applicable for credit toward the B.S. in Chemistry.

CHEM 301-302 Organic Chemistry

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: CHEM 101-102 and CHEZ/FRSZ 101L, 102L; and for CHEM 302, a "C" grade or higher in CHEM 301. A comprehensive survey of aliphatic and aromatic compounds with emphasis on their structure, properties, reactions, reaction mechanisms and stereochemistry.

CHEM 303 Physical Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L, PHYS 201-202 or PHYS 207, PHYS 208 and MATH 200-201. Ideal and nonideal gases, thermodynamics, free energy and chemical equilibrium.

CHEM 304 Physical Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and CHEM 303. Kinetics, solution thermodynamics, heterogeneous equilibria, electrochemistry and introductory biophysical chemistry.

CHEM 305 Physical Chemistry for the Life Sciences

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L, CHEM 301-302, CHEM 309 and MATH 200. Concepts and principles of physical chemistry as related to the life sciences, forensic science and the B.S in science programs. Major topics include thermodynamics of proteins and nucleic acids, enzyme kinetics and spectroscopic techniques useful in biophysical research such as circular dichroism, nuclear magnetic resonance and magnetic resonance imaging.

CHEM 306/EGRC 306 Industrial Applications of Inorganic Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 302 and CHEZ 302L. Chemical engineering students: EGRC 201, EGRC 205 or permission of the instructor. A study and analysis of the most important industrial applications of inorganic chemistry, with emphasis on structure/properties correlation, materials and energy balance, availability and logistics of starting materials, economic impact and environmental effects.

CHEM 309 Quantitative Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and MATH 151, or equivalent. Theory and practice of gravimetric, volumetric and instrumental analysis techniques and treatment of multiple equilibria in aqueous solutions.

CHEM 310/MEDC 310 Medicinal Chemistry and Drug Design

Semester course; 3 lecture hours. 3 credits. Prerequisite: One year of organic chemistry. This course is designed to expose undergraduate chemistry, biology and pre-medicine majors to the history, theory and practice of medicinal chemistry. The course will emphasize a combination of fundamentals and applications of drug design. In particular, the molecular aspects of drug action will be discussed. Special emphasis will also be placed on the methods used by medicinal chemists to design new drugs.

CHEM 320 Inorganic Chemistry I

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L, CHEM 301-302, and CHEZ 301L, 302L. Pre- or corequisites: CHEM 309 and CHEZ 309L. A systematic, unified study of the structures, properties, reactions and practical applications of inorganic compounds.

CHEM 350 Guided Inquiry in Chemistry

Semester course; 1.5 lecture hours. 1 credit. Prerequisites: Grade of "B" or better in CHEM 101 and 102, and permission of instructor. Student facilitators lead recitation sections using guided inquiry, group-based activities. Introduces students to the principles of guided inquiry, active learning and collaborative learning in chemistry through practical, hands-on class work, class discussions and readings.

CHEM 391 Topics in Chemistry

Semester course; variable hours. Variable credit. Maximum of 4 credits per semester; maximum total of 6 credits for all chemistry topics courses may be applied to the major. Prerequisites: CHEM 101-102 and CHEZ/FRSZ 101L, 102L. A study of a selected topic in chemistry. See the Schedule of Classes for specific topics to be offered each semester.

CHEM 398 Professional Practices and Perspectives Seminar

Seminar course; 1 lecture hour. 1 credit. Prerequisites: Completion of 18 credits in chemistry. Seminar course for students considering careers in chemistry-related fields covering topics such as scientific professionalism and ethics, and using chemical literature.

CHEM 401 Applications of Instrumental Techniques in Organic and Forensic Chemistry

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L, CHEM 301-302 and CHEZ/FRSZ 301L, 302L. Theory and laboratory practice of instrumental and chemical methods applied to the analysis of organic compounds with emphasis on applications in forensic chemistry.

CHEM 403/BIOC 403 Biochemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and CHEM 301-302, or equivalents with permission of instructor. A presentation of structural biochemistry, enzymology, biophysical techniques, bioenergetics and an introduction to intermediary metabolism.

CHEM 404/BIOC 404 Advanced Topics in Biochemistry

Semester course; 2 lecture hours. 2 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and CHEM 301-302, and CHEM/BIOC 403, or equivalents with permission of instructor. Presentations of cellular, molecular and structural aspects of biochemistry. Selected topics of biomedical research.

CHEM 406 Inorganic Chemistry II

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L, CHEM 301-302, CHEZ 301L, 302L, CHEM 303-304, CHEZ 303L, 304L, CHEM 309, CHEZ 309L and CHEM 320. An advanced study of inorganic chemistry, including inorganic spectroscopy, organometallic compounds and catalysis, and bioinorganic systems.

CHEM 409 Instrumental Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L, CHEM 301-302, CHEM 303-304 and 309 with laboratories. Theory and practice of modern spectrophotometric, electroanalytical and chromatographic and nuclear magnetic resonance methods.

CHEM 491 Topics in Chemistry

Semester course; variable hours. Variable credit. Maximum of 4 credits per semester; maximum total of 6 credits for all chemistry topics courses may be applied to the major. Prerequisites: CHEM 101-102 and CHEZ/FRSZ 101L, 102L. A study of a selected topic in chemistry. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

CHEM 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 4 credits per semester; maximum total of 8 credits for all independent study courses. Prerequisites: CHEM 101-102 and CHEZ/FRSZ 101L, 102L. Open generally to students of junior or senior standing who have completed CHEM 302, CHEZ 302L and CHEM 309, and have a minimum GPA of 2.5 in chemistry courses. A determination of the amount of credit and the written permission of both the instructor and the department must be procured prior to registration for the course. Investigation of chemical problems through literature search and laboratory experimentation. Written progress and final reports will be required.

CHEM 493 Chemistry Internship

Semester course; variable hours. Variable credit. Maximum of 3 credits; 1 credit will be given for each 150 hours (approximately one month) of part-time or full-time chemical work experience. Prerequisites: CHEM 101-102 and CHEZ/FRSZ 101L, 102L. Open to students who have completed 24 credits in chemistry. Permission of adviser and department chair must be obtained prior to registration for the course. Acquisition of chemistry laboratory experience through involvement in a professional chemistry setting. Written progress and final reports will be required.

CHEM 498 Honors Thesis

Semester course; 1 credit. Prerequisites: Completion of 29 credits in chemistry, including CHEM 398 and at least six credits of CHEM 492. Students submit to the Department of Chemistry a thesis based on their independent study research. Students also present their results to the department as a research seminar.

CHEM 504 Advanced Organic Chemistry I

Semester course; 3 lecture hours. 3 credits. An integrated study of certain free radical and ionic reaction mechanisms with emphasis on electronic effects and stereochemical consequences of these reactions.

CHEM 506 Introduction to Spectroscopic Methods in Organic Chemistry

Half-semester course; 3 lecture hours. 1.5 credits. Introduction to mass spectrometry, infrared and 1D 1H and 13C NMR spectroscopy, theory and practice in the elucidation of organic structures.

CHEM 507 Introduction to Natural Products

Semester course; 3 lecture hours. 3 credits. A study of the biosynthetic origins, isolation, structure elucidation, and uses of naturally occurring organic compounds. Emphasis is placed upon three major classes of compounds, carboaromatics, terpenes, and alkaloids.

CHEM 510 Atomic and Molecular Structure

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 301 and PHYS 208. Survey of the pertinent aspects of quantum mechanics. Line spectra, atomic structure and molecular bonding.

CHEM 511 Chemical Thermodynamics and Kinetics

Semester course; 3 lecture hours. 3 credits. The concepts and principles of thermodynamics and their application to chemical problems. The rates and mechanisms of chemical reactions including collision and transition state theories.

CHEM 532 Advanced Analytical Chemistry

Semester course; 3 lecture hours. 3 credits. Theories and principles of thermodynamics and kinetics relevant to analytical methods, including acid-base, redox, and metal complexation equilibria, nonaqueous systems, kinetics, and an introduction to surface chemistry.

CHEM 550 Introduction to Polymer Chemistry

Semester course; 3 lecture hours. 3 credits. A study of macromolecular compounds that includes classifications, methods of preparation, mechanisms, stereochemistry, and applications. Physical characterizations, such as structure and property correlations, kinetics, thermodynamics, and molecular weight determinations are emphasized.

CHEM 580 Mechanical Properties of Plastics and Polymers

Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate standing or permission. This course provides a link between the more practical aspects of plastics and the fundamental properties of the polymers from which they are made. Topics covered deal with the structure of polymers with emphasis on relationships with mechanical properties; rubber elasticity; the glass transition and other secondary transitions; time and temperature dependency; yield and fracture; crystallization and morphology; influence of polymer processing on mechanical properties.

CHEM 591 Topics in Chemistry

Semester course; variable hours. 1-6 credits per semester. Maximum total of 9 credits for all topics courses. An in-depth study of a selected topic in chemistry. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

CHEM 604 Advanced Organic Chemistry II

Semester course; 3 lecture hours. 3 credits. An integrated study of the mechanism and stereochemistry of organic reactions and their application to organic synthesis. Emphasis is placed on addition and condensation reactions, carbanions, carbines, and other reactive intermediates.

CHEM 605 Physical Organic Chemistry

Semester course; 3 lecture hours. 3 credits. The theory and application of physical methods in the study of the behavior of organic compounds. Topics covered include homogeneous kinetics, equilibria, acid-base catalysis, and the quantitative correlation of structure and reactivity as they apply to the understanding of the mechanisms of organic reactions.

CHEM 606 Advanced Spectroscopic Methods in Organic Chemistry

Half-semester course; 3 lecture hours. 1.5 credits. Prerequisite: CHEM 506 or permission of instructor. Advanced spectroscopic techniques including 2D, multinuclear and solid state NMR; theory and practice in the education of organic structures.

CHEM 607 Organic Synthesis of Natural Products

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 604 or permission of instructor. A study of the criteria for, applications of reactions to, and design of, complex organic syntheses, including functional group protection and control of stereochemistry.

CHEM 610 Applied Quantum Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 510. Quantum mechanics applied to chemical problems in UV, IR, and NMR spectroscopy and the electronic structures of atoms and molecules; development of the self-consistent field equations.

CHEM 611 Molecular Spectroscopy

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 510. This course teaches the interaction of radiation and molecules; the rotation, vibration, and electronic motion of molecules; molecular spectra and recent developments in laser spectroscopy.

CHEM 612 Modern Statistical Mechanics: Fundamentals and Applications

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 510 and CHEM 511. Fundamental topics in modern equilibrium and non-equilibrium statistical mechanics, with applications to selected chemical, physical and biological systems.

CHEM 615 Chemical Thermodynamics

Semester course; 3 lecture hours. 3 credits. The study of the laws of thermodynamics and their application to pure phases, solutions, and changes in state.

CHEM 616 Chemical Kinetics

Semester course; 3 lecture hours. 3 credits. A study of the rates and mechanisms of chemical reactions, reaction rate theory, kinetic theory of gases, and theories of catalysis.

CHEM 620 Advanced Inorganic Chemistry I

Semester course; 3 lecture hours. 3 credits. The application of modern physical techniques for the determination of the symmetry, molecular structure, bonding, and reaction mechanisms of inorganic compounds.

CHEM 621 Advanced Inorganic Chemistry II

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 620 or permission of instructor. A coordinated study of synthetic methods, stereochemistry, and reaction mechanisms including catalysis of inorganic, organometallic and bioinorganic compounds.

CHEM 630 Electroanalytical Chemistry

Modular course; 3 lecture hours. 1.5 credits per module. Maximum of two modules per semester. Prerequisite: CHEM 532 or permission of instructor. Presents the theory and application of electroanalytical techniques including cyclic voltammetry, potential step methods, microelectrode voltammetry and spectroelectrochemistry.

CHEM 631 Separation Science

Modular course; 3 lecture hours. 1.5 credits per module. Maximum of two modules per semester. Prerequisite: CHEM 532 or permission of instructor. Discusses theories and principles of separation science as applied to chemical problems with emphasis on current techniques, instrumentation, and applications.

CHEM 632 Chemometrics

Modular course; 3 lecture hours. 1.5 credits per module. Maximum of two modules per semester. Prerequisite: CHEM 409 or permission of the instructor. Computer methods for experimental design and data analysis of spectroscopic, electrochemical and chromatograph data. Topics include sampling theory, detection limits, curve resolution, Fourier transform-based instruments, and factor analysis.

CHEM 633 Mass Spectrometry

Modular course; 3 lecture hours. 1.5 credits per module. Maximum of two modules per semester. Prerequisite: CHEM 532 or permission of the instructor. Topics include mass spectrometry ionization methods, mass analyzers, theory of unimolecular decompositions, and techniques used for ion structure determination.

CHEM 634 Surface Science

Modular course; 3 lecture hours. 1.5 credits per module. Maximum of two modules per semester. Prerequisite: CHEM 532 and 633 or permission of the instructor. Topics include types of surfaces requiring surface analysis, electron-surface scattering (AES, UPS, XPS, HREELS, LEED, STM, SEM), photon-surface scattering (IR, NMR, EXAFS), Molecule/Ion-Surface scattering (ISS, RMBS), chemisorption techniques and work function measurements.

CHEM 635 Spectrochemical Analysis

Modular course; 3 lecture hours. 1.5 credits per module. Maximum of two modules per semester. Prerequisite: CHEM 532 or permission of instructor. Topics include instrumental components, such as lasers, photomultipliers, array detectors, monochromators, lock-in and boxcar detection, waveguides and optical fibers, atomic spectroscopic methods, fluorescence, Raman and circular dichroism spectroscopies.

CHEM 690 Research Seminar

Semester course; 1 credit. May be repeated for credit. In addition to reports presented by students, staff, and visiting lecturers, current problems and developments in chemistry are discussed.

CHEM 691 Topics in Chemistry

Semester course; variable hours. 1-6 credits per semester. Maximum total of 9 credits for all topics courses. An advanced study of selected topic(s) in chemistry. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

CHEM 697 Directed Research

Semester course; 1-15 credits. May be repeated for credit. Research leading to the M.S. and Ph.D. degree.

Chemistry Lab(CHEZ)

CHEZ 101L/FRSZ 101L General Chemistry Laboratory I

Semester course; 1 lecture and 2 laboratory hours. 1 credit. Pre- or corequisite: CHEM 101. Experimental work correlated with CHEM 101 with selected forensic science applications. Each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory upon withdrawal or for other reasons will incur a charge billed from the Student Accounting Department.

CHEZ 102L/FRSZ 102L General Chemistry Laboratory II

Semester course; 1 lecture and 2 laboratory hours. 1 credit. Prerequisite: CHEZ/FRSZ 101L. Pre- or corequisite: CHEM 102. Experimental work includes qualitative analysis with selected forensic science applications. Each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory upon withdrawal or for other reasons will incur a charge billed from the Student Accounting Department.

CHEZ 110L Chemistry and Society Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: CHEM 110. Experimental work correlated with CHEM 110. Not applicable for credit toward the B.S. in Chemistry. Each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory upon withdrawal or for other reasons will incur a charge billed from the Student Accounting Department.

CHEZ 301L Organic Chemistry Laboratory I

Semester course; 4 laboratory hours. 2 credits. Prerequisites: CHEM 101-102 and CHEZ/FRSZ 101L, 102L. Pre- or corequisite: CHEM 301. Experimental work correlated with CHEM 301. Each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory upon withdrawal or for other reasons will incur a charge billed from the Student Accounting Department.

CHEZ 302L Organic Chemistry Laboratory II

Semester course; 4 laboratory hours. 2 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and 301L. Pre- or corequisite: CHEM 302. Experimental work correlated with CHEM 302. Each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory upon withdrawal or for other reasons will incur a charge billed from the Student Accounting Department.

CHEZ 303L Physical Chemistry Laboratory I

Semester course; 4 laboratory hours. 2 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L. Pre- or corequisites: CHEM 303, 309 and CHEZ 309L. This course covers experiments in calorimetry, molecular and thermodynamic properties of gases and liquids, surfaces, electrochemistry, equilibria, polymers, phase diagrams, and biophysical chemistry. Extensive report writing, laboratory notebook writing and statistical analysis of data are emphasized. A final project may be required.

CHEZ 304L Physical Chemistry Laboratory II

Semester course; 4 laboratory hours. 2 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L, CHEM 303, CHEM 309 and CHEZ 309L. Pre- or corequisite: CHEM 304. This course covers experiments in absorption and emission spectroscopy, infrared and Raman spectroscopy, NMR spectroscopy, kinetics, photochemistry, biophysical chemistry and modeling. Report writing, laboratory notebook writing and statistical analysis of data are emphasized. A final project may be required.

CHEZ 309L Quantitative Analysis Laboratory

Semester course; 1 lecture and 3 laboratory hours. 1 credit. Prerequisites: CHEM 101-102 and CHEZ/FRSZ 101L, 102L. Pre- or corequisite: CHEM 309. Laboratory associated with quantitative analysis. Includes practice in volumetric and instrumental laboratory techniques as applied to measurement sciences.

CHEZ 406L Inorganic Chemistry Laboratory

Semester course; 1 lecture and 3 laboratory hours. 2 credits. Prerequisites: CHEM 101-102 and CHEZ/FRSZ 101L, 102L. Pre- or corequisite: CHEM 406. Examination of inorganic nonmetal, transition metal and organometallic compounds using modern inorganic methods of synthesis and characterization. Each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory upon withdrawal or for other reasons will incur a charge billed from the Student Accounting Department.

CHEZ 409L Instrumental Analysis Laboratory

Semester course; 4 laboratory hours. 2 credit. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L, CHEM 301-302, 303-304 and 309 with related laboratories. Pre- or corequisite: CHEM 409. Practice of electrochemical, spectroscopic and chromatographic methods of analysis.

Chinese(CHIN)

CHIN 101-102 Elementary Chinese

Continuous courses; 5 lecture/recitation hours. 4-4 credits. Elementary grammar, reading and oral drill.

CHIN 110 Intensice Elementary Chinese

Semester course; 10 lecture and 10 laboratory hours. 8 credits. This intensive course combines CHIN 101 and 102 into a single-semester class. Students may receive credit toward graduation for either the CHIN 101-102 series or CHIN 110, but not both.

CHIN 201-202 Intermediate Chinese

Continuous courses; 3 lecture hours. 3-3 credits. Rapid review of the essentials of grammar, conversation and readings from Chinese literature.

CHIN 210 Intensive Intermediate Chinese

Semester course; 6 lecture hours. 6 credits. This intensive course combines CHIN 201 and 202 into a single-semester class. Students may receive credit toward graduation for either the CHIN 201-202 series or CHIN 210, but not both.

Criminal Justice(CRJS)

CRJS 180 Introduction to Forensic Science

Semester course; 1 lecture hour. 1 credit. Forensic Science is the application of scientific methods to crime, investigation and criminal identification. This short course will present the nature and scope of the field of forensic science and the precise ways in which law and science intersect. The scientific basis for behavioral prediction and classification (profiling) will be reviewed as will the natural science skills required for those entering the field, and career opportunities will be described.

CRJS 181 Justice System Survey

Semester course; 3 lecture hours. 3 credits. Comprehensive overview of criminal justice; assesses the extent of crime; reviews law enforcement, judicial and correctional processes at all levels of government; discusses history and philosophy of public safety; evaluates career opportunities.

CRJS 252 Introduction to the Juvenile Justice System

Semester course; 3 lecture hours. 3 credits. This survey course studies all segments of juvenile justice and special procedures designed for young persons; recognizes the importance of proper handling of the juvenile by the police and the courts; reviews recent developments in juvenile rehabilitation.

CRJS 253 Introduction to Corrections

Semester course; 3 lecture hours. 3 credits. A survey of societal responses to the offender; traces the evolution of practices based on philosophies of retribution, punishment and rehabilitation; reviews contemporary correctional activities and their relationships to other aspects of the criminal justice system; introduces the emerging area of correctional programming within the community.

CRJS 254 Introduction to Policing

Semester course; 3 lecture hours. 3 credits. A survey of different facets of law enforcement including the activities of public police agencies and private security organizations. Assesses changes in law enforcement philosophy and practices, police relationships with the public and the political arena and anticipated future trends in policing.

CRJS 255 Introduction to Legal Studies

Semester course; 3 lecture hours. 3 credits. Overview of the American legal system, processes, terminology; analysis of historical and philosophical bases of law. Examines the systems that adjudicate criminal and civil law; considers the role of law in the functioning of the justice system.

CRJS 260 Criminal Law

Semester course; 3 lecture hours. 3 credits. Deals with the definition and processing of substantive offenses along with the bases of criminal liability, defenses and complicity. Covers the scope of individual rights under due process, emphasizing arrest, interrogations, search and seizure.

CRJS 300 Forensic Criminology

Semester course; 3 lecture hours. 3 credits. The intersection of law, predictions of dangerousness, mental disorder and crime. Behavioral prediction, classification and the development of typologies of offenses and offending will be considered. Issues in the use of clinical and statistical prediction methods in criminal justice will be presented.

CRJS 302/ENGL 302 Legal Writing

Semester course; 3 lecture hours. 3 credits. Intensive practice in writing on subjects related to law or legal problems. Emphasis on organization, development, logical flow and clarity of style. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

CRJS 305 Policing Theories and Practice

Semester course; 3 lecture hours. 3 credits. An overview of the nature and application of law enforcement theory. Examines the theoretical underpinnings of a variety of law enforcement practices, with emphasis on evolving trends.

CRJS 320 Principles of Criminal Investigation

Semester course; 3 lecture hours. 3 credits. Surveys the fundamentals of criminal investigation procedures and techniques. Examines crime scene management, searching, collecting, handling and preserving of evidence as applied to forensic crime scene investigation.

CRJS 324 Courts and the Judicial Process

Semester course; 3 lecture hours. 3 credits. Examines the systems that adjudicate criminal and civil law; includes constitutional authority, jurisdictions and trial processes, with particular emphasis on reform in court administration, disposition without trial and sentencing.

CRJS 330/HSEP 330 Legal and Constitutional Issues in Homeland Security and Emergency Preparedness

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 301 and HSEP 302 or permission of instructor. An analysis of the legal and civil liberties changes and challenges brought on by terrorist attacks. Topics addressed may include surveillance issues, federal legislation passed in the aftermath of the terrorist attacks, the rights of foreign nationals, the rights of U.S. citizens, the governmental infrastructure for decisions concerning legal rights and the difficulties of prosecuting terrorist suspects, such as jurisdictional issues, rules of evidence and prosecution strategies.

CRJS 350 Evaluation and Treatment of the Offender

Semester course; 3 lecture hours. 3 credits. An analysis of the issues and procedures involved in evaluating individual differences in offenders and among classes of offenders; current diagnostic and treatment methods are discussed; introduces the student to case analysis and correctional counseling techniques. Includes analysis of evaluation and treatment resources external to corrections.

CRJS 351 Community-based Correctional Programs

Semester course; 3 lecture hours. 3 credits. A comprehensive review of various community-based rehabilitation and treatment efforts; includes analysis of probation, parole, work release, halfway houses and other methods of re-integrating the offender into society.

CRJS 352 Crime and Delinquency Prevention

Semester course; 3 lecture hours. 3 credits. Review and analysis of the problems associated with prevention of crime and delinquency, viewed in a total systems context. Programs and activities involving citizen, community and agency interrelationships will be developed and examined. Students are responsible for preparing and evaluating projects with crime preventive goals.

CRJS 355 Foundations of Criminal Justice

Semester course; 3 lecture hours. 3 credits. An examination of the intellectual underpinnings of the criminal justice system. This will include analysis of evolving values and ideas regarding social control, individual and collective responsibilities and rights, the role of punishment, politics and the law, practitioners as public servants, and criminological and other foundations of the criminal justice system.

CRJS 358 Lawyer's Role in the Justice System

Semester course; 3 lecture hours. 3 credits. Examines the multiple responsibilities of lawyers from an historical and contemporary perspective. The basic techniques of the lawyer's craft will be studied with emphasis placed on case advocacy, negotiation skills and legal reasoning, and problem solving.

CRJS 363 Correctional Law

Semester course; 3 lecture hours. 3 credits. Examines the legal rights of both the offender and the correctional worker. Attention is given to case law and legal decisions affecting policies and procedures in probation, correctional settings and parole. Trends influencing correctional programming and management activities will be projected.

CRJS 367/HSEP 301/POLI 367 Terrorism

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 101, POLI 103 and POLI 105 or permission of instructor. A survey of the modern problem of terrorism with an emphasis on the political nature of terrorist acts. Examines the history of terrorism, domestically within the U.S. and internationally, the role of religion, the structures and operations of terrorist organizations, as well as counterterrorism policies and policy making.

CRJS 368/HSEP 302 Emergency Planning and Incident Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 101, POLI 103 and 105, or permission of instructor. An introduction to the basic tasks of emergency preparedness and disaster mitigation, including planning, response and recovery. Special emphasis will be placed on command arrangements, coordination and budgetary issues among emergency responders (law enforcement, firefighters and health care system officials), and within and between federal, state and local governments.

CRJS 370 Criminalistics and Crime Analysis

Semester course; 3 lecture hours. 3 credits. A comprehensive evaluation of current developments in research, instrumentation and laboratory technology utilized to detect, identify, analyze and compare evidence.

CRJS 373 Crime Scene Evidence: Law and Trial Procedure

Semester course; 3 lecture hours. 3 credits. Provides a fundamental understanding of evidence law. Examines the nature and admissibility of various forms of evidence. Provides an understanding of the investigator's role in the judicial process including the presentation of testimony and adversarial proceedings.

CRJS 375/HSEP 320 The Intelligence Community and the Intelligence Process

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 301 and HSEP 302 or permission of instructor. An examination of the concepts of and challenges for state, local and federal policy making and organization for homeland security and emergency preparedness. The intelligence process — the collection, analysis, sharing and dissemination of information within and between local, state and federal governmental agencies — is a special focus.

CRJS 378 Juvenile Justice Law and Process

Semester course; 3 lecture hours. 3 credits. Examines the juvenile court as an institution; its jurisdiction and procedures. Considers intake, pretrial diversion and hearings, as well as rights and liabilities of the delinquent, dependent and neglected child. Contrasts juvenile and adult law; projects future impact of the court.

CRJS 380 Research Methods in Criminal Justice

Semester course; 3 lecture hours. 3 credits. Prerequisite: Statistics or permission of instructor. Designed to familiarize the student with current and applied research methods in criminal justice, including the application of data and information processing techniques and procedures; analyzes research in criminal justice journals and government reports; and enhances the capability to evaluate contemporary research.

CRJS 382/WMNS 382 Women in the Justice System

Semester course; 3 lecture hours. 3 credits. Surveys the special situation of women in the justice system as offenders, as victims and as professional practitioners. Applicable laws and public policy are studied in detail. Issues are punctuated by field trips to juvenile/adult programs and institutions.

CRJS 394 Field Service in Criminal Justice

1 credit. Designed to provide the student with an opportunity to participate as a volunteer worker in a criminal justice agency. Offers actual experience as an agency volunteer under the general supervision of a faculty member. An application is required a semester in advance. Graded as pass/fail.

CRJS 425 Violent Crime Scene Investigation

Semester course; 3 lecture hours. 3 credits. Introduces students to specialized tools and scientific aids used in the criminal investigation of homicide and rape cases. Applies investigative techniques and preparation of trial evidence used in homicides and rape cases.

CRJS 432 Criminal Justice: Organizations

Semester course; 3 lecture hours. 3 credits. Considers the behavioral dimensions of administrations in criminal justice and public safety agencies. Examines the concepts of leadership and decision making and the effect of environmental dynamics in the management of the criminal justice system.

CRJS 434 Police Administration

Semester course; 3 lecture hours. 3 credits. Examines major management concepts and principles with special emphasis on consideration of law enforcement. Policies and procedures formulated and followed by managers in law enforcement settings will be evaluated from a structural as well as a functional perspective. Contemporary and anticipated future problems, challenges and trends facing police managers will be addressed.

CRJS 450 Computer Forensic Investigation

Semester course; 3 lecture hours. 3 credits. Prerequisite: Successful completion of the computer literacy test. Study of the emerging field of computer forensics including prevention, detection, apprehension, analysis and prosecution of security violators and criminals. Focus is primarily on the federal/state use of computer forensic investigation, which includes cybercrime, cybervandalism, cyberpredators, cyberterrorism and the use of computers as electronic file cabinets.

CRJS 463 Comparative Criminal Justice Systems

Semester course; 3 lecture hours. 3 credits. Study of national and international criminal justice systems with an emphasis on historical, cultural and operational comparisons. Contemporary research relating to law enforcement, adjudicative and correctional systems will be considered.

CRJS 468 Economic and Organized Crime

Semester course; 3 lecture hours. 3 credits. Analysis of the types of offenses which occur in the business and governmental work and the consequences of illegal practices. Primary attention will address the public sector through the methods utilized to detect and investigate criminal activities affecting governmental units. Relationships to organized crime will be described for each of the specific topics and techniques.

CRJS 475 Case Studies in Criminal Procedure

Semester course; 3 lecture hours. 3 credits. Analyzes case studies reflecting the supervisory role of the courts over the prosecutorial use of testimonial and nontestimonial evidence; examines by actual cases the judicial interpretive processes by which the public safety is balanced with individual rights.

CRJS 480 Senior Seminar

Semester course; 3 lecture hours. 3 credits. A capstone course designed to assist students to apply and to think critically about current knowledge regarding crime, crime trends, law, law enforcement, the adjudication process, corrections and crime prevention. Scenarios, research, projections and evaluation of different viewpoints will be employed to develop the student's ability to assess methods of argumentation, use information and apply existing knowledge to new fact situations. A writing intensive course restricted to seniors in criminal justice.

CRJS 491 Topics in Criminal Justice

Semester course; 1-3 lecture hours. 1-3 credits. In-depth examination of selected administration of justice topics. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

CRJS 492 Directed Individual Study

Semester course; variable hours. 1, 2 or 3 credits. Maximum total of 6 credits. Available to all other criminal justice students who are seniors and have a 3.0 or above GPA (with permission of department chair) as a substitute for a major elective course. Provides an independent study opportunity for the adult student who is (or was) employed in a criminal justice, safety or risk administration position and who does not require internship or volunteer experience.

CRJS 501 Criminal Justice Assessment

Semester course; 3 lecture hours. 3 credits. Survey of the American criminal justice system, and the relationships among crime, law, police, courts, and corrections. Review of contemporary criminal justice literature.

CRJS 550 Professional Ethics and Liability

3 credits. The ethical basis for decision making in criminal justice. How ethical considerations affect every important decision in criminal justice, especially as they involve the liberty interests of others. These decisions include: police stop and arrest decisions, prosecutor charging decision, defendant plea decisions, defense strategy decisions, judicial evidentiary rulings, sentencing decisions, among others. The consequences of unethical decisions on management ability, civil and criminal liability faced by criminal justice professionals.

CRJS 591 Topic Seminar

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for a maximum of 6 credits. Periodic seminar in contemporary criminal justice topics. Topics to be determined.

CRJS 601 Research Basis of Criminal Justice

Semester course; 3 lecture hours. 3 credits. Examines principles of design, method, and analysis in criminal justice research. Issues of reliability, validity and the applicability of research findings in practice.

CRJS 612 Criminal Justice Politics and Planning

Semester course; 3 lecture hours. 3 credits. Assesses political and public policy issues as they relate to the administration of justice planning and policy strategies. Emphasizes planning implications of interagency relationships, the impact of social change in the criminal justice process, and community involvement in the control and prevention of crime.

CRJS 616 Justice Policy and Administration

Semester course; 3 lecture hours. 3 credits. Analyzes the legal, philosophical, political, and management influences that shape the criminal justice policy and its administration. Organization and management principles as they apply to the justice system with emphasis on leadership and human resource development.

CRJS 620/SOCY 620 Seminar in Criminology

Semester course; 3 lecture hours. 3 credits. Examination and analysis of social, psychological, and economic theories and correlates of criminal behavior. Typologies of offenders.

CRJS 622 Comparative Criminal Justice Systems

Semester course; 3 lecture hours. 3 credits. Study of crime, law, and criminal justice from an international perspective, emphasizing their comparative aspects.

CRJS 623/GVPA 623/PADM 623/URSP 623 Research Methods for Government and Public Affairs

Semester course; 3 lecture hours. 3 credits. Introduction to the scope and methods of applied research for the public sector. Focuses on problem structuring through logical methods, exploring problems through observation and other methods of data collection, analyzing and summarizing findings using both qualitative and quantitative methods.

CRJS 631 Administrative Issues in Criminal Justice

Semester course; 3 lecture hours. 3 credits. Application of organizational theory and administrative behavior to criminal justice policy, management, and operation. Administrative concepts, program planning and development, and innovative management practices.

CRJS 641 Jurisprudence

Semester course; 3 lecture hours. 3 credits. Examines the theoretical underpinnings of law and justice. Studies the evolution of theories of jurisprudence within the context of evolving concepts of responsibility and law. Systems of law will be contrasted and emphasis will be placed on contemporary developments in substantive laws.

CRJS 660 Seminar in Legal Process

Semester course; 3 lecture hours. 3 credits. Studies the formal and informal procedures of various criminal justice systems. Advanced study of criminal procedure and the major legal constraints and authorizations placed upon arrest, prosecution, trial, sentencing and appeal.

CRJS 670/FRSC 670 Forensic Evidence and Criminal Procedure

Semester course; 3 lecture hours. 3 credits. Presents the law of criminal procedure and rules of evidence as applied to forensic science. Explores issues of scientific versus legal burdens of proof, legal terminology, and trial procedure.

CRJS 680/FRSC 680 Forensic Psychiatry

Semester course; 3 lecture hours. 3 credits. Guilty mind requirements in criminal law. Competency to stand trial, insanity defense, mental disorder and crime. Behavioral profiling of serial murders and sex offenders. Issues in the use of clinical and statistical prediction methods in criminal justice.

CRJS 684 Comprehensive Exam Writing

Semester course; 3 credits with 1 credit extension. May be taken anytime after completion of the required core courses. Students will write a multiquestion comprehensive exam over a period of 10 weeks. Students may be asked to orally explain and respond to questions on the written answers to the comprehensive exam. Graded as pass/fail.

CRJS 692 Directed Independent Study

Semester course; 1-3 credits. May be repeated for a maximum of 6 credits. The instructor's review and approval of the study proposal must precede independent work by student. Provides an opportunity for an advanced student to pursue an independent research project or extensive literature review under the supervision of an instructor.

CRJS 693 Internship

Semester course; 3 credits. Students must apply for this internship a semester in advance. Provides student an opportunity to relate theory to practice through observation and experience in an approved agency. The internship should be taken near the end of the degree program. Graded as pass/fail.

CRJS 763 Seminar in Social Justice

Semester course; 3 lecture hours. 3 credits. Examines the philosophical and historical underpinnings of the principles of justice and their relationship to equality, liberty, government, and law.

CRJS 798 Thesis Research

Semester course; 3 credits with 1 credit extension. Prerequisite: CRJS 601; a graduate statistics course is strongly recommended. Permission of graduate instructor. Registration for this course is permitted only upon approval of the candidate's detailed research proposal and statement of qualifications reviewed a semester in advance by a faculty committee. A two-semester project resulting in an advanced research paper that involves a comprehensive literature review, approved research design, and an original analysis or replication study. CRJS 798 involves preparation and oral defense of the thesis prospectus. Graded as "S," "U," or "F."

CRJS 799 Thesis

Semester course; 1-3 credits. Prerequisite: Completion of CRJS 798. Execution of the research prospectus approved in CRJS 798. The master's thesis will be written according to University guidelines, approved by the student's faculty committee, and defended orally before the faculty committee. Graded as "S," "U," or "F."

English(ENGL)

ENGL 101 is a prerequisite to all 200-level English courses; three credits in 200-level literature courses (or equivalent) are prerequisite to all 300- and 400-level English courses.

ENGL 001 Fundamentals of English Composition

Semester course; 3 lecture hours. 0 credit. This course is recommended for students who have not previously studied grammar and composition extensively, and will be required for those students whose English placement scores indicate inadequate preparation in grammar and composition. A course designed to prepare students for ENGL 101 by teaching them to write clear sentences and well-developed, well-organized paragraphs.

ENGL 002 English as a Second Language

Semester course; 2 lecture and 2 laboratory hours. 0 credit. Primarily for students whose English-as-a-second-language skills are at the intermediate level. Instruction in English pronunciation, grammar, vocabulary and writing for students whose native language is not English.

ENGL 100 Introductory Writing and Rhetoric Workshop

Semester course; 3 lecture hours. 3 credits. Placement in either ENGL 100 or 101 by Writing Assessment Exam. This course introduces students to the critical thinking, conventions and language requirements of academic writing. Emphasis is on coherence, fluency, grammar and usage. These credits may not be used to satisfy general education requirements.

ENGL 101 Writing and Rhetoric Workshop I

Semester course; 3 lecture hours. 3 credits. Placement in either ENGL 100 or 101 by Writing Assessment Exam. This course leads students through rhetorical practices and various stages of academic writing, with emphases on critical thinking, a variety of forms and genres, and the process of revision. It also introduces students to argument and the use of print and electronic sources. May be graded with "CO."

ENGL 114 English Grammar and Usage

Semester course; 3 lecture hours. 2 credits. Prerequisite: ENGL 101 or permission of the director of composition and rhetoric. An intensive study of the fundamentals of English grammar, usage, punctuation, mechanics and spelling through drills and written exercises. This course is not equivalent to ENGL 101 or 200, and these credits may not be used to satisfy the College of Humanities and Sciences degree requirements in composition and rhetoric.

ENGL 200 Writing and Rhetoric Workshop II

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 101 and sophomore standing (completion of 24 credits). Intensive study of the rhetorical principles and writing conventions of research-based argumentation. Emphasis on methods and criteria for finding, analyzing, evaluating and documenting information from a variety of print and electronic sources.

ENGL 201 Western World Literature I

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to the literature of Western cultures from the ancient world through the Renaissance, emphasizing connections among representative works.

ENGL 202 Western World Literature II

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to the literature of Western cultures from the end of the Renaissance to the present, emphasizing connections among representative works.

ENGL 203 British Literature I

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to the literature of the British Isles from the Middle Ages through the 18th century, emphasizing connections among representative works.

ENGL 204 British Literature II

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to the literature of the British Isles from the late 18th century to the present, emphasizing connections among representative works.

ENGL 205 American Literature I

Semester courses; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to the literature of the United States from its origins through the 1860s, emphasizing connections among representative works.

ENGL 206 American Literature II

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to the literature of the United States from the 1860s to the present, emphasizing connections among the representative works.

ENGL 211/INTL 211 Contemporary World Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. A study of selected literature published in the last 25 years and chosen from a number of different nations and cultures.

ENGL 215 Readings in Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to literature through the study of two or more types, such as poetry, fiction, drama or essay.

ENGL 216 Readings in Narrative

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to literature with the focus on the art and structure of the narrative in a variety of forms.

ENGL 236/WMNS 236 Women in Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to literature by and/or about women.

ENGL 241 Shakespeare's Plays

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. An introduction to literature, with the focus on Shakespeare's plays, including their art and dramatic conventions.

ENGL 291 Topics in Literature

Semester course; 3 lecture hours. 3 credits. Maximum 6 credits in all topics courses at the 200 level. Prerequisite: ENGL 101. An introduction to literature through the in-depth study of a selected topic or genre. See the Schedule of Classes for specific topics to be offered.

ENGL 300 Practical Writing Workshop

Semester course; 3 workshop hours. 5, 10 or 15 weeks. 1-3 credits. Prerequisites: ENGL 101, 200 and three credits in a 200-level literature course (or equivalent). Practical Writing Workshop is a variable credit course covering organization, writing and revision skills useful in upper-level university classes and on-the-job situations. Classes will be conducted as workshops, discussions and lectures. Assignments may consist of essays, revision exercises, summaries, critical reviews, letters and resumes. Does not satisfy the College of Humanities and Sciences minimum competency writing requirements or count toward requirements for the English major or minor.

ENGL 301 English Studies: Reading Literature

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 101 and three credits in a 200-level literature course (or equivalent). Open primarily to majors; others with permission of instructor. Study of literature focused on skills helpful in the English major, introducing students to the ways in which language is used in literary texts and to the practice of writing responses to those texts. Texts will represent at least two genres (drama, poetry, prose). This course should be taken at the beginning of the student's major, preferably before completing more than six hours of other upper-level English courses. Majors are required to take ENGL 301; they must achieve at least a "C" grade to complete the requirement.

ENGL 302/CRJS 302 Legal Writing

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 200 and three credits in a 200-level literature course (or equivalent). Intensive practice in writing on subjects related to law or legal problems. Emphasis on organization, development, logical flow and clarity of style. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 303 Writing in the Workplace

Semester course; 3 lecture/workshop hours. 3 credits. Prerequisites: ENGL 200 and three credits in a 200-level literature course (or equivalent). Advance study and practice of writing in fields such as technology, science, administration and government, including visual rhetoric in both print and electronic forms. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 304 Advanced Writing

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 200 and three credits in a 200-level literature course (or equivalent). An advanced study of informative and persuasive prose techniques, with attention to the relationships among content, form and style. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 305 Creative Writing: Genres

Semester course; 3 workshop hours. 3 credits. May be repeated once for credit. Prerequisites: ENGL 200 and three credits in a 200-level literature course (or equivalent). Sections: poetry, fiction, drama or multigenre. A workshop primarily for students who have not produced a portfolio of finished creative work. Students will present a collection of their work at the end of each course. See the Schedule of Classes for specific genres to be offered each semester. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 307/TEDU 307 Teaching Writing Skills

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Studies the theory and methods for teaching writing to students in middle and secondary schools. Teaches strategies for prewriting, composing, peer revision, evaluation and topic construction. Includes extensive journal and essay writing. May not be used to satisfy the literature requirements of the College of Humanities and Sciences.

ENGL 313 Southern Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the literature of the South with attention to writers such as Byrd, Poe, Chopin, Faulkner, Welty, Wolfe, O'Connor, Walker and Percy.

ENGL 314/AFAM 314 African-American Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). An examination of the culture and literature of African-Americans from their roots in Africa and the African Diaspora to the present day. Authors may include Wheatley, Jacobs, Wilson, Brown, Dubois, Hurston, Wright, Gaines and Morrison.

ENGL 315 The Modern Novel

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). An examination of the novel, chiefly British and European, in the 20th century.

ENGL 316 Modern Poetry

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of British and American poetry in the first half of the 20th century.

ENGL 317 Modern Drama

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the development of Continental, English and American drama since Ibsen.

ENGL 318 Contemporary Poetry

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of British and American poetry from approximately 1950 to the present for the purpose of determining the aesthetic and thematic concerns of contemporary poets.

ENGL 320 18th-century British Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A survey of representative poetry, drama and prose from the Restoration and 18th century, usually including Behn, Dryden, Pope, Swift, Johnson and Gay.

ENGL 321 British Literature of the Romantic Era

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Exploration of the literature and the cultural phenomenon of Romanticism in Britain during the years 1783-1832, with reading from poets such as Blake, Wordsworth, Byron and Shelley, and from a variety of other writers.

ENGL 322 Victorian Poetry

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A survey of the poetry of Victorian Britain, usually including Tennyson, the Brownings, Arnold and the pre-Raphaelites.

ENGL 323 Early 20th-century British Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Representative British and Irish poetry, fiction and drama of the early 20th century, including such writers as Yeats, Joyce, Shaw, Lawrence, Conrad, Auden, Forster and Woolf.

ENGL 324 Later 20th-century British Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Representative British and Irish fiction, drama and poetry of the later 20th century, including such writers as Thomas, Golding, Lessing, Beckett, Heaney, Larkin, Fowles, Churchill and Murdoch.

ENGL 327/MGMT 327 Business and Technical Report Writing

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 200 and three credits in a 200-level literature course (or equivalent). Development of critical writing skills used in business, science, technology and government, including instructions, descriptions, process explanations, reports, manuals and proposals. The course will include such topics as communication theory, technical style, illustrations, formats for proposals, reports and manuals. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 335 Literature of the English Renaissance

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). An introduction to some of the most exciting works of a dynamic age, providing an understanding not only of the achievements of Shakespeare, Spenser and Milton, but also of the literary period from which they emerged.

ENGL 340 Philosophy for Children

Semester course; 3 lecture hours. 3 credits. Prerequisites: Two philosophy courses, which must include at least on of PHIL 101, 103 or 104. A service learning course requiring at least 15 hours of service in which students will be required to lead philosophical discussions with primary/secondary schoolchildren. An analysis of perennial philosophical questions and problems with the aim of introducing them to children. Some of the questions that might be addressed include: What is happiness? What is justice? What is a mind? Can amind exist apart from a body? Can machines think? What is time? What is knowledge? What are the limits of human knowledge? Service-learning course.

ENGL 350 Approaches to Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). The study and application of various critical approaches such as historical, sociocultural, psychological, archetypal and formalist, used in analyzing literary works.

ENGL 351/TEDU 351 Children's Literature I

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Designed to give students an appreciation of children's literature; includes biography, fable, myth, traditional and modern fanciful tales and poetry, as well as a survey of the history of children's literature. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 352/WMNS 352 Feminist Literary Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). The study of contemporary feminist thought and feminist approaches to analyzing literature and culture. This course examines the history and development of feminist theory as a methodology in the humanities, explores several of the major theoretical trends of the last 30 years and examines applications of feminist theory to specific works of literature.

ENGL 361/RELS 361 The Bible as Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Literary aspects of the Bible will be considered. Also, attention will be given to the history of the English Bible.

ENGL 363/AFAM 363/INTL 366 African Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A survey of the literature of Africa with particular emphases on fiction and on West Africa. Some attention also will be given to orature.

ENGL 365/AFAM 365/INTL 367 Caribbean Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A survey of West Indian writings. Attention will be given to African, European and Amerindian influences, as well as to the emergence of a West Indian literary tradition.

ENGL 367 Eastern Thought in Western Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). An exploration of the influence of Eastern thought on selected Western writers, with emphasis on the period from the 19th century to the present.

ENGL 371 American Literature: Colonial and Federal

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the most important writings from the founding of the first colonies to the establishment of the federal government with attention to such authors as Bradford, Byrd, Bradstreet, Taylor, Edwards and Franklin.

ENGL 372 American Literature: American Romanticism

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the writings of the American romantics in the 19th century, with attention to such authors as Poe, Emerson, Thoreau, Fuller, Hawthorne, Melville, Dickinson and Whitman.

ENGL 373 American Literature: Realism and Naturalism

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of writings from the end of the Civil War to World War I, with attention to such authors as Dickinson, Clemens, Howell, James, Wharton, Crane, Norris, Dreiser, Chopin and Chesnutt.

ENGL 374 American Literature: Early 20th Century

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the most important writings between World War I and World War II, with attention to such authors as Anderson, Frost, Eliot, Stein, Glasgow, Fitzgerald, Wright, Cather, Hemingway, O'Neill, Hurston, Toomer and Faulkner.

ENGL 375 American Literature: Contemporary

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of American writings since the end of World War II, with attention to such authors as Albee, Auster, Baldwin, Carver, Didion, Ellison, Ginsberg, Lowell, Morrison, Percy, Plath, Salinger and Walker.

ENGL 381 Fiction into Film

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the translation of literature into film. Topical approaches vary from semester to semester. Consideration is given to the literature in its original form and to the methods of translating it into film.

ENGL 384/WMNS 384 Women Writers

Semester course; 3 lecture hours. 3 credits. May be repeated once when different groups of writers are studied. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of selected literature written by women and about women writers.

ENGL 385/ENVS 385 Nature Writing

3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the literary genre of nature writing in English.

ENGL 386/ANTH 386 Introduction to Folklore

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A survey of the basic forms of folklore including proverbs, riddles, ballads, folktales, legends, myths and games. The survey also will include approaches to collecting material and examining its literary, social and historical significance.

ENGL 387/WMNS 387 Lesbian Texts/Queer Theories

Semester course; 3 lecture hours. 3 credits. Prerequisite: 3 credits in a 200-level literature course (or equivalent). A study of queer literature and theory, focusing on writing about female same-sex desire. Explores the idea of a "lesbian subject" and a "lesbian text" through directed study of literature, film, history and theory. Considers issues of aesthetics, politics, authorship and interpretive communities and examines the intersection of social identities with particular attention to race/ethnicity, sex/gender, class and nationality.

ENGL 390 Studies in Satire

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Studies in the satiric mode, with some attention to the definition and development of the mode.

ENGL 391 Topics in Literature

Semester course; 3 lecture hours. 3 credits. Maximum of 12 credits in all topics courses at the upper level. Prerequisites: 3 credits in a 200-level literature course (or equivalent) and junior standing. An in-depth study of a literary genre, an aesthetic or cultural theme in literature, or of a major writer in English or American literature. See the Schedule of Classes for specific topics to be offered each semester.

ENGL 400 Shakespeare: The Early Works

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Study of the plays and poems written before 1600, focusing primarily on the comedies and histories. For English majors, these courses (limit of six credits) may be counted as part of a graduate or undergraduate degree, but not both.

ENGL 401 Shakespeare: The Later Works

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Study of the plays written in 1600 and after, focusing primarily on the mature tragedies and late romances. For English majors, these courses (limit of six credits) may be counted as part of a graduate or undergraduate degree, but not both.

ENGL 402 Chaucer

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of "The Canterbury Tales," with some attention to the early works. For English majors, these courses (limit of six credits) may be counted as part of a graduate or undergraduate degree, but not both.

ENGL 403 Milton

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of shorter poems, selected prose, "Paradise Lost" and "Samson Agonistes." For English majors, these courses (limit of six credits) may be counted as part of a graduate or undergraduate degree, but not both.

ENGL 407 Medieval Epic and Romance

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the vernacular epic and romance in England and on the continent prior to 1500.

ENGL 409 Medieval Studies

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Studies in the English language and literature of the Middle Ages in its cultural context.

ENGL 410 Renaissance Studies: _____

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Studies in the English language and literature of the 16th and 17th centuries.

ENGL 411 18th-century British Studies

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Studies in the literature, language and culture of the Restoration and 18th-century England.

ENGL 413 American Novels and Narratives: 19th Century and Earlier

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of selected novels with some attention to other forms of narrative that reflect the experiences of diverse groups of Americans.

ENGL 414 American Novels and Narratives: 20th Century

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of selected novels with some attention to other forms of narrative that reflect the experiences of diverse groups of Americans.

ENGL 415 British Novel: 18th Century

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the British novel in the 18th century, usually including Defoe, Richardson, Fielding, Burney, Sterne, Austen, Radcliffe and Walpole.

ENGL 416 British Novel: 19th Century

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the British novel, usually including Austen, Dickens, Thackeray, the Brontes, George Eliot and Hardy.

ENGL 423 English Drama, 900-1642

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the origin of the English drama and its development until the closing of the theaters in 1642, exclusive of Shakespeare.

ENGL 424 Restoration and 18th-century Drama

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of English drama from 1660-1777, usually including the comedy of manners, sentimental comedy, ballad opera, farce and heroic and bourgeois tragedy.

ENGL 426/THEA 426 Advanced Playwriting

Semester course; 3 workshop hours. 3 credits. May be repeated once for credit. Prerequisite: ENGL 317 or permission of instructor. A practical introduction to the creation of original scripts for theatre. Works may be selected for reading and performance. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 429 Form and Theory of Poetry

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the poetics, including prosody, with attention to the nature and functioning of language in poetry (especially metaphor), the development of poetic genres and the process by which poems are created and come to have meaning.

ENGL 430 Form and Theory of Fiction

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of narration in verbal and other media, with attention to the nature, organization and functioning of language in narrative, the development of narrative genres and the process by which narratives are created and come to have meaning.

ENGL 433/TEDU 433 Literature for Adolescents

Prerequisite: Three credits in a 200-level literature course (or equivalent). Designed to acquaint the prospective middle and secondary school English teacher with the nature, scope and uses of adolescent literature. The student is acquainted with reading materials for meeting the varied needs and interests of adolescents. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 435 Advanced Poetry Writing

Semester course; 3 workshop hours. 3 credits. May be repeated once for credit. Prerequisite: Three credits in a 200-level literature course (or equivalent). Study of the craft of writing, with instruction and guidance toward constructive self-criticism. Workshop members will be expected to produce a substantial volume of quality work and to become proficient in critical analysis in order to evaluate and articulate the strength of their own poetry. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.
Effective Fall 2006 ENGL 435 Advanced Peotry Writing
Semester course: 3 workshop hours. 3 credits. May be repeated once for credit. Prerequisites: Three credits in a 200-level literature course (or equivalent) and ENGL 305 (poetry). Study of the craft of writing, with instruction and guidance toward constructive self-criticism. Workshop members will be expected to produce a substantial volume of quality work and to become proficient in critical analysis in order to evaluate and articulate the strength of their own poetry. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 437 Advanced Fiction Writing

Semester course; 3 workshop hours. 3 credits. May be repeated once for credit. Prerequisite: Three credits in a 200-level literature course (or equivalent). Study the craft of fiction writing, with instruction and guidance toward constructive self-criticism. Workshop members will be expected to produce a substantial volume of short stories or portion of a novel and to become proficient in the critical analysis of fiction in order to evaluate and articulate the strength of their own work. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.
Effective Fall 2006 ENGL 437 Advanced Fiction Writing
Semester course: 3 workshop hours. 3 credits. May be repeated once for credit. Prerequisites: Three credits in a 200-level literature course (or equivalent) and ENGL 305 (fiction). Study the craft of fiction writing, with instruction and guidance toward constructive self-criticism. Workshop members will be expected to produce a substantial volume of short stories or portion of a novel and to become proficient in the critical analysis of fiction in order to evaluate and articulate the strength of their own work. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 439 Literary Nonfiction Writing

Semester course; 3 workshop hours. 3 credits. May be repeated once for credit. Prerequisite: ENGL 304 or ENGL 305, or permission of instructor. Advanced study of the craft of literary nonfiction writing, with instruction and guidance toward constructive self-criticism. Workshop members will be expected to produce a substantial volume of writing or a portion of a book-length work of nonfiction, and to become proficient in the critical analysis of literary nonfiction in order to evaluate and articulate the strength of their own work.

ENGL 449/LING 449/ANTH 449 Introduction to Linguistics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). An introduction to methods of language analysis, emphasizing the study of sounds and sound patterns and units of meaning and their arrangements. May not be used to satisfy the literature requirement of the College of Humanities and Sciences. For English majors, these courses (limit of six credits) may be counted as part of a graduate or undergraduate degree, but not both.

ENGL 450/LING 450 Modern Grammar

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Study of modern English grammar and usage with some attention to linguistic theory. Recommended for teachers at all levels. May not be used to satisfy the literature requirement of the College of Humanities and Sciences. For English majors, these courses (limit of six credits) may be counted as part of graduate or undergraduate degree, but not both.

ENGL 451/LING 451 History of the English Language

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). The historical development of the English language; etymology, morphology, orthography and semantics. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 452/LING 452/WMNS 452 Language and Gender

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of relationships between gender and language by focusing on such issues as differences between the ways women and men use language, relationships between language and power and ways in which language reflects and reinforces cultural attitudes toward gender. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 453/LING 453 Introduction to Modern Rhetoric

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). An introduction to the broad range of modern rhetorical theories, emphasizing their relationships with linguistics, literary criticism and the process of writing. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

ENGL 454/INTL 454/ANTH 450 Cross-cultural Communication

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the dynamics of cross-cultural communication that applies linguistic tools to understanding cultural issues and solving communication problems.

ENGL 490 Senior Seminar in English

Semester course; 3 lecture hours. 3 credits. Open to English majors only. A study of a specific topic, author, movement or genre in a seminar format. Students will produce an extended, documented essay as a seminar paper. See the Schedule of Classes for specific topics to be offered each semester.
Effective Fall 2006 ENGL 490 Senior Seminar in English
Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 301. Open to English majors only. A study of a specific topic, author, movement or genre in a seminar format. Students will produce an extended, documented essay as a seminar paper. See the Schedule of Classes for specific topics to be offered each semester.

ENGL 491 Topics in Literature

Semester course; 3 lecture hours. 3 credits. Maximum of 12 credits in all topics courses at the upper level. Prerequisite: Three credits in a 200-level literature course (or equivalent). An in-depth study of a selected literary topic or genre or one or more major writings in English or American literature. See the Schedule of Classes for specific topics to be offered each semester.

ENGL 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 3 credits per semester. Student may take no more than 9 hours total. Prerequisite: Three credits in a 200-level literature course (or equivalent). Generally open only to upper-class students with at least 12 hours of English. To register, the student must write a proposal and have it approved by the supervising instructor, the director of undergraduate studies and the departmental chair. It may not be used for a writing project. This course is designed for students who wish to do extensive reading and writing in a subject not duplicated by any English course in this bulletin.

ENGL 493 English Internship

Semester course; 1-3 credits. May be repeated for a maximum total of 6 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Open to students with demonstrated writing ability; completion of ENGL 302, 304 or 327 is recommended. Permission and determination of credit must be established prior to registration. Students will apply research, writing and/or editing skills in an approved job in areas such as business, government, law or financial services.

ENGL 500 Practicum in College English

Semester course; 1-6 credits. May be repeated for credit. May not be applied toward degrees in English. Prerequisite: Permission of director of graduate studies. Student participation in planned educational experience under the supervision of English department faculty. The practicum may include classroom teaching, Writing Center tutoring, or participation in research projects.

ENGL 501 Introduction to Graduate Studies in English

Semester course; 1 lecture hour. 1 credit. Required of all new graduate students seeking the M.A. in English. An introduction to the theoretical and practical aspects of advanced English studies.

ENGL 528/TEDU 528 Children's Literature II

Semester course; 3 lecture hours. 3 credits. A study of classic and current children's books from a variety of literary genre. Magazines and media-related reference resources and journals are reviewed. The creative use of literature, its sociocultural functions, and its contribution to the development of the oral and written expression of children from nursery to grade eight are explored. A focus on children with special problems is included. May not be taken for credit toward undergraduate English major if student has taken ENGL/TEDU 351. May not be used to fulfill literature requirement for M.A. in English or M.F.A. in Creative Writing, but may be taken as elective credit.

ENGL 530 Introduction to Scholarship in English Studies

Semester course; 3 lecture hours. 3 credits. Introduces the practice of research and scholarly discourse in English studies. Emphasizes scholarly resources (printed and electronic) and textual studies.

ENGL 531 Literary Criticism

Semester course; 3 lecture hours. 3 credits. A study of the fundamental concepts involved in the practice of criticism. Some attention is given to the historical development of criticism, but the primary focus is on its methods and aims.

ENGL 532/ENED 532 Applied English Linguistics

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: ENGL 449 or equivalent course in linguistics or permission of instructor. Application of linguistics theories and methods to selected teaching problems, such as teaching English grammar and usage, teaching English as a second or foreign language, or teaching standard English to students who speak different dialects.

ENGL 552/TEDU 552/LING 552 Teaching English as a Second Language

Semester course; 3 lecture hours. 3 credits. Provides students who plan to teach English to people whose native language is not English with a variety of instructional/learning strategies. Presents and explores current approaches and methodology, as these relate to linguistic features and pedagogy.

ENGL 553 Studies in Linguistics

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: ENGL 449 or equivalent course in linguistics or permission of instructor. A general introduction to one area of linguistic study, such as pronunciation, grammar, stylistics, dialects, usage standards, lexicography, onomastics, or semantics.

ENGL 561 Medieval Literature

Semester course; 3 lecture hours. 3 credits. A survey of major works of British literature in the Middle Ages with some attention to continental influences upon both Old English and Middle English works. The study will include poetry, prose, and drama from Beowulf to Morte d'Arthur. Some reading in modern English translation, some in Middle English.

ENGL 563 Renaissance Literature

Semester course; 3 lecture hours. 3 credits. A survey of British poetry, prose, and drama written in the 16th and 17th centuries. Attention will be divided among major figures - such as More, Marlowe, Spenser, Shakespeare, Donne, Johnson, Milton, and minor authors.

ENGL 565 Restoration and 18th-century Literature

Semester course; 3 lecture hours. 3 credits. A survey of Restoration and 18th-century poetry, drama, fiction, and prose. Readings in major figures of the period including Behn, Dryden, Etherege, Congreve, Steele, Defoe, Swift, Pope, Montagu, Richardson, Fielding, Johnson, Sheridan and Austen.

ENGL 567 Romantic and Victorian British Literature

Semester course; 3 lecture hours. 3 credits. A survey of British literature during the 19th-century. Readings in the major writers, especially poets and novelists such as Wordsworth, Shelley, Dickens, the Brownings, the Brontes, Eliot and Hardy.

ENGL 569 20th-century British Literature

Semester course; 3 lecture hours. 3 credits. A survey of the literature of 20th-century Britain and Ireland. Major figures of the early part of the century such as Conrad, Lawrence, Woolf, Joyce, Yeats, Shaw, Auden will be complemented by the emerging writers of the second half of the century.

ENGL 571 American Literature I

Semester course; 3 lecture hours. 3 credits. A survey of the literature of the United States from the Puritan period through the Romantic period.

ENGL 572 American Literature II

Semester course; 3 lecture hours. 3 credits. A survey of the literature of the United States from the Age of Realism through the Contemporary period.

ENGL 601/ENED 601 Young Adult Literature

Semester course; 3 lecture hours. 3 credits. Examination of literature written for young adults, literature appropriate for young people in middle schools and high schools. Focuses on the content, characteristics, and teaching of such literature.

ENGL 611 Authors

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of the relationships among authorship (in material or discursive form), texts and cultural contexts.

ENGL 614 Cultural Discourses

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of contemporary literary and nonliterary texts produced within a designated period of time.

ENGL 620 Intertextuality

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of texts, potentially of disparate genres and contexts, focused on similar theme, concern or issue. Will examine both foundational, originating texts, and subsequent reactions.

ENGL 624 Texts and Contexts

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of the ways in which texts shape, reflect and inform their cultural contexts.

ENGL 627 Genres

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A sustained and detailed examination of one or more genres.

ENGL 629 Form and Theory of Poetry

Semester course; 3 lecture hours. 3 credits. May be repeated once for credit. Will address a number of key issues concerning the structure of verse and the function of poetic discourse and will provide readers and writers of poetry an opportunity to study and practice a broad range of poetic forms and techniques, as well as to explore various genre conventions and their thematic and rhetorical significance. Students may study poems from various periods, with some focus on the contemporary, and apply to them the insights offered by major theorists of poetry and poetics. They also may write imitations, parodies and responses examining and demonstrating poetic approaches.

ENGL 630 Form and Theory of Fiction

Semester course; 3 lecture hours. 3 credits. May be repeated once for credit. Will address a number of key issues concerning the structure, conventions and function of narrative discourse and will seek to give readers and writers of fiction an opportunity to study a broad range of narrative forms, as well as to explore genre conventions and their thematic and rhetorical significance. Students will read stories and novels from various historical periods, with some focus on the contemporary, and apply to them the insights offered by major theorists of narrative. They also may write imitations, parodies and responses examining and demonstrating the aesthetics of fiction.

ENGL 636/ENED 636 Teaching Writing

Semester course; 3 lecture hours. 3 credits. Examines theories and practices of teaching writing, with emphasis on the connections between theory and practice.

ENGL 637 Theories of Rhetoric and Composition

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 636 A study of theory and scholarship in rhetoric and writing.

ENGL 643/ENED 643 Teaching Basic Writing Skills

Semester course; 3 lecture hours. 3 credits. Emphasis on developing the student's ability to teach fundamental writing skills, including such topics as diagnosis of writing problems, strategies for correcting problems, and methods for evaluating progress.

ENGL 651 Topics in Teaching Composition

Semester course; 1-3 lecture hours. 1-3 credits. A course for the examination of a specialized issue, topic, or problem in teaching composition.

ENGL 652 Studies in Writing and Rhetoric: _____

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of an area or specialized issue in rhetoric and/or writing such as the history of rhetoric, theories of invention, qualitative research methods in writing, or studies in style.

ENGL 661 Themes in Interdisciplinary Studies

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study in depth of a theme, topic, or concept involving two or more disciplines.

ENGL 666 Creative Writing: Fiction

Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in M.F.A. program or permission of the Creative Writing Committee. All students seeking to enroll must contact the creative writing M.F.A. director. Study of the art of fiction writing, with the goal of producing professionally acceptable and publishable fiction. Workshop members shall produce a substantial amount of writing, short stories or a portion of a novel, and in addition shall be able to evaluate and articulate the strengths of their own work. Graded as pass/fail.

ENGL 667 Creating Writing: Poetry

Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in M.F.A. program or permission of the Creative Writing Committee. All students seeking to enroll must contact the creative writing M.F.A. director. Study of the art of poetry writing, with the goal of producing professionally acceptable and publishable poetry. Workshop members shall produce a substantial amount of poetry and in addition shall be able to evaluate and articulate the strengths of their own work. Graded as pass/fail.

ENGL 668 Creative Writing: Drama

Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in M.F.A. program or permission of the Creative Writing Committee. All students seeking to enroll must contact the creative writing M.F.A. director. Study of the art of playwriting with the goal of creating plays that are suitable for production. Workshop members shall produce a substantial volume of writing, one-act plays, or a portion of a longer play, and, in addition, shall be able to evaluate and articulate the strengths of their own work. Graded as pass/fail.

ENGL 670 Literary Editing and Publishing

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A course in which the student learns to edit fiction, poetry, drama, or nonfiction. Genre covered will vary from semester to semester. Attention will be paid to the ways in which editors work with writers in all the technical aspects of editing, revising, and publishing. Ethical responsibilities of editors to authors and their texts will be stressed. Questions considering the publishing world at large will be considered.

ENGL 671 Film and Television Scripts

Semester course; 3 lecture hours. 3 credits. Study of the theory and practice of producing shooting scripts for television and motion pictures. Emphasis will be placed on the various kinds of scripts most commonly used by directors and cinematographers (e.g., silent, narrated, and dramatized). Attention will also be paid to the ways in which script writers adapt material to audiences, and the ways in which strict time frames are imposed on scripts. Students will write scripts of various kinds and lengths.

ENGL 672 Writing Nonfiction

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Study and practice of writing one or more modes of nonfiction on the professional or preprofessional level, under critical supervision. Emphasis will be placed on such matters as organization, style, revision, and adaptation to particular audiences and publications. Possible kinds of writing could include reports; writing based on statistics; writing textbooks; writing separate chapters of books, and writing reviews, criticism, and advocacy materials.

ENGL 673 Teaching Creative Writing

Semester course; 3 lecture hours. 3 credits. The course is intended for those who teach or plan to teach creative writing. A comparative analysis of different approaches to the teaching of creative writing. Attention will be paid to the different ways in which elements such as dialogue, sound pattern, scene development, line break, meter, voice, and distance can be taught.

ENGL 692 Independent Study

1-3 hours. Variable credit. Maximum of 6 credits. Prerequisite: Permission from department chair. For students in English/English education to pursue, in depth, a particular problem or topic about which an interest or talent has been demonstrated.

ENGL 694 Internship in Writing

Semester course; 1 lecture and 6 practicum hours. 3 credits. Permission of director of M.A. program required. Analyses and practices of professional writing in settings such as business, government and industry.

ENGL 798-799 Thesis

Continuous courses; hours to be arranged. Credits to be arranged; 1-3 credits per course. Preparation of a thesis or project based on independent research or study and supervised by a graduate adviser.

European Cultures(EUCU)

EUCU 307 Aspects of German Culture

Semester course; 3 lecture hours. 3 credits. A broad interdisciplinary approach to an understanding of German culture, language and literature. Lectures in English by guest speakers and/or use of films as required. This course will not satisfy foreign language requirements. No knowledge of German is required. All work is done in English.

EUCU 311 Classical Mythology

Semester course; 3 lecture hours. 3 credits. The basic myths of the Greek and Roman heritage. Their impact in culture then and now; from the origins of Greek myth to the superstitions of the late Roman and early Christian world.

Foreign Literature in English Translation(FLET)

FLET 321 Early German Literature

Semester course; 3 lecture hours. 3 credits. Changing perspectives in German literature from its pagan beginnings, through the Medieval Golden Age, Baroque extremism, the Enlightenment and Storm and Stress up to Classicism and Goethe's Faust. Treatment of The Nibelungenlied, the courtly epic, Simplicissimus, and selections by Lessing, Schiller and Goethe. This course will not satisfy foreign language requirements. No knowledge of German is required. All work is done in English.

FLET 322 Modern German Literature

Semester course; 3 lecture hours. 3 credits. Growing psychological awareness and alienation of the individual in German literature of the 19th and 20th centuries. Representative works chosen from among writers of the past century and such modern writers as Thomas Mann, Kafka, Hesse, Brecht, Kafka, Hesse, Brecht, Boll and Grass. This course will not satisfy foreign language requirements. No knowledge of German is required. All work is done in English.

FLET 391/INTL 391 Topics in Foreign Literature in English Translation

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for a maximum of 12 credits. An in-depth study of selected topics in foreign literature. This course will not satisfy foreign language requirements. No knowledge of a foreign language is required. All work is done in English.

FLET 492 Independent Study

Semester course; 1, 2 or 3 credits. Maximum of 3 credits per semester, maximum total of 6 credits for all FLET independent study courses. Open generally to students of only junior or senior standing who have acquired at least 12 hours in any literature course. Determination of course content and permission of the instructor and department chair must be obtained prior to registration of the course. A course designed to give students an opportunity to become involved in independent study in a literary or linguistic area or subject in which they have an interest and for which they have the necessary background.

French(FREN)

Non-foreign language majors who wish to take one or two upper-level classes only need to complete FREN 202, 205 or equivalent.

In order to complete French through the intermediate level, a student may select FREN 202 or 205.

FREN 101-102 Elementary French

Continuous courses; 5 lecture/recitation hours. 4-4 credits. Elementary grammar, reading and oral drill.

FREN 110 Intensive French I

Semester course; 10 lecture and laboratory hours. 8 credits. This intensive course combines FREN 101 and 102 into a single semester.

FREN 201 Intermediate French

Semester course; 3 lecture hours. 3 credits. Continuation of the essentials of grammar with emphasis on achieving proficiency in aural comprehension, speaking, reading and writing skills.

FREN 202 Intermediate French Readings

Semester course; 3 lecture hours. 3 credits. Prerequisite: FREN 201 or the equivalent. In order to complete French through the intermediate level, a student may select FREN 202 or 205. Designed to increase the student's proficiency through the study of selected cultural and literary texts.

FREN 205 Intermediate Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisite: FREN 201 or the equivalent. In order to complete French through the intermediate level, a student may select FREN 202 or 205. Designed to increase the student's proficiency in the spoken language through audio-oral exercises, dialogues and free conversation.

FREN 210 Intensive French II

Semester course; 6 lecture and laboratory hours per week. 6 credits. Prerequisites: successful completion of FREN 101 and 102, or FREN 110. This intensive course combines FREN 201 and 202/205 into a single semester.

FREN 295 Gateway to the French Major/Minor

Semester course; 3 lecture hours. 3 credits. Prerequisite: FREN 201 or permission of instructor. Non-foreign language majors who wish to take one or two upper-level classes only need to complete FREN 202, 205 or equivalent. This course is composed of three different areas: 1) writing and analytical skills: enhancement of grammatical and writing skills and development of analytical techniques using a variety of texts; 2) improving students' oral communication; 3) listening skills: extensive use of recorded material and Language Learning Center resources to improve and enhance listening skills in a variety of authentic contexts.

FREN 300, 301 Advanced Grammar and Writing

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisites: French courses through the intermediate level or equivalent. Conducted in French. A systematic review of French grammar with emphasis on the elements of style and vocabulary building; translation and composition.

FREN 305 Advanced Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisites: French courses through the intermediate level or equivalent. Conducted in French. Development of advanced oral skills while conversing about topics on current French culture and society. Proficiency in listening comprehension is stressed through regular activities based on a variety of different situations of communication.

FREN 320 French Civilization and Culture I

Semester course; 3 lecture hours. 3 credits. Prerequisites: French courses through the intermediate level or equivalent. Conducted in French. A survey of French civilization and culture from its origins to the French Revolution. Introduction to and analysis of the most important aspects of Gallo-Roman society and of the Merovingian, Carolingian and Capetian dynasties which influenced the institutions of the Ancien Regime and still serve as cultural archetypes and icons in contemporary French culture.

FREN 321 French Civilization and Culture II

Semester course; 3 lecture hours. 3 credits. Prerequisites: French courses through the intermediate level or equivalent. Conducted in French. A survey of French civilization and culture from the Napoleonic era to the present. This course retraces important cultural and social traditions found during the first Empire, the Restoration, the Second Republic, the Second Empire, the Commune, the Third and Fourth Republics which influenced and continue to shape contemporary French civilization and culture of the Fifth Republic.

FREN 330, 331 Survey of Literature

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisites: French courses through the intermediate level or equivalent. Conducted in French. First semester: through the 18th century. Second semester: 19th and 20th centuries.

FREN 410 Explication de Textes

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: two French courses at the 300 level or permission of instructor. Conducted in French. This course provides an introduction to terms encountered in text analysis: prosody, versification, rhetorical language, narratology and genres. It presents traditional and current schools of literary criticism and applies them to an interdisciplinary selection of texts. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 420 French Regional Culture

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 320 or 321 or permission of instructor. Conducted in French. Focuses on the culture and civilization specific to each of France's 22 regions. History, culture, architecture as well as sociopolitical, linguistic identities, artisanal trades and folklore are presented for each region. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 421 French Contemporary Culture

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 320 or 321 or permission of instructor. Conducted in French. Focuses on the contemporary culture found in French society. The individuals and events shaping current French social, political, artistic and cultural life are examined. Each theme is illustrated by current audiovisual materials. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 422 French Cinema

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 320 or 321 or permission of instructor. Conducted in French. Tracing French cinema from les Frores Lumiore and Georges Melius through the New Wave to new contemporary directors, this course focuses on the thematic selections and stylistic techniques particular to French cinematographic culture. The class is offered concurrently with the annual VCU French Film Festival, thereby permitting students to directly communicate with French actors and directors participating in the festival. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 425 French Media

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 305 or permission of instructor. Conducted in French. Analysis of the French media: written press, radio and television. Advanced comprehension skills required and stressed through regular exercises pertaining to different journalistic discourses and styles. Proficiency in journalistic writing is developed in class through the creation of an electronic French newspaper on the Internet. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 430 The Middle Ages

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 300 or 301 or permission of instructor. Conducted in French. A contextualization and detailed study of a selection of texts representative of literary schools, genres and major works of the period: Chansons de geste, Litterature Courteous, Fabliaux and Poesie lyrique. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 431 The 16th Century

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 300 or 301 or permission of instructor. Conducted in French. A contextualization and detailed study of a selection of works representative of literary schools, genres and major works of the period: Rabelais, the Pleiade, Minting and the Baroque poets. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 432 The 17th Century

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 300 or 301 or permission of instructor. Conducted in French. A contextualization and detailed study of a selection of texts representative of literary schools, genres and major works of the period: Baroque and Classical readings including prose, poetry and drama of the authors of the reign of Louis XIV; Pascal, La Rochefoucauld, La Bruyure, Corneille, Racine and Moliere. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 433 The 18th Century

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 300 or 301 or permission of instructor. Conducted in French. A contextualization and detailed study of a selection of texts representative of literary schools, genres and major works of the period: the "philosophes" including Montesquieu, Voltaire, Diderot and Rousseau and readings from Marivaux, Provost and Vauvenargues. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 434 The 19th Century

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 300 or 301 or permission of instructor. Conducted in French. A contextualization and detailed study of a selection of texts representative of literary schools, genres and major works of the period: Romanticism, Realism, Naturalism and Symbolism. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 435 The 20th Century

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: FREN 300 or 301 or permission of instructor. Conducted in French. A contextualization and detailed study of a selection of texts representative of literary schools, genres and major works of the period: Surrealism, Existentialism, Nouveau Roman and Theater of the Absurd. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 440 Commercial French

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: At least one French course at the 300 level. This course introduces students to the cultural, economic and linguistic dimensions of the Francophone commercial sector. It builds the student's reading, writing, listening and speaking proficiencies through active engagement with business-related materials and activities. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 450/INTL 450 Francophone Literatures and Cultures

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: FREN 300 or FREN 301, and at least one additional French course at the 300 level, or permission of instructor. Conducted in French. Introduces students to the literatures and cultures of the Francophone world. Provides an overview of the Francophone world and an in-depth study of literary works written in French from Africa, the Caribbean, North America, Asia and Europe. Also explores the impact of colonial history on Francophone literatures and cultures. See the Schedule of Classes for the specific topic to be offered each semester.

FREN 491 Topics in French

Semester course; variable hours. 1-3 credits. May be repeated with different topics for a maximum of 9 credits. Prerequisite: Completion of six credits of French at the 300 level or equivalent. An in-depth study of selected topics in French. See the Schedule of Classes for specific topics to be offered each semester.

FREN 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 3 credits per semester; maximum total of 6 credits for all independent study courses in French. Open generally to students of only junior or senior standing who have six credits of upper-level French courses and/or have a demonstrated competency in the language. Determination of course content and permission of the instructor must be obtained prior to registration of the course. A course designed to give students an opportunity to become involved in independent study in a literary or linguistic area or subject in which they have an interest.

FREN 500 French for Graduate Students

Semester course; 3 lecture hours. 3 credits. This course is designed to prepare graduate students for the reading knowledge examination for higher degrees. Each graduate department will determine the nature and form of certifying examination.

FREN 501 French Communication

Semester course; 1-4 lecture hours. 1-4 credits. An intensive study of communication in French. Variable credits; primarily oral, written, and listening skills.

FREN 511 French Civilization

Semester course; 1-4 lecture hours. 1-4 credits. Prerequisite: Functional fluency in French since the class will be taught in French. A comprehensive study of the civilization and culture of France and its global expressions.

Foreign Languages(FRLG)

FRLG 101-102 Foreign Languages: _____

Continuous courses; 5 lecture/recitation hours. 4-4 credits. Elementary grammar, reading and oral skills. Course may be repeated with different languages.

FRLG 201 Foreign Languages: _____

Semester course; 3 lecture hours. 3 credits. Prerequisite: FRLG 102 or equivalent. Continuation of the essentials of grammar with emphasis on achieving proficiency in aural comprehension, speaking, reading and writing skills. Course may be repeated with different languages.

FRLG 202 Foreign Languages: _____

Semester course; 3 lecture hours. 3 credits. Prerequisite: FRLG 201 or equivalent. Designed to increase the student's proficiency through the study of selected cultural and literary texts. Course may be repeated with different languages.

FRLG 203/INTL 203 Language and Identity

Semester course; 3-4 lecture hours. 3-4 credits. Taught in English. This course introduces students to both the cohesive and divisive dynamics that language exerts in the world today. Students explore the links connecting different peoples who share a common language as well as their language conflicts in a multilingual world. Students examine the interaction of language with identity in culture, art and nationalism through fiction and nonfiction texts, films and multimedia pertaining to a specific language area, such as: The Francophone World, post-Franco Spain, post-Cold War Germany, the Mayan World or the Swahili World. See the Schedule of Classes for specific topics to be offered each semester.

FRLG 204/INTL 204 Language and Groups in the United States

Semester course; 3-4 lecture hours. 3-4 credits. Taught in English. This course introduces students to the sociocultural experience and formation of identity of non-English-speaking peoples in the United States. Students explore the dynamic between English and a specific heritage language and its interaction with artistic, cultural and social issues through fiction and nonfiction texts, films and multimedia pertaining to specific language group, such as: Latinos, Italian-Americans, German-Americans or Native Americans. See the Schedule of Classes for specific topics to be offered each semester.

FRLG 345/INTL 345/URSP 350 Great Cities of the World

Semester course; 3 lecture hours. 3 credits. Course may be repeated under different topics for a total of 6 credits. Prerequisite: Sophomore standing or permission of instructor. An interdisciplinary course with a focus on the origin, expansion and significance of one or more cities, the specifics of its/their culture and the role of language. Particular emphasis will be placed on relating the physical, social and economic aspects of the city's growth and development to the cultural expression of urbanism.

FRLG 490 Foreign Languages Urban Internship

Semester course; 50 to 150 clock hours in local, national or international urban internship placement where the use of a foreign language is required. 1-3 credits. Prerequisites: prior completion of 9 credits in a foreign language at the 300 level, with a course in advanced grammar and composition, one in conversation and one in civilization. Under the supervision of both a faculty member and a field supervisor, students will apply their linguistic skills in an approved work situation and each internship will be specifically designed in accordance with the student's linguistic level and the job requirements. Students studying languages in which the 300-level courses are not available will be handled on a case by case basis in the screening process. All students will be screened before acceptance. Students wishing to undertake a non-urban project will register for an independent study.

FRLG 510 Language Learning and Technology

Semester course; 3 lecture hours. 3 credits. Introduces the variety of ways technology can be used to enhance language instruction and student learning. Targeted technologies include audio/visual media, language learning software, the Internet and multimedia resources. Attention also will be given to considerations of learning style, curricular integration and enhancement.

FRLG 575/TEDU 575 Intercultural Communication

Semester course; 3 lecture hours. 3 credits. An experientially oriented seminar for persons preparing for or in careers necessitating intercultural communication among persons of differing cultural and/or national backgrounds. Special attention is given to teachers and other professionals who work with a clientele from Latin America, the Middle East, Asia, Africa and Eastern Europe. American cultural patterns broaden understanding of specific groups and engagement in intercultural communication.

FRLG 591 Topics in Foreign Languages

Semester course; 1-4 lecture hours. 1-4 credits. A detailed study of selected topics in one or more of the foreign language or comparative courses offered by the department.

Forensic Science(FRSC)

FRSC 309 Scientific Crime Scene Investigation

Semester course; 3 lecture/laboratory hours. 3 credits. Forensic science majors only or with instructor's permission. Provides scientific theory of crime scene investigation and crime scene reconstruction and basic knowledge of proper crime scene protocol and evidence processing techniques. Includes the processes for documentation, collecting and preserving physical evidence.

FRSC 310/ANTH 310 Forensic Anthropology

Semester course; 3 lecture and 1 laboratory hours. 3 credits. A comprehensive overview of forensic anthropology, including its development and the theory and methodology on which it is based.

FRSC 320 Forensic Fire Investigation

Semester course; 3 lecture hours. 3 credits. Examines the specialized field of forensic fire investigation including on-scene investigation, fire theory, accelerant-assisted burn patterns and expert-witness testimony.

FRSC 350 Survey of Forensic Science

Semester course; 3 lecture hours. 3 credits. Pre- or corequisites: BIOL 151, BIOZ 151L, BIOL 152, BIOZ 152L, CHEM 301 and CHEZ 301L. Open to forensic science majors only or instructor's permission required. Introduces the theory, concepts and practices used in the analysis of physical evidence performed in crime laboratories, and the fundamentals of crime scene investigation. Also introduces ethical and quality assurance issues of crucial importance in modern crime laboratories.

FRSC 365 Forensic Microscopy

Semester course; 4 lecture hours. 4 credits. Prerequisite: FRSC 350. An in-depth course in the theory and practical application of microscopy to the examination, identification and individualization of physical evidence submitted to forensic laboratories.

FRSC 375 Forensic Evidence, Law and Criminal Procedure

Semester course; 3 lecture hours. 3 credits. Prerequisites: Open to forensic science majors only or instructor's permission required. The law of criminal procedure and rules of evidence as applied to forensic science. Issues of scientific versus legal burdens of proof, legal terminology and trial procedure will be presented.

FRSC 385 Forensic Serology

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: FRSC 350. Examines the application of basic chemical, biological, immunological and microscopic laboratory techniques to the examination and identification of body-fluid stains, including both presumptive and/or confirmatory indentification of blood, semen, saliva, urine and feces. Applies methods that are used in forensic laboratories to identify the species of origin and includes a review of advanced methods for automated serological analysis. Laboratory exercises will supplement lectures to give students practical knowledge of the laboratory procedures.

FRSC 391 Topics in Forensic Science

Semester course; variable lecture hours. 1-3 credits. Maximum total of 6 credits for all forensic science topics courses may be applied to the major. Prerequisites: BIOL 151, 152, BIOZ 151L, 152L, CHEM 101, 102, CHEZ 101L, 102L, and FRSC 309 and 350. A study in selected topics in forensic science. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

FRSC 401 Forensic Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: FRSC 350, CHEM 409 and CHEZ 409L. Theory and practical laboratory applications with instrumentation used in a forensic laboratory for the chemical analysis of various types of physical evidence including: accelerants, explosives, paints, fibers, glass, suspected drug substances and other evidence.

FRSC 438/BIOL 438 Forensic Molecular Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 Genetics or equivalent; CHEM 302 Organic Chemistry II and CHEZ 302L Organic Chemistry II Laboratory. Provides an understanding of various DNA testing methodologies and their applicability to forensic science. Students will learn the skills necessary to evaluate the applicability of each method as it applies to particular case situations. Not applicable for credit toward the B.S. in Biology.
Effective Fall 2006 < p > < b > FRSC 438/BIOL 438 Forensic Molecular Biology < /b > < br >
Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 or equivalent; CHEM 302 and CHEZ 302L. Provides an understanding of various DNA testing methodologies and their applicability to forensic science. Students will learn the skills necessary to evaluate the applicability of each method as it applies to particular case situations. < /p >

FRSC 445/PATH 445 Forensic Toxicology

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L; CHEM 301-302 and CHEZ 301L. Provides a comprehensive overview of the basic principles of toxicology and the practical aspects of forensic toxicology. Students will learn to define the toxic agents most commonly resulting in legal problems in U.S. society and also the process by which the U.S. judicial system is aided by scientific investigation.

FRSC 490 Professional Practices in Forensic Science

Semester course; 3 lecture hours. 3 credits. An examination and evaluation of historical and current issues in the scientific analysis of physical evidence in criminal investigations. Individual and group activities relating to professional practices (ethics, quality control and testimony) of forensic scientists.

FRSC 492 Forensic Science Independent Study

Semester course; variable hours. 1-3 credit hours. Maximum total of 6 credits for all independent study courses. Open only to forensic science majors with junior or senior standing with a GPA of 2.5 or above. Prerequisites: BIOL 151-152, CHEM 101-102, FRSC 101 or 201. A determination of the amount of credit and the written permission of both the instructor and the program director must be procured prior to registration for the course.

FRSC 493 Forensic Science Internship

Semester course; 3 credits. May be taken only once. Prerequisites: 27 forensic science core program credits and at least a 2.75 GPA. Open only to forensic science majors with senior standing. An application is required in advance of admission with permission of the internship coordinator. Through placement in an approved organization, the student will obtain a broader, more practical knowledge of forensic science and its applications. Written progress and final reports are required. Graded as pass/fail.

FRSC 505 Forensic Entomology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Focuses on the proper techniques in the taxonomic identification of forensic insects and proper methods of postmortem interval determinations. Students will be responsible for the identification of insects, a reference collection of specimens, and the processing of a mock crime scene for entomological evidence.

FRSC 570 Forensic Science Seminar

Semester course; 1 lecture hour. 1 credit. Must be repeated a minimum of three times for three credits. A seminar course featuring presentations by faculty, crime laboratory staff, students and visiting lecturers. Instruction includes discussions of research and developments and current topics in various forensic science disciplines and related fields.

FRSC 591 Topics in Forensic Science

Semester course; variable lecture hours. 1-3 credits; maximum of six credits for all forensic science topic courses may be applied to major. Prerequisite: Graduate standing in the forensic science program or permission of instructor required for enrollment. A study in selected topics in forensic science. See the Schedule of Classes for specific topics to be offered each semester and additional prerequisites.

FRSC 661 Analysis of Pattern Evidence

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: FRSC 673 and FRSZ 673L or equivalents. Covers topics in pattern evidence analysis including analysis of latent prints, impression evidence and bloodstain pattern analysis as applied to forensic casework. The course covers both the theoretical and practical aspects, using lectures and laboratory exercises focusing on the collection, analysis and interpretation of pattern evidence.

FRSC 662 Firearm and Toolmark Identification

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: FRSC 673 and FRSZ 673L or equivalents. Covers topics in firearm and toolmark identification as applied to forensic casework. The course covers both the theoretical and practical aspects, using lectures and laboratory exercises.

FRSC 665 Scientific Crime Scene Investigation

Semester course; 3 lecture and/or laboratory hours. 3 credits. Presents the theory and techniques of scientific crime scene investigation including: recognition, documentation, collection and enhancement of physical evidence. A comprehensive introduction to the use of physical evidence for crime scene reconstruction is presented.

FRSC 670/CRJS 670 Forensic Evidence and Criminal Procedure

Semester course; 3 lecture hours. 3 credits. Presents the law of criminal procedure and rules of evidence as applied to forensic science. Explores issues of scientific versus legal burdens of proof, legal terminology and trial procedure.

FRSC 671 Instrumentation in Forensic Chemistry

Semester course; 3 lecture hours. 3 credits. Theory and applications of chromatography, mass spectrometry and spectroscopy as used in modern crime laboratories. Instruction will focus on instrumental analysis as applied to drug analysis, toxicology, fire debris identification and general trace evidence examination.

FRSC 672 Advanced Drug Analysis

Semester course; 3 lecture and/or laboratory hours. 3 credits. Isolation and identification of abused drugs emphasizing the analysis of unknowns, problems encountered in analysis and chain of custody issues.

FRSC 673 Forensic Microscopy

Semester course; 2 lecture hours. 2 credits. Establishes the foundation for the theory of microscopy. The knowledge acquired in this course can be applied to forensic disciplines such as firearms examinations, forensic biology, controlled substances, questioned documents and trace evidence.

FRSC 675 Forensic Serology and DNA Analysis

Semester course; 2 lecture and/or laboratory hours. 2 credits. Presents the theory and methodology used for the examination and identification of body fluid stains and determination of species. Provides students an introduction to the theory and methodology of forensic DNA analysis as well as forensic DNA quality control issues. Instruction will focus on molecular biology techniques as they are applied in a forensic DNA crime laboratory setting.

FRSC 676 Advanced Forensic DNA Analysis

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Focuses on the specific principles and modern procedures used for analysis of forensic nuclear and mitochondrial DNA evidence. Other topics include current research and development for forensic DNA instrumentation and applications, statistical interpretation of results and case report writing. Students gain individualized, hands-on experience with DNA procedures and instrumentation in the laboratory exercises. Students will process mock forensic casework.

FRSC 677 Expert Testimony in Forensic Science

Semester course; 3 lecture hours. 3 credits. Examines forensic testimony in the courtroom, communication of scientific findings to a general audience, public speaking skills, trial preparation and cross-examination in moot court format. This course should be taken near the end of the degree program.

FRSC 680/CRJS 680 Forensic Psychiatry

Semester course; 3 lecture hours. 3 credits. Guilty mind requirements in criminal law. Competency to stand trial, insanity defense, mental disorder and crime. Behavioral profiling of serial murders and sex offenders. Issues in the use of clinical and statistical prediction methods in criminal justice.

FRSC 681 Analysis of Fire Debris and Explosives

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: FRSC 671, FRSC 673 and FRSZ 673L or equivalents. Presents the collection, analysis and interpretation of fire debris and explosives as they are applied in forensic casework. Covers the theoretical and practical aspects. Laboratory exercises include hands-on instruction with appropriate instrumentation and techniques, including stereomicroscopy, gas chromatography, GC-MS, thin layer chromatography, HPLC and FT-IR.

FRSC 682 Forensic Analysis of Paint and Polymers

Semester course; 5 lecture/laboratory hours. 3 credits. Prerequisites: FRSC 671, FRSC 673 and FRSZ 673L or equivalents. Covers topics in paint and polymer analysis including collection, classification and analysis of paint and fiber evidence as applied to forensic casework. The course covers the theoretical and practical aspects, using lectures and laboratory exercises. Laboratory exercises include hands-on instruction with appropriate instrumentation and techniques, including stereomicroscopy, microchemical testing, fluorescence molecular tomography, fluorescence microscopy, FT-IR and polarizing light microscopy.

FRSC 692 Forensic Science Independent Study

Semester course; variable hours. 1-3 credits. Maximum credit for all independent study is 6 credits. The amount of credit must be determined, and written permission of instructor and program director must be obtained prior to registration for this course. A course designed to provide an opportunity for independent research in an area of forensic science. The products of this experience will be an oral presentation at a campus seminar and a written report.

FRSC 793 Forensic Science Laboratory Internship

Semester course; variable laboratory hours. 1-3 credits. 100 hours of laboratory work per credit. 3 credits or 300 hours of laboratory work required for graduation. Students must apply to the program director for this internship a semester in advance. Students conduct replication, validation or other analyses in a specialization area of interest in a laboratory and gain practical experience in crime laboratory practices and methods. The product of this experience will be presentations at a campus seminar and/or professional conference, and a written report. This capstone course should be taken near the end of the degree program.

Forensic Science Lab(FRSZ)

FRSZ 101L/CHEZ 101L General Chemistry Laboratory I

Semester course; 1 lecture and 2 laboratory hours. 1 credit. Pre- or corequisite: CHEM 101. Experimental work correlated with CHEM 101 with selected forensic science applications. Each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory upon withdrawal or for other reasons will incur a charge billed from the Student Accounting Department.

FRSZ 102L/CHEZ 102L General Chemistry Laboratory II

Semester course; 1 lecture and 2 laboratory hours. 1 credit. Pre- or corequisite: CHEM 102. Prerequisite: CHEZ/FRSZ 101L. Experimental work includes qualitative analysis with selected forensic science applications. Each student is charged for breakage incurred. Approved safety glasses are required. Failure to check out of laboratory upon withdrawal or for other reasons will incur a charge billed from the Student Accounting Department.

FRSZ 350L Laboratory in Forensic Principles and Practice

Semester course; 4 laboratory hours. 2 credits. Pre- or corequisite: FRSC 350. Open only to forensic science majors. Experimental work associated with FRSC 350. Application of forensic science laboratory techniques to the analysis of fingerprints, unknown chemicals, physical evidence and biological evidence.

FRSZ 391L Topics in Forensic Science Laboratory

Semester course; variable laboratory hours. 1-3 credits. Maximum total of 6 credits for all forensic science topics courses may be applied to the major. Prerequisites: BIOL 151, 152, BIOZ 151L, 152L, CHEM 101, 102, CHEZ 101L, 102L, and FRSC 309 and 350. Laboratory investigations in a selected topic in forensic science. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

FRSZ 438L/BIOZ 438L Forensic Molecular Biology Laboratory

Semester course; 4 laboratory hours. 2 credits. Pre- or corequisites: BIOL 300 and BIOL/FRSC 438. Provides comprehensive coverage of the various types of DNA testing currently used in forensic science laboratories. Students will have hands-on experience with the analytical equipment employed in forensic science laboratories and the techniques for human identification in forensic casework. Students also will explore and practice both scientific style writing as well as writing DNA case-style reports. Not applicable for credit toward the B.S. in Biology.

FRSZ 673L Forensic Microscopy Laboratory

Semester course; 3 laboratory hours. 1 credit. Establishes the foundation for the application and methodology of microscopy. The knowledge acquired in this course can be applied to forensic disciplines such as firearms examinations, forensic biology, controlled substances, questioned documents and trace evidence. The course consists of laboratory exercises and demonstrations.

FRSZ 675L Forensic Serology and DNA Analysis Laboratory

Semester course; 3 laboratory hours. 1 credit. Presents the chemical, immunological and microscopic laboratory techniques commonly used for the examination and identification of body fluid stains and determination of species. Provides working knowledge and hands-on practice with basic forensic DNA procedures, including DNA extractions, quantitation, PCR amplification analysis/genotyping. Instruction focuses on molecular biology techniques as applied in a forensic DNA laboratory.

Geography(GEOG)

GEOG 102 Introduction to Human Geography

Semester course; 3 lecture hours. 3 credits. An introduction to human geography from a global perspective, emphasizing settlement patterns, human-environment interactions, cultural variations, political transitions and population change in the global economy.

GEOG 105/ENVS 105 Physical Geology

Semester course; 3 lecture hours. 3 credits. A descriptive approach to physical geology dealing with the history and structure of the earth, catastrophic events and geology as it relates to the contemporary environment. An optional laboratory may be taken with this course. See GEOZ/ENVZ 105L.

GEOG 203, 204 Physical Geography

Semester courses; 3 lecture hours. 3, 3 credits. GEOG 204 can be taken without GEOG 203, and vice versa. Analysis of the interrelated systems of the earth. GEOG 203: the earth in space, atmosphere, climate, vegetation. GEOG 204: earth materials, tectonics, weathering, erosion, landforms, soils.

GEOG 302/URSP 302 Land Use Capability

Semester course; 3 lecture hours. 3 credits. An introduction to the principles, concepts and knowledge involved in determining the capacity of land under various conditions to support a variety of uses.

GEOG 303, 304/INTL 303, 304 World Regions

Semester courses; 3 lecture hours. 3, 3 credits. An examination of the various regions of the earth, including land forms, climate, resources, peoples, agriculture and urban conditions. First semester: Anglo-America, Latin America, Western Europe, Eastern Europe, the former USSR. Second semester: Middle East and North Africa, Africa (south of the Sahara), Indian subcontinent, China, Japan, Southeast Asia, Oceania.

GEOG 306/URSP 306 Urban Economic Geography

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 162, completion of Knowledgenet assessment for Microsoft Excel or permission of instructor. Explores the nature of work as it is organized in urban businesses, the interdependence of industries and the reasons why different cities develop different types of economies. Policies and strategies for developing and maintaining healthy urban economies will be discussed in detail.

GEOG 312/ANTH 312 History of Human Settlement

Semester courses; 3 lecture hours. 3 credits. A cultural and historical geography of human migration and settlement over the earth. Topics may include agricultural and urban systems, exploration, colonization and imperialism, and changing relationships with the environment, during and since the middle ages.

GEOG 313/URSP 313 Urban Research and Field Methods

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 210. Introduces students to a variety of field and research techniques used to gather and analyze information to study urban and regional issues. Key topics include designing a research project, developing and implementing surveys, conducting focus groups and observation, analyzing data statistically, interpreting and reporting results, and utilizing secondary information.

GEOG 332/ENVS 332/URSP 332 Environmental Management

Semester course; 3 lecture hours. 3 credits. An interdisciplinary review of domestic and international environmental problems and their underlying causes, current management frameworks, alternative management approaches and strategies, and barriers to their implementation. Other topics include: environmental history and economics, population growth, natural resources use, biodiversity, pollution.

GEOG 333/AFAM 333/INTL 333 Geography of Africa

Semester course; 3 lecture hours. 3 credits. A study of the land forms, climate, peoples, livelihoods, settlement patterns, and cultural groupings of sub-Saharan Africa.

GEOG 334/INTL 334 Regional Geography of _____

Semester course; 3 lecture hours. 3 credits. A study of the land forms, climate, resources, peoples, agricultural and urban conditions in a specific region such as North America, Europe, Latin America, the Middle East and India, the USSR and Eastern Europe. See the Schedule of Classes for specific region to be studied each semester.

GEOG 335/ENVS 335 Environmental Geology

Semester course; 3 lecture hours. 3 credits. Corequisite: ENVZ/GEOZ 335L. The relationship between humankind and the physical environment, Earth materials and processes, geological hazards, water, mineral and energy resources, land use and environmental health and law.

GEOG 340/INTL 340/URSP 340 World Cities Outside of North America

Semester course; 3 lecture hours. 3 credits. An examination of urban habitats in a variety of geographical regions, with emphasis on their differences and their common experiences.

GEOG 391 Topics in Geography

Semester course; 1, 2 or 3 credits. This course may be repeated with different topics for a maximum of 9 credits. Prerequisite: Because of changing subject matter to be treated in this course, permission of instructor is required. Students will have an opportunity to examine in detail a geographical issue of significance. See the Schedule of Classes for specific topics to be offered each semester.

GEOG 401/ENVS 401 Meteorology and Climatology

Semester course; 3 lecture hours. 3 credits. Prerequisite: GEOG 203 or a physical science sequence or permission of instructor. A basic, semiquantitative course in the elements of weather and climate, their driving forces and their spatial and temporal distribution and variability. Atmospheric motions and circulation, weather forecasting, human impact on weather and climate.

GEOG 411/ENVS 411 Oceanography

Semester course; 3 lecture hours. 3 credits. Prerequisite: GEOG 203 or PHYS 101 or a natural science sequence or permission of instructor. A basic course in the physical, chemical and geological properties of oceans and ocean basins. Origin and character of ocean basins, properties of oceanic waters, oceanic circulation, land-sea interactions, marine environments and ecology.

GEOG 492 Independent Study

Semester course; 1-3 credits. May be repeated for a maximum total of 6 credits. Prerequisites: junior or senior standing required. Permission of instructor and geography program director must be obtained prior to course registration. Under the supervision of a geography faculty member, a student studies a topic of mutual interest.

GEOG 521/URSP 521/ENVS 521 Introduction to Geographic Information Systems

Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental analysis and planning. Includes geographic and remote sensing data structures, global positioning systems, spatial analysis, geographic data standards, public domain software and data resources, and principles of cartography design. Lab exercises in the use of geographic information systems software tools.

GEOG 550 Physical Geography of Virginia

Semester course; 6 field hours. 3 credits. Field course, traversing the varied physical regions of Virginia with emphasis on the climate, terrain, soils, and vegetation of each region and on the transitional zones in between. Human modification of the physical environment and its consequences are also stressed.

GEOG 551 Cultural Geography of Virginia

Semester course; 6 field hours. 3 credits. Field course, traversing the various cultural regions of Virginia with emphasis on basic economic activities of each area, the cumulative effect of occupation of the regions, and past and present changes in the cultural landscape.

GEOG 626 GIS Applications for Planners

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: URSP 623. Examines in detail Geographic Information Systems.

GEOG 680 Geography Workshop

Semester course; 1 lecture or 2 field hours per credit. 1-6 credits. Lecture, laboratory and/or field course. May be repeated with different topics to maximum of 9 credits. An intensive study of a particular area or topic in geography. See the Schedule of Classes for specific workshops to be offered each semester.

Geography Lab(GEOZ)

GEOZ 105L/ENVZ 105L Physical Geology Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: GEOG/ENVS 105. An optional laboratory course consisting of experiments and activities related to GEOG/ENVS 105.

GEOZ 203L, 204L Physical Geography Laboratory

Semester courses; 2 laboratory hours. 1, 1 credit. Pre- or corequisite: GEOG 203 for GEOZ 203L; GEOG 204 for GEOZ 204L. Problem solving and map reading exercises related to earth-sun relationships, atmosphere, weather and climate, vegetation, soils (in GEOZ 203L) and earth materials, tectonics, weathering, erosion, landforms (in GEOZ 240L). GEOZ 204L can be taken without GEOZ 203L, and vice versa.

GEOZ 335L/ENVZ 335L Environmental Geology Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: GEOG/ENVS 335. Required for environmental science majors enrolled in ENVS/GEOG 335; optional for other majors. Attendance on one Saturday morning field trip required. Laboratory exercises coordinated with GEOG/ENVS 335 lectures.

GEOZ 401L/ENVZ 401L Meteorology and Climatology Laboratory

Semester course; 3 laboratory hours. 1 credit. Pre- or corequisite: GEOG/ENVS 401. A series of laboratory and field experiments designed to quantify the elements of weather and climate and to interpret their local temporal and spatial variations.

German(GRMN)

Non-foreign language majors who wish to take one or two upper-level classes only need to complete GRMN 202, 205 or equivalent.

GRMN 101-102 Elementary German

Continuous courses; 5 lecture/recitation hours. 4-4 credits. Elementary grammar, reading and oral drill.

GRMN 201 Intermediate German

Semester course; 3 lecture hours. 3 credits. Continuation of the essentials of grammar with emphasis on achieving proficiency in aural comprehension, speaking, reading and writing skills.

GRMN 202 Intermediate German Readings

Semester course; 3 lecture hours. 3 credits. Prerequisite: GRMN 201 or the equivalent. In order to complete German through the intermediate level, a student may select GRMN 202 or 205 or equivalent. Designed to increase the student's proficiency in German through the study of selected cultural and literary texts.

GRMN 205 Intermediate Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisite: GRMN 201 or the equivalent. In order to complete German through the intermediate level, a student may select GRMN 202 or 205 or equivalent. Designed to increase the student's proficiency in the spoken language through audio-oral exercises, dialogues and free conversation.

GRMN 295 Gateway to German Major/Minor

Semester course; 3 lecture hours. 3 credits. Prerequisite: GRMN 201 or permission of instructor. Non-foreign language majors who wish to take one or two upper-level classes only need to complete GRMN 202, 205 or equivalent. This course focuses on three different areas: 1) writing and analytical skills: enhancement of grammatical and writing skills and development of analytical techniques using a variety of literary and expository texts; 2) phonetics: use and practice of native pronunciation; 3) listening skills: extensive use of recorded materials and Language Learning Center resources for the improvement of listening proficiency in a variety of authentic contexts.

GRMN 300, 301 Advanced Grammar and Writing

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisites: German courses through the intermediate level or equivalent. A systematic review of German grammar with emphasis on the elements of style and vocabulary building.

GRMN 305 German Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisites: German courses through the intermediate level or equivalent. Conducted in German. Practice in the spoken language with emphasis on discussions relating to topics of current interest.

GRMN 311 German through the Media

Semester course; 3 lecture hours. 3 credits. Prerequisites: German courses through the intermediate level or equivalent. A course designed to develop language proficiency by using material available through the various media: newspapers, magazines, films, slides and radio broadcasts.

GRMN 314 Commercial German

Semester course; 3 lecture hours. 3 credits. Prerequisites: German courses through the intermediate level or equivalent. Designed to develop the student's ability to use German as a means of oral and written communication in the business world. Emphasis on the acquisition of technical tools necessary for business exchanges in specialized fields.

GRMN 320 German Civilization I

Semester course; 3 lecture hours. 3 credits. Prerequisites: German courses through the intermediate level or equivalent. Conducted in German. A survey of German and Austrian culture from their origins to the founding of the German Empire in 1871.

GRMN 321 German Civilization II

Semester course; 3 lecture hours. 3 credits. Prerequisites: German courses through the intermediate level or equivalent. GRMN 320 recommended. Conducted in German. A treatment of German and Austrian culture from the founding of the German Empire in 1871 to the present. Particular emphasis on life in modern-day Austria and the Federal Republic of Germany.

GRMN 330, 331 Survey of Literature

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisites: German courses through the intermediate level or equivalent. Conducted in German. First semester: beginnings of German literature through the literature of the first half of the 19th century. Second semester: contemporary German literature.

GRMN 420 The Turn of the Century

Semester course; 3 lecture hours. 3 credits. Prerequisites: GRMN 300, 301 or GRMN 320 and GRMN 321. Conducted in German. A course dealing with the major intellectual, philosophical, artistic and cultural trends from the turn of the century through the Weimar period as reflected in the writings of authors such as Kafka, Mann and Hesse. Includes impressionism, expressionism and neue Sachlichkeit.

GRMN 421 The Postwar German Scene

Semester course; 3 lecture hours. 3 credits. Prerequisites: GRMN 300, 301 or GRMN 320 and GRMN 321. Conducted in German. A course dealing with the political, social and intellectual developments of the German-speaking countries from the end of World War II to the present as reflected in the literary works of their major authors.

GRMN 422 German Film

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated with different topics for a total of 6 credits. Prerequisites: GRMN 300, 301 or GRMN 320, 321, or permission of instructor. Conducted in German. Study of selected topics in German film from the beginnings to today, particularly as seen in their social, historical and cultural contexts. See the Schedule of Classes for the specific topic to be offered each semester.

GRMN 423 Folk/Popular Culture

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated with different topics for a total of 6 credits. Prerequisites: GRMN 300, 301 or 320, 321, or permission of instructor. Conducted in German. Sudy of selected topics related to folk traditions and/or popular culture in German-speaking countries. See the Schedule of Classes for the specific topic to be offered each semester.

GRMN 424 Culture and Society

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated with different topics for a total of 6 credits. Prerequisites: GRMN 300, 301 or 320, 321, or permission of instructor. Conducted in German. Study of issues in the culture and society of German-speaking countries today. See the Schedule of Classes for the specific topic to be offered each semester.

GRMN 491 Topics in German

Variable hours. 1-3 credits. May be repeated with different topics for a maximum of 9 credits. Prerequisite: Completion of six credits of German at the 300 level or equivalent. An in-depth study of selected topics in German. See the Schedule of Classes for specific topics to be offered each semester.

GRMN 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 3 credits per semester; maximum total of 6 credits for all independent study courses in German. Prerequisites: GRMN 300, 301 or GRMN 320 and GRMN 321. Open generally to students of only junior or senior standing who have 6 credits of upper-level German courses and/or have a demonstrated competency in the language. Determination of course content and permission of the instructor must be obtained prior to course registration. A course designed to give students an opportunity to become involved in independent study in a literary or linguistic area or subject in which they have an interest.

GRMN 500 German for Graduate Students

Semester course; 3 lecture hours. 3 credits. This course is designed to prepare graduate students for the reading knowledge examination for higher degrees. Each graduate department will determine the nature and form of the certifying examination.

GRMN 502 German Communication

Semester course; 1-4 lecture hours. 1-4 credits. An intensive study of communication in German. The content of this course will emphasize primarily oral, written, and listening skills.

GRMN 512 German Civilization

Semester course; 1-4 lecture hours. 1-4 credits. Prerequisite: Functional fluency in German since the class will be taught in German. A comprehensive study of the civilization and culture of Germany and its global expressions.

Government and Public Affairs(GVPA)

GVPA 423 Virginia Capital Semester Seminar

Semester course; 3 lecture hours. 3 credits. Open only to students in the Virginia Capital Semester program. Designed as an integral part of the program, this course provides an examination of state policy issues and state legislative processes using the current Virginia General Assembly session as illustration.

GVPA 493 Government and Public Affairs Internship

Semester course; 3 or 6 credits. (50 hours per credit.) May be repeated for a maximum of six credits. Permission of internship coordinator required. Open to all Wilder School undergraduates. Designed to provide the student with an opportunity to relate theory to practice through observation and actual experience within the field of government and public affairs.

GVPA 494 Virginia Capital Semester Internship

Semester course; 3 credits. Open only to students in the Virginia Capital Semester program. Designed to provide students with an opportunity to relate theory to practice through participation in activities related to the annual session of the Virginia General Assembly.

GVPA 495 UROP Directed Study

Semester course; 3 lecture hours. 3 credits. Students enrolling in this course must meet the eligibility requirements of the Undergraduate Research Opportunity Program. Designed to provide advanced research opportunities to undergraduate students. Topics chosen in consultation with the UROP coordinator. Students may take a total of six GVPA 495 credits; only three of those credits may be applied to the major.

GVPA 499 Wilder School Scholars Seminar

Semester course; 3 lecture hours. 3 credits. Capstone seminar course focusing on a broad topic in one of several disciplines of interest to Wilder School Scholars. Topics, structure and content determined each semester.

GVPA 601/PADM 601 Principles of Public Administration

Semester course; 3 lecture hours. 3 credits. Dynamics of governmental administration including administrative principles, decision making, communication, leadership, organizational models, and the social, economic, legal, and political milieu of administration.

GVPA 623/URSP 623/PADM 623/CRJS 623 Research Methods for Government and Public Affairs

Semester course; 3 lecture hours. 3 credits. Introduction to the scope and methods of applied research for the public sector. Focuses on problem structuring through logical methods, exploring problems through observation and other methods of data collection, analyzing and summarizing findings using both qualitative and quantitative methods.

GVPA 625/PADM 625 Public Policy Analysis

Semester course; 3 lecture hours. 3 credits. The examination of various methods for identifying and structuring public policy problems and issues, formulating and analyzing alternative responses, recommending policy actions for decision making, and designing and evaluating implementation plans and the means to monitor and evaluate the resulting policy outcomes.

GVPA 632/URSP 632 Planning Theory and Processes

Semester course; 3 lecture hours. 3 credits. Examines major traditions in the theory of planning in the context of actual planning processes and outcomes. Explores in depth the political, economic, and institutional constraints to effective planning and plan implementation. Discusses the planners' ethical dilemmas.

GVPA 640/ENVS 640 River Policy

Semester course; 3 lecture hours. 3 credits. Examines public policy related to rivers and watersheds. Uses the James River for exploring and illustrating generic river policy issues.

GVPA 672 Social Equity and Public Policy Analysis

Semester course; 3 lecture hours. 3 credits. Designed to provide an overview of the concept of social equity and its relationship to public policy. A survey course that will introduce students to an array of public policy areas along the core dimensions of race, ethnicity, gender and class.

GVPA 683/PADM 683/PHIL 683 Administrative Ethics

Semester course; 2 or 3 lecture hours. 2 or 3 credits. A philosophical investigation into the problems of making ethical decisions, focusing on issues likely to confront the public administrator. Examples of such issues are equity in social services delivery, affirmative action, loyalty to the bureaucracy vs. "whistle blowing," and conflicts of interest between personal and public interest.

GVPA 691 Special Topics

Semester course; 3 lecture hours. 3 credits. An intensive focus on a specialized subject area relevant to graduate programs in the Wilder School of Government and Public Affairs. Also open to graduate students in programs outside of the Wilder School, with permission of the instructor. See the Schedule of Classes for specific topics to be offered each semester.

GVPA 693 Internship

Semester course; 1-9 hours. 1-9 credits. Permission of instructor required. A graduate-level internship that allows students to explore professional opportunities that relate to one or more of the graduate programs in the Wilder School. See graduate coordinator for specific hour requirements.

History(HIST)

HIST 101, 102 Survey of European History

Semester courses; 3 lecture hours. 3, 3 credits. A survey of European civilization from the ancient world to the present, emphasizing the events, ideas and institutions that have shaped, influenced and defined Europe's place in the world. First semester: to 16th century. Second semester: 16th century to the present.

HIST 103, 104 Survey of American History

Semester courses; 3 lecture hours. 3, 3 credits. A survey of American civilization from prehistory to the present, emphasizing the events, ideas and institutions that have shaped, influenced and defined America's place in the world. First semester: to Reconstruction. Second semester: Reconstruction to present.

HIST 105, 106/AFAM 105, 106 Survey of African History

Semester courses; 3 lecture hours. 3, 3 credits. A survey of African civilizations from prehistory to the present, emphasizing the events, ideas and institutions that have shaped, influenced and defined Africa's place in the world. First semester: to 1800. Second semester: 1800 to the present.

HIST 107, 108 Survey of East Asian Civilizations

Semester courses; 3 lecture hours. 3, 3 credits. A survey of East Asian civilizations (China and Japan) from prehistory to the present, emphasizing the events, ideas and institutions that shaped, influenced and defined East Asia's place in the world. First semester: to the 14th century. Second semester: from the 14th century to the present.

HIST 109, 110 Survey of Latin American History

Semester courses; 3 lecture hours. 3, 3 credits. A survey of Latin American civilization from its early civilizations to the present, emphasizing the events, ideas and institutions that have shaped, influenced and defined Latin America's place in the world. First semester: to 1824. Second semester: 1824 to the present.

HIST 191 Topics in History

Semester course; variable hours. 1-3 credits per semester. Maximum total of 6 credits. The study of a selected topic or topics in history. See the Schedule of Classes for specific topics to be offered each semester.

HIST 300 Introduction to Historical Study

Semester course; 3 lecture hours. 3 credits. History majors must complete HIST 300 with at least a "C" grade prior to enrolling in more than six credits of 300- or 400-level history courses. This introduction to the historical discipline is required of all history majors. It is designed to enhance basic research, writing and study skills in order to increase student appreciation of, and performance in, the advanced courses within the history major.

HIST 301, 302/RELS 315, 316 The Ancient Near East

Semester courses; 3 lecture hours. 3, 3 credits. A study of the ancient Near Eastern civilizations of Mesopotamia, Egypt, Anatolia and Syria-Palestine, from the preliterary period to that of the Archaemenid Empire of the Persians. First semester: preliterary period to the end of Kassite rule in Babylonia (c. 1160 B.C.). Second semester: the rise and fall of the great Neo-Assyrian, Neo-Babylonian, Hebrew and Persian Empires (c. 331 B.C.).

HIST 303 Greek Civilization

Semester course; 3 lecture hours. 3 credits. A study of the unique cultural heritage of Greece and the historical patterns that rose from it, from the Heroic Age to the urban worlds after Alexander, 1400 B.C.-146 B.C.

HIST 304 Roman Civilization

Semester course; 3 lecture hours. 3 credits. A study of Roman history as it derived from Roman cultural institutions, from the Etruscan period through the conflict of the pagan and Christian worlds and advent of the barbarians, 753 B.C.-A.D. 454.

HIST 305 Introduction to Greek Archaeology

Semester course; 3 lecture hours. 3 credits. Selected centers of civilization in prehistoric, classical and Hellenistic Greece: their rise, destruction or renewal by urban planning; the history of classical archaeology, its growth and impact on modern European art. Emphasis is on the living context of mature and complex peoples: Crete, Myceanae, Classical and Hellenistic Greece.

HIST 306 The Early Middle Ages

Semester course; 3 lecture hours. 3 credits. A topical, thematic, integrative and problems approach to the emergence of a distinctive European community during the period frequently alluded to as the "Dark Ages."

HIST 307/RELS 308 The High Middle Ages

Semester course; 3 lecture hours. 3 credits. A detailed historical analysis of the Gregorian Revolution, the Crusades, the 12th-century Renaissance, the Thomistic World and the death of medieval civilization.

HIST 308 Europe in Renaissance

Semester course; 3 lecture hours. 3 credits. Examination of the political, economic, social, cultural and religious dimensions of the Italian and Northern European renaissances.

HIST 309/RELS 309 The Reformation

Semester course; 3 lecture hours. 3 credits. A careful and intensive inquiry into the spiritual and material forces and people involved in the reformation of Christendom in 16th-century Europe.

HIST 310 Europe in Absolutism and Enlightenment, 1648-1815

Semester course; 3 lecture hours. 3 credits. Examines the political, social and economic orders of Old Regime Europe in the context of their increasing contradictions; introduces the cultural and intellectual forces that helped challenge that regime; culminates in the French Revolution and Napoleon.

HIST 311 The Zenith of European Power, 1815-1914

Semester course; 3 lecture hours. 3 credits. A study of the period in which the nations of Europe reached their height of world power between the reconstruction of Europe after the Napoleonic Wars and the eve of World War I. Topics include the rise of nationalism, liberalism and socialism; the spread of capitalism and industrial society; the beginnings of mass politics; the new imperialism; the diplomatic revolution in the European state system before World War I.

HIST 312 The Age of Total War: Europe, 1914-1945

Semester course; 3 lecture hours. 3 credits. A study of the transformation of European society precipitated by World War I and World War II. Emphasis is placed on the origin, nature, and repercussions of total war; the crisis of democracy and the rise of modern dictatorships; changes in political, economic and social institutions; and the decline of European power.

HIST 313 Post-War Europe, 1945 to the Present

Semester course; 3 lecture hours. 3 credits. An examination of Europe's social, economic and political recovery after World War II and of the transformation of Europe from the center toward the periphery of world power.

HIST 315, 316 History of France

Semester courses; 3 lecture hours. 3, 3 credits. First semester: history of France from Gallo-Roman times through the French Revolution and the Napoleonic era. Second semester: from 1815 to the present.

HIST 317, 318 History of Germany

Semester courses; 3 lecture hours. 3, 3 credits. First semester: the rise of Prussia, decline of the Holy Roman Empire and the German Confederation up to 1870. Second semester: Bismarck's Empire, the World Wars, Nazism and post-1945 Germany.

HIST 319, 320 History of England

Semester courses; 3 lecture hours. 3, 3 credits. Traces the rise of England to world hegemony and the causes of its decline as a world power. First semester: Tudor Revolution in government, Reformation, English civil wars and Restoration. Second semester: Whig oligarchy, Industrial Revolution, Victorianism, impact of world wars, problems of Empire.

HIST 321, 322 History of Russia

Semester courses; 3 lecture hours. 3, 3 credits. Russian history from its origins to the present, emphasizing the development of political and social institutions and Russia's unique position between Europe and Asia. First semester: origins to 1861. Second semester: 1861 to the present.

HIST 323 History of Spain and Portugal

Semester course; 3 lecture hours. 3 credits. A survey of the history of the Iberian peninsula from ancient times to the present, with an emphasis on the distinctive culture and attitude toward life that developed south of the Pyrenees.

HIST 324 The Holocaust

Semester course; 3 lecture hours. 3 credits. A multidisciplinary examination of the events leading to and culminating in the Nazi extermination of six million Jews; the historical settings of European Jewry and of German fascism; the role of traditional anti-Semitism; the psychology of aggressor and victim; the Holocaust in art and literature and the moral implications for today.

HIST 325, 326/RELS 318, 319 History of the Jewish People

Semester courses; 3 lecture hours. 3, 3 credits. A study of the Jewish people from the destruction of the Second Temple in A.D. 70 to the present. First semester: Judea in Roman times, the Diaspora in Islam and in Europe, social and cultural trends and the impact of the Emancipation. Second semester: the rise of the American Jewish community, the impact of modernism and growth of Reform, the beginnings and growth of Zionism, restoration in Palestine, the Holocaust, the creation of Israel and the relations of Israel and World Jewry.

HIST 327/RELS 327 History of Christianity

Semester course; 3 lecture hours. 3 credits. A historical and theological examination of Christianity from its origin to the present. Emphasis is placed upon an understanding of leading events, ideas, movements and persons in their historical settings.

HIST 328 Modern Middle East

Semester course; 3 lecture hours. 3 credits. Analysis of the history, problems, and prospects of the nations and peoples of the Middle East with emphasis on developments since the Balfour Declaration of 1917.

HIST 329, 330 European Social History

Semester courses; 3 lecture hours. 3, 3 credits. Examines the institutions and structures of European society in the context of their changing interrelationships with politics, economics, ideas and culture throughout European history. First semester: pre-Industrial Europe; second semester: the Industrial Age.

HIST 331 Nazi Germany

Semester course; 3 lecture hours. 3 credits. The origin and nature of Hitler's Third Reich. A study of the failure of the Weimar Republic; genesis of the Nazi racial ideology and party structure; the Nazi political, social and cultural order after the seizure of power; Nazi foreign policy leading to war and genocide; and an analysis of the personality of Hitler.

HIST 332 History in Film

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits with different topics. An examination of the uses and misuses of historical events and personalities in film. Lectures and readings are used to critically analyze films dealing with biographies, events and propaganda.

HIST 333/ECON 419 History of Economic Thought

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211. A survey of the ideas of major economic contributors to modern economic thought. Theories of value, growth and distribution from the 18th through the 20th centuries will be presented.

HIST 334 Comparative History of Revolutions

Semester course; 3 lecture hours. 3 credits. A historical investigation of the causes, events, results and interpretation of revolution, focusing upor such subjects as revolutionary change in the ancient and medieval worlds, and the revolutions of the modern age in England, France, Mexico, Russia, China and Cuba. Emphasis is on historical comparisons and the specific revolutions examined may vary.

HIST 335/RELS 335 The American Jewish Experience

Semester course; 3 lecture hours. 3 credits. The religious, social and cultural structure of American Jewry from the colonial era to the present

HIST 336 Modern European Intellectual History

Semester course; 3 lecture hours. 3 credits. An investigation of the main currents of European thought since 1750 which have shaped the contemporary mind. Emphasis on the interconnections between ideas and society placed in their historical contexts.

HIST 337 The Origins of Modernism, 1880-1930

Semester course; 3 lecture hours. 3 credits. An investigation of the interconnections between social, intellectual, and artistic change in Europe in the crucial period 1880-1930. Focus is placed on such major figures as Nietzsche, Freud, Einstein, Picasso, Duchamp and Stravinsky ir an attempt to locate the origins of contemporary artistic and intellectual experience.

HIST 338 History of Socialism

Semester course; 3 lecture hours. 3 credits. An examination of the roots of socialism in the cultural and religious tradition of the West, its development during Europe's industrialization, its present status and the alternative it presents to capitalism.

HIST 339, 340/WMNS 339, 340 History of Women in Europe

Semester courses; 3 lecture hours. 3, 3 credits. A history of European women from the Greeks to the contemporary world. A major focus of both courses will be primary sources by and about women. First semester: from antiquity to the Enlightenment. Second semester: from the French Revolution to the present.

HIST 341/WMNS 341 American Women's History

Semester course; 3 lecture hours. 3 credits. Through reading, lecture and discussion, this course analyzes historical changes in the social, cultural, political and economic position of women in America over the past three centuries. It includes such topics as the differences and similarities of women's experiences across lines of class, race and ethnicity, the struggle for suffrage and social reform, shifting gender roles and changing employment opportunities.

HIST 342 Colonial America, 1585-1763

Semester course; 3 lecture hours. 3 credits. An examination of the development of the 13 original colonies; the establishment and growth of society, politics and the economy; and modification in the relationship between the provinces and Great Britain.

HIST 343 Two American Revolutions, 1763-1800

Semester course; 3 lecture hours. 3 credits. An examination of the late 18th-century revolutions which molded the American political system - the revolution of colonial Englishmen against Great Britain and the revolution of the nationalists against the government established by the American Revolution, which produced and firmly established the United States Constitution.

HIST 344 Ante-bellum America: 1800-1860

Semester course; 3 lecture hours. 3 credits. Federalist era to 1860. A study of the events, forces, and personalities that shaped Ante-bellum America and led to Southern secession and Civil War.

HIST 345 Civil War and Reconstruction

Semester course; 3 lecture hours. 3 credits. A study of the major events, forces, personalities and significance of the Civil War and Reconstruction eras.

HIST 346 The Emergence of Modern America, 1877-1914

Semester course; 3 lecture hours. 3 credits. An examination of the major political, legal, social, and economic trends in the United States at this time, focusing on the industrialization of the nation and the resulting effects it had on such diverse matters as urbanization, immigration, economic distribution and cultural affairs, culminating in the Progressive reform movement.

HIST 347, 348 20th-century U.S. History

Semester courses; 3 lecture hours. 3, 3 credits. A study of the political, social, economic, and cultural history of the United States in the 20th century, with emphasis on how the American people have responded to reform, war, prosperity, depression, international status and changing relationships within government and society. First semester: to World War II. Second semester: since World War II.

HIST 349, 350 American Military History

Semester courses; 3 lecture hours. 3, 3 credits. Analysis of the evolution, status, and conduct of the armed forces of the United States. Emphasis will be placed on the changing nature of American military thought and institutions, their performance in peace and war and their relationship to civilian authority. First semester: to 1900. Second semester: 1900 to the present.

HIST 351, 352 History of the South

Semester courses; 3 lecture hours. 3, 3 credits. A regional history placing particular emphasis upon the distinctive culture and problems of the South and its significance in the history of the United States. First semester: Old South, from colonial period to 1861. Second semester: New South, from 1865 to the present.

HIST 355 History of Virginia

Semester course; 3 lecture hours. 3 credits. The course focuses on the central themes, events and personalities of the state's history from 1607 to the present.

HIST 357, 358 American Social History

Semester courses; 3 lecture hours. 3, 3 credits. The social life of Americans is examined in all periods of their history, focusing on the changing structure and functions of social institutions and thought. First semester: to 1876. Second semester: 1877 to the present.

HIST 361, 362/AFAM 361, 362 Americans from Africa

Semester courses; 3 lecture hours. 3, 3 credits. A study of the history and culture of blacks in the United States, designed to analyze some of the most important aspects of black life and the attitudes of the dominant society within which blacks lived. The second semester emphasizes the changing status, expectations and ideologies of black Americans in the 20th century. First semester: to 1877. Second semester: since 1877.

HIST 363 History of the American Urban Experience

Semester course; 3 lecture hours. 3 credits. The evolution of colonial towns into industrial metropolises will be examined, placing emphasis on how this change determined contemporary conditions in American cities.

HIST 365, 366 American Intellectual History

Semester courses; 3 lecture hours. 3, 3 credits. The development of American thought and attitudes, with emphasis on trends in social and religious ideas, the rise of educational and cultural institutions, and expressions in literature and the arts. First semester: Colonial period to 1860. Second semester: 1860 to the present.

HIST 369, 370 American Constitutional and Legal Development

Semester courses; 3 lecture hours. 3, 3 credits. An analysis of the development of American constitutionalism and of concomitant legal developments, emphasizing judicial review, the relationship between the Constitution and modern industrialized society, and civil rights, as well as the growth of case law and the rise of the legal profession. First semester: to 1877; Second semester since 1877.

HIST 374 History of the American Frontier

Semester course; 3 lecture hours. 3 credits. A survey of the western movement in the United States from the time the first outposts were established to the end of the frontier in the 19th century. Particular attention to the influence of the frontier upon the American mind and ideals.

HIST 375, 376 American Diplomatic History

Semester courses; 3 lecture hours. 3, 3 credits. A study of the role of the United States in international relations. Emphasis is placed on institutional and theoretical development and continuity as well as the role of the individual. First semester: to 1900. Second semester: since 1900.

HIST 378 History of Central America

Semester course; 3 lecture hours. 3 credits. An exploration of the history of the region beginning with pre-Hispanic Indian civilizations and continuing to the present. Topics to be studied include the Spanish conquest, the liberal-conservative struggle, U.S. gunboat diplomacy, the Sandinista Revolution, civil war in El Salvador, militarism in Guatemala and democracy in Costa Rica.

HIST 379 The History of Modern Japan

Semester course; 3 lecture hours. 3 credits. This course will offer a detailed examination of Japan's modern history, from the rise of Tokugawa rule in 1600 to the end of World War II. A general overview of Japan's traditional society will give way to a historical analysis of the major social, cultural, political and intellectual changes that occurred in Japan throughout this time period.

HIST 381 The History of Early Modern China, 1500 to 1800

Semester courses; 3 lecture hours. 3 credits. Examines the last 150 years of the Ming Dynasty (1368-1644) and the first 150 years of the Qing Dynasty (1644-1912). General overview of China's traditional political economy is followed by a historical analysis of the major social, cultural, political, intellectual and economic changes that occurred in China between 1500 and 1800. In addition, students will be introduced to such concepts and issues as empire building, ethnicity and nationalism to prepare for the study of the 19th- and 20th-century China.

HIST 382 The History of Modern China, 1800 to the Present

Semester course; 3 lecture hours. 3 credits. Examines China's modern history beginning at the height of the Qing Dynasty (1644-1912) in 1800. A general overview of China's traditional political economy is followed by a historical analysis of the major social, cultural, political, intellectual and economic changes that occurred in China from 1800 to the present. This course is divided into three sections: the first examines the factors leading to the collapse of China's last dynasty in 1912; the second focuses on the revolutionary changes taking place in China during the first half of the 20th century (from 1912 to 1949); and the final section looks at Communist China since 1949.

HIST 383 Ancient Egypt

Semester course; 3 lecture hours. 3 credits. A general survey of the history and culture of ancient Egypt from the Predynastic period through the age of the New Kingdom. In addition to the historical reconstruction, emphasis is placed on the art, literature and religion of each of the major periods.

HIST 384 Latin America and World Affairs

Semester course; 3 lecture hours. 3 credits. A survey of the relation of Latin America since the 16th century to major world developments which have occurred and in which Latin America was involved.

HIST 385 History of Mexico

Semester course; 3 lecture hours. 3 credits. A study of Mexico and its culture, including early Indian civilizations, Spanish conquest, colonial period, independence, struggle for reform, revolution and development as a modern state.

HIST 386 History of Brazil

Semester course; 3 lecture hours. 3 credits. A survey of the development of Brazilian culture and institutions from the Portuguese occupation of eastern South America through the Colonial period, independent empire and the republic to the present time.

HIST 387/AFAM 387 History of West Africa

Semester course; 3 lecture hours. 3 credits. A study of the transformation of West African societies from early times to the present, with emphasis on the rise of states and empires, the introduction, spread and impact of Islam, the Atlantic Slave trade and its effects, colonialism, African resistance and nationalism, and developments since independence.

HIST 388/AFAM 388 Africa: Social, Cultural, and Economic History

Semester course; 3 lecture hours. 3 credits. A study of economic, social and cultural developments in Africa from the beginning of the 19th century to the present, with emphasis on agricultural and industrial development, trade, Africa's involvement in the world economy, changes in labor systems, racial dominance, African initiatives and resistance, religion and social evolution and Africa in world affairs.

HIST 389/AFAM 389 History of Southern Africa

Semester course; 3 lecture hours. 3 credits. A study of the history and culture of the peoples of southern Africa. Deals with the areas that presently are the Republic of South Africa, Lesotho, Swaziland, Botswana, Namibia and Zimbabwe. Emphasizes the interaction among the various communities and ethnolinguistic groups in southern Africa.

HIST 390/AFAM 390/WMNS 390 Africa and the Americas: Slavery, Gender and Race

Semester course; 3 lecture hours. 3 credits. An examination of various aspects of slavery in Africa primarily, and selected parts of the African Diaspora including the United States, Canada and the Caribbean, with emphasis on African conditions of servility, the Atlantic slave trade and chattel slavery. The role gender and race played in slavery will be given particular attention.

HIST 391 Topics in History

Semester course; 1, 2 or 3 lecture hours. Variable credit. May be repeated with different topics for a maximum of 9 credits. An in-depth study of a selected topic in history. See the Schedule of Classes for specific topics to be offered each semester.

HIST 392/AFAM 392 The Caribbean to 1838

Semester course; 3 lecture hours. 3 credits. An exploration of changes in the structure of Caribbean society from the late 15th century to 1838, with emphasis on the development of plantation slavery, social stratification, race, slave resistance, the Haitian Revolution, African cultural patterns and abolition.

HIST 393/AFAM 393 Akhenaten to Cleopatra

Semester course; 3 lecture hours. 3 credits. A survey of Egyptian history from the period of the Empire (New Kingdom, c. 1570 B.C.) through the Ptolemaic Age of Cleopatra (c. 30 B.C.). Particular areas of concentration will include the Amarna Period of Akhenaten and various aspects of Egyptian daily life.

HIST 394/ANTH 394 Historical Archaeology

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 105 and any history course. A review of historical archaeology, recognizing its contemporary emphasis on the spread of European cultures across the globe beginning in the 15th century. Methods and findings of archaeological research from the United States, Europe and Africa will be covered with special emphasis on the study of documents and artifacts related to the emergence and present state of the modern world. Students will participate in field research.

HIST 461-462 Archival and Historical Administration

Continuous courses; 3 lecture and 3 workshop hours. 3-3 credits. First semester: an examination of the development of archival administration with emphasis on modern techniques and practices of archival and historical administration. Second semester: workshop in which each student will receive on-the-job training in various phases of archival administration.

HIST 483 Museum Methods

Semester course; 3 lecture hours. 3 credits. Practical presentation of techniques of working museums, presented in conjunction with local or regional museums.

HIST 485 Seminar in Historiography

Semester course; 3 lecture hours. 3 credits. May be repeated for maximum of 6 credits with different topics. Introduction to questions in historiography, meaning, methodology and interpretation in the teaching and writing of history.

HIST 486 Seminar in Historical Methodology

Semester course; 3 lecture hours. 3 credits. In a seminar setting involving reading, discussion and writing, students will explore the canons, practices, and limitations of one or more historical methodologies. Since the emphasis may shift from semester to semester, interested students should contact the instructor listed in the current Schedule of Classes.

HIST 490 Seminar in History

Semester course; 3 lecture hours. 3 credits. Maximum of 9 credits. Research and analysis of a selected historical topic in a seminar setting. See the Schedule of Classes for specific topics to be offered each semester.

HIST 492 Independent Study

Semester course; variable hours. 2-4 credits per semester. Maximum total of 6 credits. Open generally to students of only junior and senior standing who have acquired 12 credits in the departmental disciplines. Determination of the amount of credit and permission of instructor and department chair must be procured prior to registration of the course.

HIST 493 Internship

Semester course; variable hours. 2-4 credits per semester. Maximum total of 6 credits. Open generally to students of senior standing. Students receive credit for work on historical projects with approved agencies. Determination of the amount of credit and permission of departmental internship coordinator must be procured prior to registration for the course.

HIST 511 Studies in American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in American history, primarily through lectures and readings. See the Schedule of Classes for specific topics to be offered each semester.

HIST 515 Studies in European History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in European history, primarily through lectures and readings. See the Schedule of Classes for specific topics to be offered each semester.

HIST 519 Studies in Ethnic and Social History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in ethnic or social history, primarily through lectures and readings. See the Schedule of Classes for specific topics to be offered each semester.

HIST 523 Studies in Virginia and Southern History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in Virginia or Southern history, primarily through lectures and readings. See the Schedule of Classes for specific topics to be offered each semester.

HIST 527 Studies in African-American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Study of a selected topic in African-American history, primarily through lectures and readings. See the Schedule of Classes for specific topics to be offered each semester.

HIST 591 Special Topics in History

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated with different topics for a maximum of 9 credits. An intensive study of a selected topic in history.

HIST 601 Historiography and Methodology

Semester course; 3 lecture hours. 3 credits. A study of the development of history as a discipline from ancient times to the present. The course examines the evolution of historical theory and philosophy, great historians, schools of interpretation, and problems of historical methodology. This course is a prerequisite for research seminars.

HIST 611 Readings in American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of American history through readings and class discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 615 Readings in European History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of European history through readings and class discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 619 Readings in Ethnic and Social History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of ethnic or social history through readings and class discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 623 Readings in Virginia and Southern History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of Virginia or Southern history through readings and class discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 627 Readings in African-American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of major studies and interpretative trends in a particular area of African-American history through readings and class discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 631 Research in American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of American history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 635 Research in European History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of European history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 639 Research in Ethnic and Social History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of ethnic or social history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 643 Research in Virginia and Southern History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of Virginia or Southern history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 647 Research in African-American History

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. Analysis of significant problems in a particular field of African-American history through research, writing, in-class presentations and discussions. See the Schedule of Classes for specific topics to be offered each semester.

HIST 691 Special Topics in History

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for a maximum of 9 credits. An intensive study of a selected topic in history.

HIST 692 Independent Study

Semester course; 1-3 credits. Maximum of 6 credits. Prerequisite: Permission of department chair. Requires an analysis of a historical problem or topic in depth under faculty supervision.

HIST 693 Internship in History

Semester course; variable hours. 2-4 credits per semester. Maximum of 6 credits. Determination of the amount of credit and permission of departmental internship coordinator must be procured prior to registration for this course. Students receive credit for work on historical projects with approved agencies.

HIST 698 M.A. Thesis

1-6 credits. May be repeated for a maximum of 6 credits.

Homeland Security and Emergency Preparedness(HSEP)

HSEP 101 Homeland Security and Emergency Preparedness

Semester course; 3 lecture hours. 3 credits. An introduction to the public and private-sector dimensions of the broad range of theoretical and practical aspects of homeland security and emergency preparedness, including: origins of natural and terrorist-caused disasters; local, state and federal emergency management planning and operations; health infrastructure capabilities; public communication strategies; business community concerns; ethical, legal and constitutional questions; as well as the social and psychological dimensions of disasters.

HSEP 301/CRJS 367/POLI 367 Terrorism

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 101, POLI 103 and POLI 105 or permission of instructor. A survey of the modern problem of terrorism with an emphasis on the political nature of terrorist acts. Examines the history of terrorism, domestically within the U.S. and internationally, the role of religion, the structures and operations of terrorist organizations, as well as counterterrorism policies and policy making.

HSEP 302/CRJS 368 Emergency Planning and Incident Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 101, POLI 103 and 105, or permission of instructor. An introduction to the basic tasks of emergency preparedness and disaster mitigation, including planning, response and recovery. Special emphasis will be placed on command arrangements, coordination and budgetary issues among emergency responders (law enforcement, firefighters and health care system officials), and within and between federal, state and local governments.

HSEP 310 Risk and Vulnerability Assessment

Semester course; 3 lecture hours. 3 credits. Prerequisites: STAT 210, HSEP 301 and 302, or permission of instructor. An introduction to analytical techniques and methodologies for threat and vulnerability assessment of various types of public and private infrastructure. An all-hazard approach is employed, considering natural disaster, system failure and terrorist attack (conventional or weapons of mass destruction). Special attention will be focused on critical infrastructure protection as well as cyberterrorism.

HSEP 311 Strategic Planning for Homeland Security and Emergency Preparedness

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 301 and HSEP 302 or permission of instructor. An examination of the strategic planning for emergency preparedness, operations and recovery for all hazards, as well as terrorist-prevention security measures. The course will focus on public goods/free rider issues, setting organizational priorities, governmental budgeting choices, legal aspects of government regulation of infrastructure and business community security concerns.

HSEP 320/CRJS 375 The Intelligence Community and the Intelligence Process

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 301 and HSEP 302 or permission of instructor. An examination of the concepts of and challenges for state, local and federal policy making and organization for homeland security and emergency preparedness. The intelligence process — the collection, analysis, sharing and dissemination of information within and between local, state and federal governmental agencies — is a special focus.

HSEP 330/CRJS 330 Legal and Constitutional Issues in Homeland Security and Emergency Preparedness

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 301 and HSEP 302 or permission of instructor. An analysis of the legal and civil liberties changes and challenges brought on by terrorist attacks. Topics addressed may include surveillance issues, federal legislation passed in the aftermath of the terrorist attacks, the rights of foreign nationals, the rights of U.S. citizens, the governmental infrastructure for decisions concerning legal rights and the difficulties of prosecuting terrorist suspects, such as jurisdictional issues, rules of evidence and prosecution strategies.

HSEP 391 Topics in Homeland Security and Emergency Preparedness

Semester course; 3 lecture hours. 3 credits. Maximum total of six credits in all departmental topics courses may be applied to the major. An intensive focus on a specialized field of interest to the study of homeland security and emergency preparedness. See the Schedule of Classes for specific topics to be offered each semester.

HSEP 490 Senior Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisites: 24 credits in homeland security and emergency preparedness courses or permission of instructor. A capstone course examining the major issues related to homeland security and emergency preparedness. Students will be required to produce a research project related to a role-playing in-class simulation of an emergency situation that will include exercises in red-teaming.

HSEP 491 Advanced Topics in Homeland Security and Emergency Preparedness

Semester course; 3 lecture hours. 3 credits. Maximum total of six credits in all departmental topics courses may be applied to the major. An intensive focus on a specialized field of interest to the study of homeland security and emergency preparedness within a seminar setting. See the Schedule of Classes for specific topics to be offered each semester.

HSEP 492 Independent Study

Semester course; 1-4 credits. Maximum total of six credits in all departmental topics courses may be applied to the major. Prerequisites: Junior or senior standing with 12 credits in HSEP courses. Permission of instructor or program director required, with determination of course credit value prior to registration. An independent study that allows students to perform research under the direction of qualified instructor in a subject or field of major interest.

Humanities and Sciences(HUMS)

HUMS 100 Intensified Problem Solving in Chemistry 100

Semester course; 4 workshop hours. 2 credits. Prerequisite: Students must be eligible to take MATH 131 or higher. Corequisite: CHEM 100. Problem-solving sessions will engage students in cooperative learning in open discussions of the elementary principles of chemistry. Students work on chemistry problems in small groups in which each student participates in the presentation of problem solutions to the class. Students receive mock quizzes and exams and will be given assistance on homework problems assigned in their chemistry lecture. This course is for students who do not meet the criteria for enrollment in CHEM 101. These credits may not be used to satisfy any chemistry course requirements in the College of Humanities and Sciences.

HUMS 101 Intensified Problem Solving in Chemistry 101

Semester course; 4 workshop hours. 2 credits. Prerequisite: CHEM 100 with a grade of "C" or higher or a satisfactory score on the Chemistry Placement Test. Students must be eligible to take MATH 151 or higher. Corequisite: CHEM 101. Problem-solving sessions will encompass the fundamental principles and theories of chemistry. Students will form and work in small study groups and must participate in open discussions of the concepts of chemistry. Each student participates in the presentation of problem solutions to the class. Students will receive mock quizzes and exams and will be given assistance on homework problems assigned in the general chemistry lecture. These credits may not be used to satisfy any chemistry course requirements in the College of Humanities and Sciences.

HUMS 102 Intensified Problem Solving in Chemistry 102

Semester course; 3 workshop hours. 2 credits. Prerequisite: CHEM 101 with a grade of "C" or higher, MATH 151 or higher. Corequisite: CHEM 102. Problem-solving sessions will encompass the fundamental principles and theories of chemistry. Students will form and work in small study groups where they engage in cooperative learning and must participate in open discussions of the concepts of chemistry. Each student participates in the presentation of problem solutions to the class. Students will receive mock quizzes and exams and will be given assistance on homework problems assigned in the general chemistry lecture. These credits may not be used to satisfy any chemistry course requirements in the College of Humanities and Sciences.

HUMS 291 Special Topics in the Humanities and Sciences

Semester course; 1-4 credits. May be repeated with different content. Specialized topics in the liberal arts and sciences designed to provide an overview of a topic not provided by an existing course or program. May be multidisciplinary. Graded as pass/fail or normal letter grading at the option of the instructor.

HUMS 391 Special Topics in the Humanities and Sciences

Semester course; variable hours. 1-4 credits. May be repeated with different content. Specialized topics in the liberal arts and sciences designed to provide an overview of a topic not provided by an existing course or program. May be multidisciplinary. Graded as pass/fail or normal letter grading at the option of the instructor.

HUMS 591 Special Topics

Semester course; variable hours. 1-4 credits. May be repeated with different content. Specialized topics in the liberal arts and sciences designed to provide an overview of a topic not provided by an existing course or program. May be multidisciplinary.

Humanities and Sciences Interdisciplinary(HUSI)

HUSI 190 College Seminar

1 lecture hour. 1 credit. May be repeated once for credit. Open only to students who participate in these programs. A seminar designed for first-year programs coordinated through the office of the dean of the College of Humanities and Sciences. Designed to help students integrate general education courses.

HUSI 491 College Topics

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Open primarily to seniors; others with permission of instructor. A discussion of complex issues that are of enduring value or of critical interest to society. The goals of the course are to (1) bring general principles from disciplinary or a variety of disciplinary contexts to bear on specific problems; (2) exercise critical thinking; (3) understand and integrate diverse perspectives; and (4) explore models of decision making, underlying assumptions and implications. See the Schedule of Classes for specific topics to be offered each semester.

Interdisciplinary Science(INSC)

INSC 300 Experiencing Science

Semester course; 5 studio hours. 3 credits. Prerequisites: 4 credits in biology, 4 credits in physical science, 3 credits in mathematics and STAT 208 or STAT 210. Study of the methods and processes used by scientists in investigations. Guided, active replication of great discoveries in major scientific disciplines in physical science, life science and earth science.

INSC 301 Investigatory Mathematics and Science

Semester course; 3 lecture hours. 3 credits. Prerequisites: 4 credits in biology, 4 credits in physical science, 3 credits in mathematics and STAT 208 or STAT 210. Students investigate real world science problems, formulate model solutions to the problems, produce project reports and present their solutions to class. Problems selected from areas including water quality, epidemics and spread of diseases, heat loss and gain, genetics and drugs in the body.

INSC 310 Content of Elementary Science

Semester course; 4 lecture/laboratory hours. 3 credits. Prerequisite: 12 credits of science courses. Designed for preservice elementary school teachers. Develops mastery of select topics in the physical, earth and life science strands appropriate to the K-6 level. Topics will be presented in the context of hands-on activities designed for the classroom, using techniques such as guided inquiry and the learning cycle.

International Studies(INTL)

INTL 101 Human Societies and Globalization

Semester course; 3 lecture hours. 3-4 credits. Four credits with supplementary online lectures and semester project. An interdisciplinary inquiry into sociocultural, literary, artistic, economic and political patterns both globally and in societies with varied historical experiences and divergent contemporary features. The focus of the course is comparative and thematic. It will examine institutional arrangements within societies and how these arrangements have developed, linkages between societies and their constituent organization in a world that is increasingly characterized by globalizing trends, and the implications of rapid social change for personal and collective identities and the structure of public and private relations.

INTL 102/ECON 101 Introduction to Political Economy

Semester course; 3 lecture hours. 3 credits. Seminar on the development of critical thought and economic analysis of policy issues. Focus is on how policy choices affect society and the individual, the economic methodology that guides policy choices, and the institutional and political environments within which policy is derived. Issues cover a broad range of topics including environmental issues, tax policy, inflation expectations, unemployment, foreign trade and the effectiveness of fiscal and monetary policies.

INTL 103/ANTH 103 Introduction to Anthropology

Semester course; 3 lecture hours. 3 credits. A general survey of anthropology with emphasis on learning about and from global cultures, and on the four fields of anthropology.

INTL 104/ANTH 105 Introduction to Archaeology

Semester course; 3 lecture hours. 3 credits. A survey of archaeological sites, methods and theories from around the world, from the earliest human cultures, to the rise and spread of civilizations, to the modern era.

INTL 105/POLI 105 International Relations

Semester course; 3 lecture hours. 3 credits. An introductory analysis of interstate relations and world affairs. Attention focuses on theories of international politics, military capabilities and their application, international organizations, global economic trends, domestic sources of state behavior and other selected issues as appropriate.

INTL 151/MASC 151 Communications Technology and Global Society

Semester course; 1.5 lecture and 1.5 computer-assisted online discussior hours. 3 credits. A comprehensive overview of how communications technologies have shaped and are shaped by, society. Considers how digital and earlier technologies have led to increasing integration of world cultures and economies.

INTL 200/AFAM 200/ANTH 200 Introduction to African Societies

Semester course; 3 lecture hours. 3 credits. This course introduces the student to the African continent, its peoples and cultures. It covers such general characteristics as the physical and geographical features, climate, topography, traditional economies, languages, religions, social systems and other cultural features that are traditional to its people.

INTL 203/FRLG 203 Language and Identity

Semester course; 3-4 lecture hours. 3-4 credits. Taught in English. This course introduces students to both the cohesive and divisive dynamics that language exerts in the world today. Students explore the links connecting different peoples who share a common language as well as their language conflicts in a multilingual world. Students examine the interaction of language with identity in culture, art and nationalism through fiction and nonfiction texts, films and multimedia pertaining to a specific language area, such as: The Francophone World, post-Franco Spain, post-Cold War Germany, the Mayan World or the Swahili World. See the Schedule of Classes for specific topics to be offered each semester.

INTL 204/FRLG 204 Language and Groups in the United States

Semester course; 3-4 lecture hours. 3-4 credits. Taught in English. This course introduces students to the sociocultural experience and formation of identity of non-English-speaking peoples in the United States. Students explore the dynamic between English and a specific heritage language and its interaction with artistic, cultural and social issues through fiction and nonfiction texts, films and multimedia pertaining to specific language group, such as: Latinos, Italian-Americans, German-Americans or Native Americans. See the Schedule of Classes for specific topics to be offered each semester.

INTL 211/ENGL 211 Contemporary World Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101. A study of selected literature published in the last 25 years and chosen from a number of different nations and cultures.

INTL 303, 304/GEOG 303, 304 World Regions

Semester courses; 3 lecture hours. 3, 3 credits. An examination of the various regions of the earth, including land forms, climate, resources, peoples, agriculture and urban conditions. First semester: Anglo-America, Latin America, Western Europe, Eastern Europe, the former USSR. Second semester: Middle East and North Africa, Africa (south of the Sahara), Indian subcontinent, China, Japan, Southeast Asia, Oceania.

INTL 305/ANTH 305 Comparative Perspectives on Cultures and Societies

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103. Examination of the theoretical, methodological and ethical problems that arise from anthropological comparisons of cultures.
Effective Fall 2006 INTL 453/ANTH 453 Comparative Perspectives on Cultures and Societies
Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103. Examination of the theoretical, methodological and ethical problems that arise from anthropological comparisons of cultures.

INTL 307/AFAM 307/RELS 307 Black Religion

Semester course; 3 lecture hours. 3 credits. An analysis of the role of religion in the lives of blacks with an emphasis on African religions and philosophies, the black church in America, and the roles of the various faiths, sects and cults.

INTL 311, 312/RELS 311, 312 Religions of the World

Semester course; 3 lecture hours. 3, 3 credits. An investigation of the historical, cultural and theological foundations and development of major world religions. First semester: Hinduism, Buddhism, Confucianism, Taoism and Shinto. Second semester: Zoroastrianism, Judaism, Christianity and Islam.

INTL 314/BIOL 315/ENVS 314 Man and Environment

3 lecture hours. 3 credits. Not applicable to the biology major. A comparative study of the ecology and natural history of human populations, including the environments as determining factors in the evolution of human institutions and technology, resources management and population crises; cultural traditions as mechanisms of population control; basic theory of population biology.

INTL 315/AFAM 315/ECON 315 Economic Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210 or ECON 203, and junior standing. Introduction to the process of economic development. Surveys development theory and experiences of underdeveloped countries of Africa, Asia, Latin America and the Caribbean and of developed countries. Explores obstacles to development and policies and tools for stimulating economic development.

INTL 317/RELS 317 Islam

Semester course; 3 lecture hours. 3 credits. A study of the emergence of Islam in Arabia in the seventh century and its subsequent developments, including a look at the Qur'an (the holy book), the Prophetic traditions, the concept of God, as well as mysticism (sufism) and law (shari'ah) and an overview of ritual practices, fundamental beliefs, theological principles and current issues in Islam and international relationship.

INTL 327/MGMT 329 Introduction to Intercultural Communication

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. An introduction to the basic concepts, principles and skills for improving verbal and nonverbal communication with persons from different cultures. Using a cultural general approach, topics discussed include the concept of culture, barriers to intercultural communication, verbal communication process and nonverbal communication aspects. Appropriate for business and non-business majors.

INTL 328/SOCY 328 Russian Society in Transition

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or permission of the instructor. An analysis of Russian culture and social institutions as they are today and in historical perspective. Throughout the course interrelationships among politics, the economy and social life are examined, with particular emphasis on the ideological implications of Russian/Soviet architecture, art and mass media; on environmental issues and health; on social problems and the legal systems; and on gender, the work world and family interaction.

INTL 329/ECON 329 International Economics

3 lecture hours. 3 credits. Prerequisites: ECON 210-211 and junior standing. An analysis of economic and political influences on exports and imports, balance of payments, foreign investment, exchange rates and international monetary systems.

INTL 330/SOCY 330 Global Societies: Trends and Issues

Semester course; 3 lecture hours. 3 credits. Prerequisite: INTL/POLI 105 or POLI 201 or SOCY 101. An analysis of factors that are promoting the globalization of social, economic and political relations, and an inquiry into implications of these developments for individuals, localities, nations and the world community. The course will highlight the impact of culture and ethnicity, historical and emerging patterns of international business activity and their societal significance, divergent strategies for economic and social development in the world's regions, and the effects of population growth and environmental problems on public life within and among nations.

INTL 331/SPAN 331 Survey of Latin American Literature

Semester courses; 3 lecture hours. 3 credits. Prerequisite: Spanish through the intermediate level or the equivalent. Conducted in Spanish. An introduction to major authors and trends up to the present.

INTL 333/AFAM 333/GEOG 333 Geography of Africa

Semester course; 3 lecture hours. 3 credits. A study of the land forms, climate, peoples, livelihoods, settlement patterns, and cultural groupings of sub-Saharan Africa.

INTL 334/GEOG 334 Regional Geography of _____

Semester course; 3 lecture hours. 3 credits. A study of the land forms, climate, resources, peoples, agricultural and urban conditions in a specific region such as North America, Europe, Latin America, the Middle East and India, the USSR and Eastern Europe. See the Schedule of Classes for specific region to be studied each semester.

INTL 340/GEOG 340/URSP 340 World Cities Outside of North America

Semester course; 3 lecture hours. 3 credits. An examination of urban habitats in a variety of geographical regions with emphasis on their differences and their common experiences.

INTL 341/RELS 340 Global Ethics and the World's Religions

Semester course; 3 lecture hours. 3 credits. A critical survey of ethical concepts and issues in the thought and practice of major religious traditions. Comparison of ethical perspectives on selected themes and attention to cooperative efforts toward a global ethic.

INTL 345/FRLG 345/URSP 350 Great Cities of the World

Semester course; 3 lecture hours. 3 credits. This course may be repeated under different topics for a total of 6 credits. Prerequisite: Sophomore standing or permission of instructor. An interdisciplinary course with a focus on the origin, expansion and significance of one or more cities, the specifics of its/their culture and the role of language. Particular emphasis will be placed on relating the physical, social and economic aspects of the city's growth and development to the cultural expression of urbanism.

INTL 348/ANTH 348 South American Ethnography

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. General ethnographic survey of both highland and lowland indigenous cultures of South America and cultural changes as a result of European contact.

INTL 349/ANTH 349 Rethinking a Continent: Latin America

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. This course surveys contemporary cultures of Latin America. It addresses historical sociocultural developments from an anthropological perspective and introduces concepts from social justice studies, development anthropology and applied anthropology.

INTL 350/ANTH 350 Rethinking a Continent: Europe

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. A survey of historical sociocultural developments from an anthropological perspective with an emphasis on integrative and disintegrative forces that have shaped cultures and identities in Europe. Introduces concepts from sociocultural anthropology, social justice studies and applied anthropology.

INTL 351/POLI 351 Governments and Politics of the Middle East

Semester course; 3 lecture hours. 3 credits. A comparative analysis of political systems in the Middle East including the study of contemporary aspects in the Middle Eastern states. The courses will explore the primary bases of cleavage and conflict and the political forces that shape the policies and political dynamics of the region.

INTL 352/POLI 352 European Governments and Politics

Semester courses; 3 lecture hours. 3 credits. A comparative study of the political systems of selected western and eastern European countries.

INTL 353/POLI 353 Latin American Governments and Politics

Semester course; 3 lecture hours. 3 credits. A survey of politics characteristic of Latin American systems, including democratic reformism, military authoritarianism and revolutionary socialism. The course also examines the contemporary problems of fledgling democracies as they cope with economic and debt crises and various opposition challenges.

INTL 354/POLI 354 Russian and Post-Soviet Politics

Semester course; 3 lecture hours. 3 credits. A study of the origins, institutions, processes and disintegration of the Soviet political system, and of the ongoing reform efforts during the post-Soviet period. Special emphasis is placed on the politics of the transition to a democratic political system and a market economy. Other topics include nationality issues, social problems and foreign policy.

INTL 355/POLI 355 Asian Government and Politics

Semester course; 3 lecture hours. 3 credits. A comparative analysis of the politics and governments of major Asian states, with a focus on Japan, China and India.

INTL 356/POLI 356/AFAM 356 Government and Politics of Africa

Semester course; 3 lecture hours. 3 credits. This course will introduce the student to the basic outlines of government and politics in Africa. The course will consider such topics as colonialism, elitism and nationalism and modernization strategies. Using the comparative approach, the course will primarily focus on West, East and Central Africa.

INTL 357/POLI 357/AFAM 357 Politics of Southern Africa

Semester course; 3 lecture hours. 3 credits. An examination of racial and political developments in the southern tip of Africa. While South Africa will be the primary focus of analysis, other countries in the region such as Zimbabwe, Angola and Mozambique will be studied.

INTL 358/POLI 358 Concepts of Comparative Government

Semester course; 3 lecture hours. 3 credits. Comparative study of politics and governments. Introduces concepts and theories used in the study of political systems. Topics include democratization and democratic governance, the role of the state, one-party and military regimes, revolution, and economic and political development.

INTL 360/RELS 350 World Classics of Spirituality

Semester course; 3 lecture hours. 3 credits. A critical reading of selected works from among the spiritual classics of Judaism, Christianity, Islam, Hinduism, Taoism and other religious traditions.

INTL 361/POLI 361 Issues in World Politics

Semester course; 3 lecture hours. 3 credits. An exploration of several significant issues in world politics. Topics may include peacekeeping and collectiveness, global environmental politics as well as selected others. Topics will vary with current events and trends in the international arena.

INTL 362/POLI 362 International Organizations and Institutions

Semester course; 3 lecture hours. 3 credits. A study of the background development structure and operations of organizations and institutions such as the United Nations, the European Community, the Organization of American States.

INTL 363/POLI 363 U.S. Foreign Policy

Semester course; 3 lecture hours. 3 credits. A analytical survey of processes and practices in the formulation of U.S. foreign policy, including an introduction to the goals, problems of implementation and current challenges faced by policy makers.

INTL 364/POLI 364 Vietnam

Semester course; 3 lecture hours. 3 credits. An analysis of the complete record of the conflict in Vietnam. The primary focus will be on the period of U.S. involvement. The course will examine closely how and why the United States became involved in Vietnam and what impact the Vietnam War has had on political institutions and behavior. In particular, the course will examine what impact the period of U.S. involvement has had upon U.S. foreign policy. The course also will consider additional topics including: public opinion and the war, the relationship between the president and Congress in light of the war and contemporary U.S. politics as a backlash against the political movements of the 1960s.

INTL 365/POLI 365 International Political Economy

Semester course; 3 lecture hours. 3 credits. A survey of both theoretical and current policy issues in international political economy. Theories to be covered include liberalism, mercantilism, Marxism, regionalism, world systems theory and others. Policy issues include differing styles of capitalism in the industrialized world, the political economy of development, the politics of international corporate alliances and others.

INTL 366/AFAM 363/ENGL 363 African Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in 200-level literature course (or equivalent). A survey of the literature of Africa with particular emphases on fiction and on West Africa. Some attention also will be given to orature.

INTL 367/AFAM 365/ENGL 365 Caribbean Literature

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A survey of West Indian writings. Attention will be given to African, European and Amerindian influences, as well as to the emergence of a West Indian literary tradition.

INTL 368/WMNS 366/POLI 366 Women and Global Politics

Semester course; 3 lecture hours. 3 credits. A study of women and global politics, providing both a feminist re-examination of traditional international-relations theories and a comparative analysis of the political, legal and economic status of the world's women. The impact of women on global political institutions such as the United Nations will be addressed as well as other feminist and grass roots means of taking political action.

INTL 370/AFAM 350/MHIS 350 Studies in the Music of the African Continent and Diaspora

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. Prerequisite: MHIS 243, MHIS/AFAM 250 or permission of instructor. An in-depth examination of selected topics and issues in African-derived musical and cultural traditions. See the Schedule of Classes for specific topics to be offered each semester.

INTL 372/WMNS 372/RELS 372 Global Women's Spirituality

Semester course; 3 lecture hours. 3 credits. Explores the spiritual writings of women in various cultures and religious traditions.

INTL 378/MRBL 378 International Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 308 or permission of department chair, and junior standing. This course is designed to orient students toward global marketing and to develop an understanding of the differences among foreign marketing environments. Subject areas emphasized are the differences and similarities between domestic and international marketing and changes in the international marketing environment. This course also introduces students to international marketing policies.

INTL 381/ANTH 381 Modern Identities: Nation Building

Semester course; 3 lecture hours. 3 credits. Critically explores how nation building and national identities have developed over the last two centuries among peoples across the globe. Class discussions will examine theoretical perceptions of these processes and focus on how they shaped and shape realities in different times and places.

INTL 390/FASH 390 Historic and Ethnic Textiles

Semester course; 3 lecture hours. 3 credits. Prerequisite: FASH 290 or IDES 446 or permission of instructor. An examination of the history of textile design and production around the world.

INTL 391/FLET 391 Topics in Foreign Literature in English Translation

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for a maximum of 12 credits. An in-depth study of selected topics in foreign literature. This course will not satisfy foreign language requirements. No knowledge of a foreign language is required. All work is done in English.

INTL 398 Directed Study Abroad

Semester course; variable hours. 0-8 credits per semester. May be repeated for a maximum of 8 credits with approval of student's major department. Permission of academic adviser required. A course involving travel and/or residence in a foreign country as features of the student's work on a pre-arranged project. Intended primarily for students participating in student exchange programs.

INTL 409/RELS 409 Modern Islamic Thought and Global Trends

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 312 or 317, or permission of instructor. Introduces students to the integral relationship of Islam to major events of global concern and contextualizes these events into the wider modern and postmodern developments of Islamic thought and its intellectual and ideological self interrogation. This course will provide students with the opportunity to study both the background of modern Islamic thought and selected contemporary events.

INTL 410/PHIL 410/RELS 410 The Chinese Tradition in Philosophy

Semester course; 3 lecture hours. 3 credits. A study of the development of Confucianism, of alternative ways of thought prior to the fall of the Han Dynasty and of neo-Confucianism. The systems of thought are examined in the light of their social, political and religious impact on China, Korea and Japan.

INTL 412/PHIL 412/RELS 412 Zen Buddhism

Semester course; 3 lecture hours. 3 credits. A study of Zen Buddhism, including backgrounds in Indian philosophy and practice, development in China and Korea, and present day Zen theory and practice in Japan and in Western countries.

INTL 413/FIRE 413 Comparative Financial Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 311 and junior standing. An analysis of the structure and functioning of financial systems in different parts of the world. Emphasis is on the evolution of such systems in relation to the U.S. financial system. Different regions of the world may be studied in different semesters.

INTL 415/ANTH 415 Economic Anthropology

Semester course; 3 lecture hours. 3 credits. Provides an overview of the anthropological approach to the "economic" in social life. Analyzes the role played by systems of reciprocity and exchange in ethnographic contexts. Concepts employed by anthropologists in the study of traditional subsistence economies are used to examine modern industrialized societies.

INTL 416/FIRE 416 International Financial Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 311 and junior standing. Financial management of business in an international environment. Emphasis on tools and techniques to prepare financial managers of multinational firms to effectively respond to the challenges of the international environment.

INTL 418/MGMT 418 International Management

3 lecture hours. 3 credits. Prerequisite: junior standing. The study of the environment of international business, ethics and social responsibility in international settings, culture and its effect on behavior and management practice, and the strategies and management practices of firms engaged in international activities. Aims to provide students with the knowledge, skills and sensitivities needed to be effective managers in the international business environment.

INTL 419/MGMT 419 Doing Business in Europe

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing and permission of instructor. Designed primarily as a core integrative course for students enrolled in the Certificate in International Management Studies, but other students are welcome. The course has three goals: a) integration of Foreign Languages, European Studies and International Management; b) infusion of other business areas relevant to doing business in Europe (such as international marketing, finance law and economics); and c) the development of cultural sensitivity and social responsibility. The course will be organized as a series of seminars with faculty and other speakers from the above disciplines.

INTL 420/AFAM 420/ANTH 420 Women of Africa

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103 or AFAM 103 or permission of instructor. This course looks at the traditional roles of women in African societies and examines how women have coped in different environments. It focuses on the institutionalized aspects of similarities and differences in women's lives in pastoral and horticultural societies and those with mixed economies, and will contrast these with women's roles in large state societies of Africa and in the modern urbanized context.

INTL 421/SPAN 421 Civilization of Latin America II

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to 6 credits. Prerequisite: Completion of nine credits of Spanish at the 300 level, including SPAN 320 or 321, or the equivalent (including those specifically required for certain courses). This course explores the cultural diversity of Latin America and the social and political forces behind cultural change. Topics will focus on a specific interdisciplinary theme, such as urban life, the politics of identity and on a specific area of Latin America. See the Schedule of Classes for the specific topic to be offered each semester.

INTL 425/RELS 425/ANTH 425 Religion, Magic and Witchcraft

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. A survey of the nature and variety of beliefs outside of the major streams of religious thought. Among topics considered are myth, totemism, taboo and sorcery. Emphasis on understanding supernatural beliefs and practices in relation to culture and society.

INTL 441/RELS 441 Islamic Mysticism: the Sufis

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 312 or 317, or permission of instructor. Introduces students to the major Sufi masters and their works. It covers ideological and practical development of Islamic mysticism as compared to the developments within Islam itself.

INTL 446/MGMT 446 International Human Resource Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 331. Covers the application of human resource management activities in an international environment. Similarities and differences in domestic methods are highlighted to aid understanding. Contemporary practices in the selection, development, compensation and maintenance of expatriates, impatriates, repatriates, host country nationals and third-country nationals are studied. Regulatory and cultural dimensions of countries are examined.

INTL 449/RELS 450 Religion, Globalization and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: nine credits in religious studies or international studies or some combination, or permission of instructor. Explores the role religions are playing in the work of building a socially just and environmentally sustainable world community.

INTL 450/FREN 450 Francophone Literatures and Cultures

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: FREN 300 or FREN 301, and at least one additional French course at the 300 level, or permission of instructor. Conducted in French. Introduces students to the literatures and cultures of the Francophone world. Provides an overview of the Francophone world and an in-depth study of literary works written in French from Africa, the Caribbean, North America, Asia and Europe. Also explores the impact of colonial history on Francophone literatures and cultures. See the Schedule of Classes for the specific topic to be offered each semester.

INTL 451/RELS 451/AFAM 451 Religion, Racism and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: nine credits in religious studies, African American studies or international studies or some combination, or permission of instructor. Explores the complex history and contemporary relationships between religion, racism and social justice.

INTL 452/POLI 452 Seminar in the Politics of Developing Areas

Semester course; 3 lecture hours. 3 credits. Analysis of the processes of political and economic development. Includes a study of various challenges facing developing countries, such as economic inequalities, environmental degradation, mass political participation, military coups, revolution and civil war.

INTL 453/RELS 453/WMNS 453 Western Religions, Women and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: at least three credits in religious studies and six credits in women's studies and/or international studies, or permission of instructor. This course explores the experience and portrayal of women in the three Abrahamic traditions: Judaism, Islam and Christianity. Study focuses on how these religions and their texts bear upon the social, economic, political and spiritual lives of women. Special attention is given to the impact of globalization and religious fundamentalism on women.

INTL 454/ENGL 454/ANTH 450 Cross-cultural Communication

Semester course; 3 lecture hours. 3 credits. A study of the dynamics of cross-cultural communication which applies linguistic tools to understanding cultural issues and solving communication problems.

INTL 455/ANTH 455 Anthropology of Development and Globalization

Semester course; 3 lecture hours. 3 credits. Prerequisite: INTL 101. May be taken for a maximum of nine credit hours in three different world areas. Consists of a global study of the developing Third World with particular emphasis on rural populations, subsistence farmers, indigenous groups and small entrepreneurs. Focuses on development and globalization while providing insights into the peasantry as a class, women in peasant societies, changes in peasant societies and the peasantry as a player in the policies of the modern state.

INTL 456/RELS 455 Catholic Ethics and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: six credits in religious studies. An exploration of the Catholic church's major theological, ethical, constitutional and strategic concerns, and an analysis of Catholic social teaching and its relation to current social issues such as abortion, peace and conflict, poverty, and human rights.

INTL 468/POLI 468 Seminar on Comparative Foreign Policy

Semester course; 3 lecture hours. 3 credits. A study of theories, models and hypotheses of foreign policy behavior in various types of political systems with emphasis on empirical research and analysis of differences and similarities.

INTL 478/MRBL 478 Global Internet Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 308 and MRBL 378, or permission of instructor. Course examines global Internet marketing as a necessary ingredient to successful global marketing strategy in the 21st century. Students engage in analyzing international markets — market evaluation, competitive analysis, market comparison and selection — using Web-based information and tools. Discussion includes comparison of e-business versus traditional business perspectives on marketing strategies and tactics.

INTL 490 Seminar in International Issues

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: INTL 101 or INTL 105, and junior or senior standing, or permission of instructor. An individualized research project focusing on international issues and undertaken in a seminar setting.

INTL 491 Topics in International Studies

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. An in-depth study of a particular topic in international studies. See the Schedule of Classes for specific topics to be offered each semester.

INTL 492 Independent Study

Semester course; variable hours. 1-3 credits. Maximum total of 4 credits in all independent study courses. Generally open to students of junior and senior standing who have acquired at least 12 credits in international studies courses. Determination of amount of credit and permission of instructor and director must be obtained before registration of the course.

INTL 493 International Studies Internship

Semester course; 50 clock hours in a local, national or international internship placement per credit. Variable credit. 1-6 credits with a maximum of 6 credits. Prerequisites: junior or senior standing, and approval of selection committee or program director. The internship is designed to present opportunities for qualified students to acquire exposure to internationally oriented public and private organizations and agencies. The course includes a rigorous evaluation of the internship experience based on learning objectives stipulated in a contract between the student, faculty adviser and a field supervisor.

INTL 499 Senior Seminar

Semester course; 1 lecture hour. 1 credit. Prerequisite: completion of 15 credits at the 300 and 400 level or the equivalent. Focuses on self-assessment, compilation of a portfolio and curriculum vitae, career and graduate school preparation and on the lifelong application of skills and knowledge acquired in the program. Students will critically assess their experience in the international and area studies program.

INTL 500/SOCY 515 Globalization and Transformation: Concepts and Realities

Semester course; 3 lecture hours. 3 credits. Examines how globalization significantly affects cultural processes at both local and national levels. Transformations of cultural understandings and practices under such circumstances will be explored. Virtual course components will bring causes, processes and consequences of the transformations of Western, Eastern and developing countries into focus.

INTL 514/NURS 514 International Perspectives on Community Health in Developing Countries

Semester course; 1 lecture and 2 laboratory hours. 3 credits. This course may be taken for a maximum of 6 credits in two different world areas. Open to undergraduate (junior or senior level) and graduate students. Explores the impact of national and international policy decisions on the health and well-being of individuals and communities (country varies semester to semester). Examines the relationship of cultural beliefs and values on health-seeking behaviors. Allows students to become immersed in a culture different than their own. Evaluates the impact of international conflict and economic development on the health status of the community. See the Schedule of Classes for location.

INTL 591 Topics in International Studies

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for a maximum of 12 credits. Open to undergraduate (junior or senior level) and graduate students. A detailed study of selected topics in one or more geographic areas or comparative studies of global phenomena. See the Schedule of Classes for specific topics to be offered each semester.

Italian(ITAL)

ITAL 101-102 Elementary Italian

Continuous courses; 5 lecture/recitation hours. 4-4 credits. Elementary grammar, reading and oral drill.

ITAL 201 Intermediate Italian

Semester course; 3 lecture hours. 3 credits. Continuation of the essentials of grammar with emphasis on achieving proficiency in aural comprehension, speaking, reading and writing skills.

ITAL 202 Intermediate Italian Readings

Semester course; 3 lecture hours. 3 credits. Prerequisite: ITAL 201 or the equivalent. Designed to increase the student's proficiency in Italian through the study of selected cultural and literary texts.

ITAL 205 Intermediate Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ITAL 201 or the equivalent. Designed to increase the student's proficiency in the spoken language through audio-oral exercises, dialogues and free conversation.

ITAL 300 Advanced Composition and Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisites: Italian courses through the intermediate level or the equivalent. Development of advanced written and oral skills through both systematic review of Italian grammar with emphasis on the elements of style and vocabulary building, and conversational activities based on a variety of situations. Conducted in Italian.

ITAL 320 Italian Cinema: _____

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisites: Italian courses through the intermediate level or the equivalent. Traces Italian cinema from Neorealism to contemporary cinema, exploring genres such as comedy and Westerns as well as landmark works by important directors such as Fellini, Lizzardi, Zavattini and Antonioni. See the Schedule of Classes for specific topic to be offered each semester. Conducted in Italian.

ITAL 330 Themes in Italian Literature: _____

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisites: Italian courses through the intermediate level or the equivalent. An in-depth study of selected topics in Italian texts, such as religion, identity, urbanism or health. See the Schedule of Classes for specific topic to be offered each semester. Conducted in Italian.

ITAL 391 Topics in Italian

Semester course; variable hours. 1-3 credits. May be repeated with different topics for a maximum of 6 credits. An in-depth study of selected topics in Italian. See the Schedule of Classes for specific topics to be offered each semester.

Language Skills(LASK)

LASK 103/LING 103 Introduction to Languages

Semester course; 3 lecture hours. 3 credits. A course designed to help students understand how languages function through a survey and contrastive analysis of language systems, with attention to the sociocultural, psychological and historical aspects of languages. Completion of this course does not qualify a student to take the 200 level of a language without passing a language placement test.

LASK 203 Classical Elements in the English Language

Semester course; 3 lecture hours. 3 credits. Development of English vocabulary through a study of Greek and Latin elements in English: derivatives, roots and loan words. Some emphasis on the special vocabularies of the sciences.

Latin(LATN)

LATN 101-102 Elementary Latin

Continuous courses; 4 lecture hours. 4-4 credits. First semester: a study of the Latin language with emphasis on the Latin elements found in English. Latin vocabulary. Second semester: introduction to Latin authors and related aspects of Roman civilization.

LATN 201-202 Readings in Latin Literature

Continuous courses; 3 lecture hours. 3-3 credits. Brief grammar review with a parallel study of political and literary trends and developments as found in several of the major Latin writers. First semester: prose, with emphasis on Cicero, Pliny the Younger and Sallust. Second semester: poetry, with selected readings from Catullus, Tibullus, Ovid and Vergil.

LATN 330 Themes in Latin Literature: _____

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisites: Latin courses through the intermediate level or the equivalent. An in-depth study of selected topics such as science and medicine, law, or satire in works by authors such as Caesar, Cicero, Horace, Catullus, Ovid, Virgil, Marcus Aurelius and Lucretius. See the Schedule of Classes for specific topic to be offered each semester. Texts are in the original language.

LATN 331 Representative Authors in Latin Literature: _____

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisites: Latin courses through the intermediate level or the equivalent. Selected readings by authors from the Archaic Period, the Classical Age, Silver Age and Patristic Latin with a focus on their impact on the political and social agendas of the day and on us today. See the Schedule of Classes for specific topic to be offered each semester. Texts are in the original language.

Linguistics(LING)

LING 103/LASK 103 Introduction to Languages

Semester course; 3 lecture hours. 3 credits. A course designed to help students understand how languages function through a survey and contrastive analysis of language systems, with attention to the sociocultural, psychological and historical aspects of languages. Completion of this course does not qualify a student to take the 200 level of a language without passing a language placement test.

LING 401/SPAN 401 Comparative Structures

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. A comparison of English and Spanish, with emphasis on pronunciation and problems encountered in the teaching of Spanish. See the Schedule of Classes for the specific topic to be offered each semester.

LING 402/SPAN 402 Language Issues in the Spanish-speaking World

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. Through a variety of topics this course explores the links between language and human behavior as exemplified by language phenomena in the Spanish-speaking world. Topics will be drawn mainly from sociolinguistics, language and culture, and education and applied linguistics. See the Schedule of Classes for the specific topic to be offered each semester.

LING 449/ENGL 449/ANTH 449 Introduction to Linguistics

Semester course; 3 lecture hours. 3 credits. An introduction to methods of language analysis, emphasizing the study of sounds and sound patterns, and units of meaning and their arrangements. May not be used to satisfy the literature requirement of the College of Humanities and Sciences. For English majors, these courses (limit of six credits) may be counted as part of graduate or undergraduate degree, but not both.

LING 450/ENGL 450 Modern Grammar

Semester course; 3 lecture hours. 3 credits. Study of modern English grammar and usage with some attention to linguistic theory. Recommended for teachers at all levels. May not be used to satisfy the literature requirement of the College of Humanities and Sciences. For English majors, these courses (limit of six credits) may be counted as part of graduate or undergraduate degree, but not both.

LING 451/ENGL 451 History of the English Language

Semester course; 3 lecture hours. 3 credits. The historical development of the English language; etymology, morphology, orthography and semantics. May not be used to satisfy the literature requirement of the College of Humanities and Sciences. For English majors, these courses (limit of six credits) may be counted as part of graduate or undergraduate degree, but not both.

LING 452/WMNS 452/ENGL 452 Language and Gender

Semester course; 3 lecture hours. 3 credits. A study of relationships between gender and language by focusing on such issues as differences between the ways women and men use language, relationships between language and power and ways in which language reflects and reinforces cultural attitudes toward gender. May not be used to satisfy the literature requirement of the College of Humanities and Sciences. For English majors, these courses (limit of six credits) may be counted as part of graduate or undergraduate degree, but not both.

LING 453/ENGL 453 Introduction to Modern Rhetoric

Semester course; 3 lecture hours. 3 credits. An introduction to the broad range of modern rhetorical theories, emphasizing their relationships and linguistics, literary criticism and the process of writing. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

LING 552/ENGL 552/TEDU 552 Teaching English as a Second Language

Semester course; 3 lecture hours. 3 credits. Provides students who plan to teach English to people whose native language is not English with techniques used in teaching foreign languages. Contrastive analysis of morphology, phonology and syntax are used to isolate areas of difficulty in learning English.

Mass Communications(MASC)

MASC 101 and MASC 203 are prerequisites for all 300- and 400-level MASC courses.

MASC 101 Mass Communications

Semester course; 2 lecture and 2 laboratory hours. 3 credits. A broad survey of mass media, with emphasis on new media, global media and the business of media as traditional lines blur among journalism, advertising and public relations. The history and evolution of mass media are examined. Emphasis is given to mass media law and ethics, including the origins and evolution of a free press and the legal framework of contemporary mass media practice.

MASC 151/INTL 151 Communications Technology and Global Society

Semester course; 1.5 lecture and 1.5 computer-assisted online discussion hours. 3 credits. A comprehensive overview of how communications technologies have shaped and are shaped by society. Considers how digital and earlier technologies have led to increasing integration of world cultures and economies.

MASC 203 Writing for Mass Media

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: MASC 101, ENGL 101, completion of Knowledgenet assessments for "Microsoft Office 2000 Intermediate Word" and "PowerPoint," cumulative GPA of 2.35, and sophomore standing. Students must obtain permission to register from the School of Mass Communications. Study and practice in fact gathering and development of the basic skills needed for writing for the media. Focus on newswriting stressing grammar skills and knowledge of current affairs. Writing on deadline using word-processing software and hardware.

MASC 290 Ethical Problems in Mass Media

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 101 or permission of school. Examination and analysis of contemporary issues and problems in conventional and new media. The philosophical foundation and principles of ethical decision making are explored. Critical and unresolved issues are discussed within the legal and ethical framework of modern mass media practice. Students are required to design and justify resolutions to the issues and present defenses for the resolution proposals.

MASC 300 Media Graphics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 101 and MASC 203. For mass communications majors only. A course on the functions of visual and graphic communication in the print and electronic media. Course focuses on creative typographic and layout design, editing, pictures and nonverbal elements of communications and perception, and integrates computer software packages such as PageMaker, Quark and others. Effective Fall 2006 MASC 300 Media Graphics
 Prerequisites: MASC 101 and 203. For mass communications majors only. A course on the functions of visual and graphic communication in the print and electronic media. Focuses on creative typographic and layout design principles and integrates practice in editing, graphic creation, digital-image manipulation and professional publishing. Students gain hands-on experience with state-of-the-art computer graphics and layout programs.

MASC 303 General Assignment Reporting

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: MASC 101 and MASC 203. For mass communications majors only. Detailed study in gathering and reporting facts, with emphasis on clarity and maturity of writing. The intent is to build skills in interviewing, to provide practice in writing general news and features and to prepare for entry-level reporting assignments.

MASC 305 Copy Editing

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisites: MASC 101, MASC 203 and MASC 300. For mass communications majors only. Instruction and practice in basic newspaper editing with a focus on practical experience in editing local and news service copy for publication. Includes emphasis on headline writing, development of news judgment, accuracy and fairness while exposing students to legal problems confronting a copy editor. Some attention will be paid to layout and design of newspapers.

MASC 323 Public Relations

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101 and MASC 203. For mass communications majors only. Study of public relations principles and practices, including analysis of tools, media, ethical responsibilities and emerging technologies. Special attention to the theory and research literature on rational and ethical persuasion.

MASC 333 Public Relations Writing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101, MASC 203 and MASC 323. For mass communications majors only. An intensive writing course focusing on researching and writing materials in support of the public relations function. Practice in preparing materials for controlled and uncontrolled media, both print and broadcast, including news releases, interview protocols, special events background materials, media kits, employee newsletters, community relations materials and formal public speaking scripts. Explores routine, special event and crisis situations, and the link between written and audiovisual documents.

MASC 335 Public Relations Production

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 333 and SPCH 321. For mass communications majors only. Instruction and practice in public relations writing styles including speeches, public service announcements and Web writing. Practice in production of broadcast and computer-based materials for public relations, oral presentations, and special events planning and implementation.

MASC 341 Feature and Article Writing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 303 or MASC 363, or permission of instructor. For mass communications majors only. Practice in preparing articles and features for newspapers and magazines. Emphasis is on creative journalistic writing and development of writing skills.

MASC 359/WRLD 359 International Media Coverage: The Middle East

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 101 or MASC 151, or permission of instructor. This interdisciplinary course, explores the media's role in covering cultural, political, religious and other issues in the Middle East. Students will examine the role and impact of the media in both the United States and Middle East in shaping global and regional public opinion. Using webcam and online technology, VCU students will discuss cross-cultural perspectives with students from the other U.S. universities and universities in the Middle East.

MASC 361 History and Development of Broadcasting

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101 and MASC 203. For mass communications majors only. An examination of the regulatory, technical, economic and creative foundations of the broadcast media. Historical, contemporary and ethical issues in broadcasting also are addressed.

MASC 362 Photojournalism

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101 and 203. For mass communications majors only. Examination of theoretical, technical and practical use of photography in communications and reporting, along with theories and legal guidelines of photojournalism. Training in news photography and its application in converged media. Students must have their own manually operable 35 mm single lens reflex (SLR) film or digital SLR cameras (minimum 3.2 megapixels) with at least a 50 mm lens or a zoom lens capable of 50 mm shooting.

MASC 363 Introduction to Broadcast Writing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101 and MASC 203. Corequisites: MASC 365 and MASC 366. For mass communications majors only. Students will concentrate on developing news writing and reporting skills for television and radio. Course work will include weekly writing assignments and the production of broadcast-quality radio and television stories. Knowledge of current events is essential.

MASC 365 Audio Production

Semester course; 3 laboratory hours. 1 credit. Prerequisites: MASC 101 and MASC 203. Corequisites: MASC 363 and MASC 366. For mass communications majors only. Students will learn the purpose, function and execution of basic techniques of audio field and studio production operations. Emphasis will be placed on the production of broadcast-quality audition tapes. Fieldwork production, remote production and live production, along with audio editing, also will be covered.

MASC 366 Video Journalism I

Semester course; 3 laboratory hours. 1 credit. Prerequisites: MASC 101 and MASC 203. Corequisites: MASC 363 and MASC 365. For mass communications majors only. Students will learn the purpose, function and execution of basic techniques of television and video field production, including nonlinear editing. Also covers studio operations as they relate to broadcast news. Emphasis will be placed on the production of broadcast-quality news video.

MASC 380 Introduction to Advertising

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101 and MASC 203. For mass communications majors only. An overview of the advertising industry. A practitioner-oriented approach to the creation, preparation and evaluation of advertising. The course views the subject from the perspective of integrated marketing communication.

MASC 392 Advertising Copywriting

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 101 and MASC 380. For mass communications majors only. Study of the different types of advertising copy used by both local and national advertisers. Practice in writing consumer, trade and industrial copy.

MASC 393 Creativity for Television

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 380. For mass communications majors only. Learn the process of developing professional-level television advertising with a concentration in creative thinking and solutions. Students create TV commercials with attention to scripts, storyboards, talent, visual composition, editing, music, sound effects and direction.

MASC 394 Advertising Art Direction

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 300 and MASC 380. For mass communications majors only. Study and practice in layout and design of advertising for all media. Ideas will be followed from concept to production.

MASC 398 Advertising Account Planning and Media Strategy

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 380 or MASC 323. For mass communications majors only. An examination of the methods advertisers use to learn about consumers and what motivates purchase decisions. The techniques account planners and market researchers employ, including quantitative and qualitative research, demographics, psychographics, and social and anthropological studies. Consumer research as applied to the development of media strategies. Practical problems in planning and buying media as they relate to integrated marketing campaigns.

MASC 399 Advertising Account Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 380. For mass communications majors only. This course is designed to prepare students for careers in the business of advertising, particularly for those interested in careers as account executives. The class will focus on account management and the theories behind those management practices. Topics covered include relationship and services management, communication skills (writing creative briefs, client communications, listening skills, presentation skills), negotiation tactics, team management, leadership and organizational skills.

MASC 403 Advanced Reporting

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: MASC 303. For mass communications majors only. Intensive study of the techniques of reporting meetings and news of public affairs. Attention will be paid to covering governmental agencies at all levels. Instruction in newspaper editing included. Quality of writing will be a paramount and continual consideration.

MASC 404 Specialized Project Reporting

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: MASC 303. For mass communications majors only. An advanced course to provide news beat experience for students reporting on complex issues facing the public in the urban community. Emphasis also on editing, team reporting, in-depth research and interviewing techniques, and use of public records.

MASC 408 Communications Law

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101 and MASC 203. For mass communications majors only. Study of legal limitations affecting publishing, advertising, broadcasting and telecasting and legal philosophy and ethics relating to the media of communications.

MASC 415 Video Journalism II

Semester course; 3 laboratory hours. 1 credit. Prerequisite: MASC 366. Corequisite: MASC 464 or permission of instructor. For mass communications majors only. Students learn advanced field shooting and editing techniques as well as the inner workings of the television studio including studio camera operation, advanced audio and video editing, visual storytelling, and advanced camera techniques.

MASC 425 Public Relations Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101 and MASC 203. For mass communications majors only. An introduction to the role of research in public relations, with primary emphasis on content analysis, focus group, survey and communication audit methods and the evaluation of quantitative research data.

MASC 439 Public Relations Campaigns

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101, MASC 203, MASC 323, MASC 333, MASC 335 and MASC 425. For mass communications majors only. Application of public relations theory and methods in the preparation of a plan for a public relations campaign. Special attention to the planning process including issues analysis, and application of public relations and research methods.

MASC 450-451 Advertising Portfolio Development

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: MASC 300, MASC 380, MASC 392 and MASC 394. For mass communications majors only. An advanced, intensive study of copywriting and art direction for advertising, emphasizing strategic and creative development of advertising campaigns. Students will conceptualize advertising campaigns, execute digitally produced, comprehensive advertisements and campaign materials, and assemble a final portfolio. Culminates in a formal portfolio review with professionals from the advertising industry.

MASC 459 Advertising Strategic Portfolio

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 380, 398, 399 and MRBL 308. For mass communications majors only. An advanced intensive study in the business and strategy of advertising. Students will prepare comprehensive materials used in advertising campaigns including advertising strategies, market and consumer research, and creative briefs based on those findings. Emphasis will be on the development of planning, media and account management skills to create a portfolio for students in the strategic concentration.

MASC 461 The Documentary

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 363, MASC 365 and MASC 366, or permission of instructor. MASC 464 may be taken concurrently with the instructor's permission. Corequisite: MASC 462. For mass communications majors only. An examination of documentary concepts through analysis of radio, television and film documentaries. The course will center on the development, writing and production of a documentary in the medium (audio or video) of the student's choice.

MASC 463 Advanced Radio Newsgathering

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 101, 203, 363 and 365. For mass communications majors only. Radio practicum. Using the university and city of Richmond as their classroom, students will report, write and produce radio news stories. Studio and remote equipment will be utilized to create professional-caliber projects.

MASC 464 Advanced Television Newsgathering

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 363, 365 and 366. Corequisite: MASC 415. For mass communications majors only. Television news practicum. Using the university and the city of Richmond as their classroom, students will report, write and produce television news stories. Electronic newsgathering and editing equipment will be utilized to create professional-caliber projects.

MASC 465 Newscasting

Semester course; 1 lecture and 4 laboratory hours. 3 credits. May be repeated once for a total of 6 credits. Prerequisite: MASC 363. Corequisite: MASC 466. For mass communications majors only. Concentrates on developing on-air skills in radio and television studio and field situations. Emphasizes journalistic principles in delivery of news, public affairs, editorial and interviews. Grammar, diction and broadcast writing are stressed.

MASC 466 Television Studio Production

Semester course; 2 laboratory hours. 1 credit. May be repeated for up to 3 credits. For mass communications majors only, or by permission of instructor. Instruction and practice in basic television or studio production. Supports the production of the television broadcast journalism programming created by students within the broadcast journalism concentration.

MASC 474/AFAM 474 Minorities and the Mass Media

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 101 or 290, or permission of instructor. Examines historical and contemporary issues associated with the presence and portrayal of selected minorities in/by mainstream mass media in the United States. Primary emphasis is placed on the examination of African Americans and Hispanic Americans. Asian Americans, Native Americans and women also are covered.

MASC 475 Capital News Service

Semester course; 9 laboratory hours. 3 credits. Prerequisite: MASC 303. To register, students must complete an application and submit writing samples for approval by the Capital News Service director. For mass communications majors only. In this intensive course, advanced journalism students cover state government and politics, including the Virginia General Assembly, the governor, regulatory agencies and elections. Students produce content for publication in statewide community newspapers and other media. Strong emphasis on fast-paced deadlines.

MASC 481 Advertising Campaigns

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 392 and MASC 394, or permission of instructor. For mass communications majors only. Intensive study in the planning and preparation of advertising campaigns. Students develop complete advertising programs including research, basic advertising plans, media and creative strategies, sales promotion and merchandising plans.

MASC 485 Web Site Design

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 300 or permission of instructor. For mass communications majors only. Students will receive an introduction to the processes, principles and tools of Web site design, development and production. The course will focus on the development of strong interactive interfaces, animation, graphic images, text, and functional site design and organization. In this hands-on, computer-based course, students will design and develop a comprehensive site and launch it to the Internet. Increasing the students' knowledge of design principles and technical skills with Web development tools will be emphasized.

MASC 491 Topics in Communications

Semester course; variable hours. 1, 2 or 3 credits per semester. Maximum total 3 credits. Prerequisites: MASC 101, MASC 203 and permission of instructor. For mass communications majors only. An intensive study of a specialized field of mass communications.

MASC 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 3 credits per semester; maximum total of 6 credits for all independent study courses. Prerequisites: MASC 101 and MASC 203. Open generally to students of only junior and senior standing who have completed at least 12 credits in mass communications. To register, a student must write a proposal and have it approved by the student's adviser, supervising instructor and school director or assistant director. For mass communications majors only. The course is designed for students who wish to study subject matter not offered elsewhere in the mass communications' curriculum.

MASC 493 Fieldwork/Internship

Semester course; variable hours. 1, 2 or 3 credits per semester. Maximum total 3 credits toward graduation. Prerequisites: MASC 101, MASC 203, and permission of faculty member and of internship coordinator. For mass communications majors only. Selected students will receive on-the-job training under the supervision of an instructor and the employer. Internships are available in newspapers, magazines, public relations, advertising, radio and television.

MASC 495 Journalism Seminar

Semester course; 1 lecture hour. 1 credit. Must be taken once in conjunction with one of the following courses: MASC 403, MASC 404, MASC 461, MASC 465 or MASC 475. For mass communications majors only. This intensive seminar is for senior broadcast and print journalism students. Includes examination of issues such as multi-media story planning and storytelling, visual presentation and design, newsroom leadership and culture, trends in media consolidation, copyright and other legal issues that cross media platforms. Students will produce a multiple-media news story or package that will be published through one or more venues available in the School of Mass Communications.

MASC 501 Journalistic Writing

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisite: School's permission. Typing skill required. See School of Mass Communications for details. A concentrated course in journalistic writing, including news, features, sports, columns, and editorials.

MASC 502 Editing the News

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisite: School's permission. A concentrated course in editing for journalistic publications. Course will include copy editing, headline writing, publications page make-up and design, and editorial decision making.

MASC 519 Journalism in the Schools

Semester course; 3 lecture hours. 3 credits. Study of school newspapers, magazines, and yearbooks: problems relating to staff selection, content of publications, copy layout, advertising, and business phases.

MASC 520 Advising Scholastic Publications

Semester course; 3 lecture hours. 3 credits. Designed for new advisers. The goals of this class are to introduce the fundamentals of scholastic journalism and to provide a foundation in the management skills necessary to teach journalism and advise a student publication. The course covers the role of the adviser, the role and scope of the publication, financing the publication, production schedules, advertising sales and design, legal and ethical issues, staff morale, student evaluation, working with key outsiders and with sources. Students will develop a staff manual for a school's publication.

MASC 601 Technology

Semester course; 1 laboratory hours. 1 credit. Restricted to Adcenter students only. Covers technology applications. Students will have the opportunity to learn how to use Flash, GoLive, Microsoft iLife, Illustrator, iMovie, Excel, Word, PowerPoint and Photoshop.

MASC 602 Advertising Technology for Copywriters, Strategists and Media Planners

Semester course; 2 laboratory hours. 2 credits. Restricted to Adcenter students only. This course covers a number of computer applications, tailored to the specific needs of copywriters, account managers, account planners and media planners. Students will learn how to create and format documents using Microsoft Word for the Macintosh, including placement of images and manipulation of text from various sources such as the Internet. Students will learn how to create computer presentations with Microsoft PowerPoint for Macintosh. This course will teach the basics of page layout, including formatting documents, placement of images and basic typography. Additionally, students will learn how to use a scanner to capture images into Adobe Photoshop, and basic image modification techniques, such as brightening and sharpening, silhouetting an image and saving the image. Additionally this course covers the appropriate applications designed to capture and edit digital video, and will include discussion of the use of the Adcenter's digital video cameras, and other accessories such as external microphones and lights. Certain applications specific to the needs of media planners and account planners, such as Simmons, SRDS, and MRI also will be covered in this course.

MASC 603 Scholastic Yearbooks

Semester course; 3 lecture hours. 3 credits. Prerequisite: School's permission. The organization, staffing, content, illustration use, production techniques, typography, style, theme, advertising, and business functions of a scholastic yearbook. The role of the yearbook adviser will be emphasized.

MASC 604 Broadcasting in High Schools

Semester course; 3 lecture hours. 3 credits. Prerequisite: School's permission. An examination of radio and television as student media in high schools. Broadcasting principles, directing and producing high school broadcast programs, using basic broadcast equipment. Emphasis is upon the role of the adviser-teacher.

MASC 605 Technology in the Classroom

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Beginning with a brief treatment of basic desktop publishing skills, students will learn layout and design using newspaper, magazine and yearbook models. They will master the functions of Photoshop, Illustrator, Adobe PageMaker and/or QuarkXpress and create promotional fliers/brochures and advertisements for their journalism programs. They will set templates and a style palette for school publications.

MASC 606 Contemporary Newspaper Design

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: MASC 502 and MASC 605. Students will study advanced layout and design techniques using professional newspaper models, including design fundamentals and the latest trends. They will learn to combine informational graphic techniques, photography and the printed word to increase the readability of their publications and to take advantage of the range of information technologies and techniques available.

MASC 607 Student Press Law Rights and Responsibilities

Semester course; 3 lecture hours. 3 credits. A review of student press law with special attention to the responsibilities of student journalists and their advisers. An in-depth study of current cases that includes student press freedom and censorship, libel, privacy invasion, copyright law and ethical decision-making plus advisers' rights. Emphasis will be on the First Amendment rights in publishing secondary-education publications. Additional topics will include ethical and legal issues surrounding Internet usage in reporting and online editing.

MASC 611 Research Methods in Mass Communications

Semester course; 3 lecture hours. 3 credits. Fundamentals of mass communications research techniques (content analysis, survey research, experimental design, historiography), including an overview of computer applications, statistics, theory development, and trends in the published literature.

MASC 612 Mass Communications Theory

Semester course; 3 seminar hours. 3 credits. Nature, function, and application of mass communications theory; structure, content, and effects of media systems; social and technological events accounted for by a generalized theory of mass communications.

MASC 613 Mass Media and Society

Semester course; 3 seminar hours. 3 credits. A study of the mass media of the United States, with special attention to their historical development and their impact on other institutions. Consideration of ethical and legal aspects of the media, and problems such as access, control, and accountability.

MASC 614 Media-governmental Relations

Semester course; 3 seminar hours. 3 credits. Study of the interaction between the media and the government, and the role of the press in the governmental process as a disseminator, opinion-maker, and adversary.

MASC 615 Depth Reporting

Semester course; 3 seminar hours. 3 credits. Prerequisites: three undergraduate reporting courses or permission of instructor. A thorough examination of one or more issues in the forefront of the news, the environment, education, health care, science and others relevant to today's readers.

MASC 616 Mass Communication Law

Semester course; 3 lecture hours. 3 credits. An intensive examination of media rights and restrictions, including libel, privacy, access to information, copyright, free-press fair-trial. Attention will be given to First Amendment theory, research techniques and administrative regulation of broadcasting and advertising.

MASC 617 Advanced Research Methods

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 611. An examination of a mass medium through design and execution of a research project using one of the traditional research techniques of the field. Students will have major and minor projects for systematic study of a medium.

MASC 618 Media Economics and Management

Semester course; 3 colloquium hours. 3 credits. Prerequisites: MASC 611 and MASC 617. Advanced work in media management research based on an examination of major contemporary issues and challenges concerning media management and economics. Student interaction with faculty, media managers and each other will lead to the design and implementation of major problem-solving projects.

MASC 619 Media and Public Opinion

Semester course; 3 lecture hours. 3 credits. A study of the role of the mass media in the formation and change of beliefs and attitudes, the involvement of the media with policy makers in shaping public opinion and public policy, and the interaction of media and public opinion polling.

MASC 620 Seminar in Mass Communications History

Semester course; 3 credits. An examination of historical methodology and content as related to the investigation and writing of mass communication history in the United States. Special attention is placed on the adaptation and the use of historical method by mass communications historians.

MASC 621 Advanced Public Relations

Semester course; 3 lecture hours. 3 credits. Students will explore a variety of case studies, decision-making analyses and advanced public relations programming in relation to private and public policy-making at the senior levels of management.

MASC 622 Visual Storytelling

Semester course; 3 lecture hours. 3 credits. The goal of this class is to take a story and translate it successfully to the screen. Class will include lectures and technology sessions. Classes will be be divided between discussions about existing films and spots, and classes devoted to learning the use of lights, cameras and software editing. Three short films will be produced.

MASC 624 Basic Photojournalism

Semester course; 2 lecture and 3 laboratory hours. 3 credits. An introduction to photojournalistic techniques and practices including how to teach a student publication staff to recognize good pictures and how to use them well in their publications. An overview of photocompositional elements, photographic technology basics and snapshots of what magazine, newspaper and yearbook photojournalists should know.

MASC 625 Strategic Brand Concepts

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 651. Addresses important branding decisions that will help build, measure and manage brand equity. This course seeks to (1) provide an understanding of the important issues in planning and evaluating brand strategies, (2) provide the appropriate concepts and techniques to improve the long-term profitability of brand strategies and (3) explore the relationship of creative development and communications in the creation of brand equity. Traditional concepts such as brand value, brand equity, brand identity and brand awareness will be explored along with more current efforts to redefine brands as ideas in the marketplace such as brand purpose, brand resonance and brand archetypes. Course culminates in a major brand analysis of a current corporation.

MASC 626 Digital Media Methods and Measurement

Semester course; 2 lecture hours. 2 credits. Restricted to Adcenter students only. Designed to cover the measuring of new media and new ways of measuring traditional media. The goal is to open the mind to new ways of thinking about effectiveness and ROI so that media specialists can continue to offer a mix of traditional and nontraditional media solutions and to satisfy the client demand for accountability and integrity in media spending.

MASC 627 Visual Storytelling for the Strategist

Semester course; 2 lecture hours. 2 credits. Restricted to Adcenter students only. The goal of this class is to take a story and translate it successfully to the screen. Class is geared to strategy students. Classes will be divided between discussions about existing films and spots, and classes devoted to learning the use of lights, cameras and software editing. Short films will be produced.

MASC 629 Strategic Thinking

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. Contrasting historically rigid ways of approaching problems to newer, more dynamic approaches will prepare students to professionally engage a constantly shifting world of business, consumer, political and economic forces. Students will engage in semester-long projects to develop new ways of thinking strategically, including writing a strategic plan and scenario plans (the art of looking ahead and envisioning various realities for a company). Students will work directly with local small business owners in developing and formally presenting relevant strategies.

MASC 630 Visual Concepts and Execution I

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Restricted to Adcenter students only. Explores the media of print, Internet and television to develop and understand the basis of good design and art direction. Will work through the process of visual concepts and execution.

MASC 631 Visual Concepts and Execution II

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 630. Explores the delivery of concepts to an audience to determine how the message is received. Will teach how to attack a problem, how to work through a creative block and how to be a better judge of your own work.

MASC 632 Introduction to Brand Management

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. Provides students with an overview of the major tasks facing today's product/brand managers, including analyzing the market, developing objectives and strategies for products and services and making decisions about price, promotion, distribution channels, customer service and advertising. Uses the product/marketing plan as the unifying framework and, via a heavy concentration on case study, takes a "hands-on" approach toward preparing students to assume positions in brand management.

MASC 640 Conceptual Thinking in Copywriting

Semester course; 3 lecture hours. 3 credits. Focuses on developing ability to create well-written, creatively focused advertising copy work. Addresses headline and body copy issues through presentation of students' work and research on major copywriters and their work.

MASC 641 Conceptual Thinking in Copywriting II

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 640 and MASC 651. Applies student's knowledge of copywriting to larger, more complex advertising projects that encompass more than one medium. Emphasizes the fine tuning of a student's creative ability and copywriting skills. Utilizes intensive copywriting projects to show the student's growing ability to develop and present professional quality work.

MASC 650 Cultural Exploration and Communications

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Restricted to Adcenter students only. Focuses on trends in effective advertising programs throughout the 20th century and addresses future developments that will affect the advertising business. Explores varying approaches to communication and allows students the opportunity to enhance organizational, writing and research skills through presentations and reports.

MASC 651 Creative Thinking for Advertising

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Restricted to Adcenter students only. Focuses on developing the creative skills necessary for solving advertising communication problems. Enables students to maximize and strengthen creative abilities through lecture, brainstorming sessions, and team-oriented strategy sessions focusing on real case projects.

MASC 652 Advertising Concept Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 651. Develops students' ability to create visually effective work that targets specific groups of consumers through ongoing review and discussion sessions designed to pinpoint strategies and create relevant visually oriented ideas quickly. Emphasizes a teamwork approach to art direction and concept development.

MASC 653 Portfolio Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 652. Focuses student toward creative solutions to communication problems. Addresses specific strategies including briefs and concept work that require extensive copy. Emphasizes a team approach to copywriting and art direction.

MASC 654 Advertising Radio and Television Development

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Explores different styles and techniques used in creative radio and television advertising. Focuses on a wide range of broadcast styles including classic radio program work. Addresses headline and body copy issues through presentation of students' work and research on major copywriters and their work.

MASC 655 Brand Campaigns

Semester course; 3 lecture/laboratory hours. 3 credits. Prerequisite: MASC 625. An experiential course in the development of brand communications over all possible communications platforms. Course will team brand managers, account planners, media strategists, art directors and copywriters together to create integrated brand campaigns. A heavy emphasis will be placed on producing campaigns that solve business problems in a strategically creative manner. Traditional, nontraditional, interactive, below-the-line communications and product design will be explored.

MASC 657 Digital Media

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 653. Restricted to Adcenter students only. An overview of conceptual and theoretical techniques used in the development of advertising for television. Introduces digital television production techniques, including pre-production, shooting, lighting, editing, audio and post-production. Students will learn to use Canon digital video cameras (DVCam format) and edit raw footage on Apple G4 computers using Final Cut Pro software. Discussion will cover lighting techniques, editing principles, digital audio digitizing, mixing and stock sources, and graphics preparation with Adobe Photoshop.

MASC 658 Account Leadership

Semester course; 2 lecture hours. 2 credits. Restricted to Adcenter students only. Students will learn first-hand general leadership skills crucial to developing successful relationships with agency personnel and clients. Emphasis will be given to exploring ways students can contribute to accounts not only strategically but creatively as well. Students will learn presentation and communication skills as well as effective ways to manage accounts. Students will sharpen previously prepared strategies as well as interviewing skills.

MASC 660 Advertising Account Research and Planning

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 650 and MASC 651. Develops student's ability to choose the most effective research methods for determining both the correct target market for a product and specific issues most pertinent to that market, in regards to positioning the product. Research work with consumer groups will demonstrate student's ability to develop thoughtful questions that will deliver valuable insight.

MASC 661 Media Research and Planning

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. Emphasizes effective use of research information in the areas of media planning, buying and placement. Focuses on new techniques used in the planning and execution of effective media buying. Requires the presentation of media plans and documents that demonstrate the student's ability to both research the information and present it in the most effective manner.

MASC 662 Quantitative and Qualitative Research

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 651. Serves as an overview to quantitative and qualitative research. Develops students' abilities to choose the most effective research methods for determining both the correct target market for a product and specific issues most pertinent to that market, in regard to positioning the product. Students will learn how to write discussion guides, screeners and conduct focus group research. Other methods of innovative styles of qualitative research will be covered. Research work with consumer groups will demonstrate students' abilities to develop thoughtful questions that will deliver valuable insight.

MASC 663 Advanced Creative Media Planning

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 661. Restricted to Adcenter students only. This course offers a deeper examination of media dynamics, variables and the creativity necessary to lead brands into a deeper connection with their customers. Examines the state of the media industry today, the way brands plan multi-media approaches, and the development of creative media ideas designed to excite creative teams and reach customers in a more inventive way. After completing this course, students also will be able to play a more active role in the development of media strategies.

MASC 664 Presentation Skills

Semester course; 1 lecture hour. 1 credit. Restricted to Adcenter students only. This course offers art directors and copywriters an intensive in the skills necessary to make strong presentations. Topics such as voice delivery, personal style, effective presentation of creative work, storytelling and capturing audience attention will be covered. Student presentations will be critiqued and videotaped for analysis.

MASC 665 Building Brands in International Cultures

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 650 and MASC 651. Restricted to Adcenter students only. Provides thorough coverage of an approach and framework for designing a comprehensive marketing plan suitable for implementations in an international setting, with particular focus on identifying and analyzing the important cultural and environmental uniqueness of single nations or global regions. We also will look at specific examples of cases that will better inform our planning efforts and will spend time examining various cultures in order to respectfully and appropriately engage them in our marketing plan.

MASC 667 Internal Brand Leadership

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. Building a brand begins by creating an informed and motivated team within the company. But brand managers do not necessarily work with departments such as product development and sales that understand the nuances of branding. Leadership is required, as well as significant people skills and presentation abilities. This course emphasizes the concepts of motivation, interpersonal relationships, group dynamics, leadership and organizational culture in the context of internal brand development and subsequent cultural change. Students will work experientially in role-playing and in presentations of ideas centered around branding and cultural change.

MASC 668 Creating Brand Products and Channels

Semester course; 3 lecture hours. 3 credits. Restricted to Adcenter students only. Teaches the concepts of product development and distribution through a series of readings and cases that profile the decision-making problems brand managers face. Discussions of product development in terms of the organization's total operation, with the emphasis on consumer satisfaction. Emphasis on the interrelationships of marketing concepts, decision making, strategy, planning and systems of control. Topics will include buyer behavior, product policy, pricing strategy, promotion and competitive strategy.

MASC 671 Strategic PR in a Digital Environment

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An introduction to the thinking and actions required to communicate strategically in today's dynamic socioeconomic environment. Focus is on the skills and information to handle strategic public relations. Introduces cutting-edge technology and using the Internet as a strategic communications tool. Professional responsibilities emphasized.

MASC 672 Strategic PR Research and Evaluation

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Introduces the basic theories and practices of strategic public relations research and evaluation. Both qualitative and quantitative techniques are examined.

MASC 675 Strategic PR Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 671, 672 and permission of instructor. An interactive exploration of navigating challenges from the perspective of organizational culture. Helps students foster diversity, support organizational change, make leadership more dynamic, operate ethically within the cultural environment and make the organization more effective overall.

MASC 676 Public Relations Ethics and Law

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 671, 672 and permission of instructor. An exploration of ethical and legal dimensions specific to public relations practice. Analysis of critical cases in the field.

MASC 677/MRBL 677 The Business of Advertising

Semester course; 3 lecture hours. 3 credits. Requires students to develop ideas ranging from strategic to tactical and from rational to emotional. Students will be called on to develop and examine ideas that differentiate brands, build sales and affect market share. The new business process will be considered and successful presentation techniques will be evaluated. Ethical considerations faced by industry practitioners will be explored.

MASC 681/TEDU 620 Video Applications in Instruction

Semester course; 3 lecture hours. 3 credits. Prerequisites: TEDU 556 and 610 or permission of instructor. Emphasizes the design and instructional strategies used with the production of video resources. Differentiates analog and digital video, importing images, video and sound, editing, previewing, transitions, filters, motion settings, superimposing, titles, special effect options, and exporting video. Students will produce and edit a personalized instructional module using digital video hardware and editing software.

MASC 682 Strategic Media Relations

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 671, 672 and permission of instructor. Focuses on what makes news, how different media work, how to determine the appropriate vehicle for the message and how to work with the media to control a message.

MASC 683 Strategic PR in the Global Environment

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 671, 672 and permission of instructor. Examines the phenomenon of global strategic communications, including the enabling environmental factors. How to develop an integrated, holistic global communications program and how to manage such a program. Students experience one region of the world with an in-depth study tour.

MASC 690 Brand Management Creative Simulation

Semester course; 3 laboratory hours. 3 credits. Restricted to Adcenter students only. Capstone course designed to give future brand managers their first experience in completely running the business of a product brand. This course will combine a computer-simulated exercise with the production of creative work and media strategies. In addition to running the day-to-day business through the simulation, students will lead the creation of an integrated communications brand campaign, working with account planners, creative teams and media strategists. The entire scope of results, both creative and simulated, will be judged by an outside panel of marketing and communications experts.

MASC 691 Topics in Mass Communications

Semester course; 1-3 credits. May be repeated for 6 total credits. Prerequisite: Permission of instructor and director of graduate studies. An advanced study of selected topic in mass communications. See the Schedule of Classes for specific topic(s) to be offered each semester.

MASC 692 Independent Study

Semester course; 1-3 credits. A maximum of 3 credits may be submitted toward the master's degree. Prerequisite: Permission of instructor and director of graduate studies.

MASC 693 Practicum in Mass Communications

Semester course; 1-6 credits. May be repeated for credit. Credits may not be applied toward the graduate degree. Prerequisite: Permission of coordinator of graduate studies. Student participation in planned educational experience under the supervision of mass communications faculty. The practicum may include supervision of writing, editing and broadcast laboratories, participation in faculty research, and assistance with lower-division undergraduate advising. Graded as pass/fail.

MASC 694 Strategic PR Campaign Design and Implementation

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 675, 676, 681 and 682. Brings together all the various tasks and concepts used in public relations work to shape an effective campaign. Through projects students become competent and proficient in analyzing cases, strategizing, implementing and evaluating public relations campaigns at senior management levels.

MASC 695 Fieldwork/Internship

Semester course; variable hours. 1, 2 or 3 credits per semester. Maximum total of 3 credits toward graduation. Prerequisite: Permission of director of graduate studies. Selected students will receive on-the-job training under the supervision of an instructor and the employer. Internships are available in newspapers, magazines, public relations, advertising, radio, and television.

MASC 696 Advanced Portfolio Development for Creatives

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 652 and MASC 653. Continues the development and demonstration of conceptual and creative abilities, and insights in a variety of areas sought by agency art directors, copywriters and recruiters. Development of concepts and materials necessary for the creation of mini-books and individual portfolios will be one of the main focal points. Independent projects pursued specifically for portfolio development also will be conducted.

MASC 697 Portfolio Development for Strategists

Semester course; 3 lecture hours. 3 credits. Prerequisites: MASC 653. Continues the development and demonstration of critical thinking skills, insights and creative abilities in a variety of areas sought by agency planning directors, media planning directors, management supervisors and recruiters. Development of concepts and materials necessary for the creation of mini-books and individual portfolios will be one of the main focal points. Independent projects pursued specifically for portfolio development also will be conducted.

MASC 699 Thesis

1-3 credits. May be repeated. A maximum of 3 credits may be submitted toward the master's degree.

Mathematics and Applied Mathematics(MATH)

Students registering for CMSC 201 or 255, MATH 131, 141, 151, 200, 211 or 300, or STAT 208 or 210 must place into these courses either from receiving VCU credit for the stated prerequisite courses (for instance, MATH 151 is a stated prerequisite course for MATH 200) or from a satisfactory score (within a 39-month period immediately preceding the beginning of the course) on the VCU Mathematics Placement Test. For students entering VCU after July 1, 2005, placement into MATH 141 also may be achieved with a satisfactory combination of high school grade point average and SAT mathematics score.

MATH 001 Elementary Algebra

Semester course; 3 lecture or 3 laboratory/tutorial hours. No credit. Prerequisite: Permission of the department chair. The purpose of this course is to provide laboratory and tutorial instruction for those seeking remediation or review of high school algebra. Topics include basic properties of real numbers, operations with algebraic expressions, solution of equations and inequalities, exponents and radicals, introduction to functions and graphing.

MATH 131 Introduction to Contemporary Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 001 or satisfactory score on the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course. An exception to this policy is made in the case where the stated alternative prerequisite course has been completed at VCU. Topics include optimization problems; data handling; growth and symmetry; and mathematics with applications in areas of social choice. Major emphasis is on the process of taking a real-world situation, converting the situation to an abstract modeling problem, solving the problem and applying what is learned to the original situation. Serves as a prerequisite for STAT 208 or 210, but does not serve as a prerequisite for MATH 151 or other advanced mathematical sciences courses.

MATH 141 Algebra with Applications

Semester course; 3 lecture hours. 3 credits. Prerequisites: one year of high school algebra and satisfactory score on the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course. An exception to this policy is made in the case where the stated alternative prerequisite course has been completed at VCU. Topics include sets, functions, exponents, logarithms, matrix algebra, systems of linear equations, inequalities, binomial theorems, sequences, series, complex numbers and linear programming.

MATH 151 Precalculus Mathematics

Semester course; 3 lecture and 1 mathematics laboratory/recitation hours. 4 credits. Prerequisite: MATH 141 or satisfactory score on the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course. An exception to this policy is made in the case where the stated alternative prerequisite course has been completed at VCU. Concepts and applications of algebra and trigonometry. Topics include graphics, transformations and inverses of functions; linear, exponential, logarithmic, power, polynomial, rational and trigonometric functions.

MATH 191 Topics in Mathematics

Semester course; 1-3 credits. May be repeated for credit. A study of selected topics in mathematics. For a course to meet the general education requirements it must be stated in the Schedule of Classes. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

MATH 200-201 Calculus with Analytic Geometry

Continuous courses; 4 lecture hours. 4-4 credits. Prerequisite for MATH 200: MATH 151 or satisfactory score on the VCU Mathematics Placement Test (algebra section) within the one-year period immediately preceding the beginning of the course. An exception to this policy is made in the case where the stated alternative prerequisite course has been completed at VCU. Prerequisites for MATH 201: MATH 200. Limits, continuity, derivatives, differentials, antiderivatives and definite integrals. Applications of differentiation and integration. Selected topics in analytic geometry. Infinite series.

MATH 211 Mathematical Structures

Semester course; 3 lecture hours. 3 credits. Prerequisite: Calculus-level placement on the VCU Mathematics Placement Test within the one-year period immediately preceding enrollment in the course or MATH 151 or MGMT 212. An alternative prerequisite course may be approved at the discretion of the academic adviser. An introduction to mathematical logic and set theory, including applications in Boolean algebras and graph theory.

MATH 255 Introduction to Computational Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 201. (A core course for mathematics/applied mathematics majors.) An introduction to computer algebra systems (CAS) and their use in mathematical, scientific and engineering investigations/computations. Introductory mathematical computer programming using a CAS, including implementation of problem-specific algorithms.

MATH 291 Topics in Mathematics

Semester course; 1-3 credits. May be repeated for credit. A study of selected topics in mathematics. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

MATH 300 Introduction to Mathematical Reasoning

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 201. (A core course for mathematics/applied mathematics majors.) An introduction to basic concepts of mathematical reasoning and the writing of proofs in an elementary setting. Direct, indirect and induction proofs. Illustrations of the concepts include basic proofs from mathematical logic, elementary set theory, elementary number theory, number systems, foundations of calculus, relations, equivalence relations, functions and counting with emphasis on combinatorial proofs.

MATH 301 Differential Equations

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 201. Solutions of ordinary differential equations of first order. Solutions of higher order linear differential equations with constant coefficients and variable coefficients by the methods of undetermined coefficients and variation of parameters, solutions by Laplace transforms and applications.

MATH 302 Numerical Calculus

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: CMSC 201 or demonstrated knowledge of FORTRAN and MATH 201. An introduction to numerical algorithms for solving systems of linear equations, finding zeroes, definite integration, minimization, etc. Those features of FORTRAN that affect the precision of numerical computations will be included.

MATH 303 Investigations in Geometry

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: MATH 131 and STAT 208, STAT 210 or STAT 212. A study of topics in Euclidean geometry to include congruence, similarity, measurement, coordinate geometry, symmetry and transformation in both two and three dimensions. These topics will be investigated using manipulatives and computer software. May be used for credit toward the degree by mathematical sciences majors; but does not count toward the 24 upper-level mathematical sciences credits required for these majors.

MATH 305 Elementary Number Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 300. Divisibility, congruences, Euler phi-function, Fermat's Theorem, primitive roots, Diophantine equations.

MATH 307 Multivariate Calculus

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 201. The calculus of vector-valued functions and of functions of more than one variable. Partial derivatives, multiple integrals, line integrals, surface integrals and curvilinear coordinates. Lagrange multipliers; theorems of Green, Gauss and Stokes. Applications.

MATH 309/STAT 309 Introduction to Probability Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 201. Completion of MATH 211 or MATH 300 (or equivalent knowledge) is strongly recommended. A study of the mathematical theory of probability, including finite and infinite sample spaces, random variables, discrete and continuous distributions, mathematical expectation, functions of random variables and sampling distributions.

MATH 310 Linear Algebra

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 200, and MATH 300 or MATH 201. Systems of linear equations, vector spaces, linear dependence, bases, dimensions, linear mappings, matrices, determinants, quadratic forms, orthogonal reduction to diagonal form, eigenvalues and geometric applications.

MATH 327/OPER 327 Mathematical Modeling

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 200. Fundamental concepts of mathematical modeling. Topics may include differential equation models, optimization models and probabilistic models. Practical problems will be discussed throughout.

MATH 351 Applied Abstract Algebra

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 300. A survey of several areas in applied abstract algebra which have applications in computer science such as groups, codes, matrix algebra, finite fields and advanced graph theory.

MATH 361 Numbers and Operations

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 131 or satisfactory score on the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course. Ways of representing numbers, relationships between numbers, number systems, the meanings of operations and how they relate to one another, and computation within the number systems as a foundation for algebra. Structured observations and tutoring of elementary-level students. Restricted to B.I.S. students majoring in liberal studies concentration for early and elementary education.

MATH 362 Algebra and Functions

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 361. Topics include algebraic concepts, linear, quadratic, exponential, logarithmic, trigonometric functions including graphical modeling of physical phenomena. Attention will be given to the use of graphing technology, the transition from arithmetic to algebra, working with quantitative change, and the description and prediction of change. Structured observations and tutoring of elementary-level students. Restricted to B.I.S. students in the liberal studies for early and elementary education concentration.

MATH 391 Topics in Mathematics

Semester course; 1-3 credits. May be repeated for credit. A study of selected topics in mathematics. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

MATH 437 Applied Partial Differential Equations

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 301 and MATH 307. Parabolic (heat), hyperbolic (wave), and elliptic (steady-state) partial differential equations are studied. Solution techniques are demonstrated, including separation of variables and integral transforms. Practical problems and applications are emphasized.

MATH 490 Mathematical Expositions

Semester course; 2 lecture hours. 2 credits. Prerequisites: ENGL 200 and nine credits in mathematics courses at the 300 level or above. Required for mathematics and applied mathematics tracks within B.S. in mathematical sciences. Designed to help students attain proficiency in expository mathematical writing and in oral presentations, which require the efficient and effective use of mathematics and the English language. Students will learn a variety of topics in mathematics and will write reviews of selected award-winning mathematics papers.

MATH 492 Independent Study

Semester course; variable hours. 2, 3 or 4 credits per semester. Maximum 4 credits per semester; maximum total of 6 credits. Generally open to students of only junior or senior standing who have acquired at least 12 credits in the departmental discipline. Determination of the amount of credit and permission of instructor and department chair must be procured prior to registration of the course. The student must submit a proposal for investigating some area or problem not contained in the regular curriculum. The results of the student's study will be presented in a report.

MATH 493 Mathematical Sciences Internship

Semester course; the equivalent of at least 15 work hours per week for a 15-week semester. 3 credits. Mathematical sciences majors only with junior or senior standing. Admission by permission from the department chair. Through placement in a position in business, industry, government or the university, the student will serve as an intern in order to obtain a broader knowledge of the mathematical sciences and their applications.

MATH 501 Introduction to Abstract Algebra

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 300 and MATH 310, or their equivalents. An introduction to groups, rings and fields from an axiomatic point of view. Coset decomposition and basic morphisms.

MATH 504 Algebraic Structures and Functions

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 200-201, MATH 300 and one additional mathematical science course and permission of instructor. Semigroups, groups, rings, integral domains and fields. Exponential, logarithmic and trigonometric functions. Graphing in parametric and polar coordinates. Arithmetic and geometric sequences and series. Not applicable toward M.S. in Mathematical Sciences.

MATH 505 Modern Geometry

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 300, and MATH 307 or MATH 310. Topics in Euclidean, projective and non-Euclidean geometries from a modern viewpoint.

MATH 507-508 Analysis I-II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: MATH 300, MATH 307 and MATH 310, or permission of instructor. Theoretical aspects of calculus, sequences, limits, continuity, infinite series, series of functions, integration, differential geometry.

MATH 509-510 General Topology I-II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: MATH 300 and MATH 307. Foundations and fundamental concepts of point-set topology. Topological spaces, convergence, connected sets, compactness, product spaces, quotient spaces, function spaces, separation properties, metrization theorems, mappings and compactifications.

MATH 511 Applied Linear Algebra

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 310. The algebra of matrices, the theory of finite dimensional vector spaces and the basic results concerning eigenvectors and eigenvalues, with particular attention to applications.

MATH 512 Complex Analysis for Applications

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 307, and MATH 300 or knowledge equivalent to MATH 300. The algebra and geometry of complex numbers, analytic functions, integration, series, contour integration, analytic continuation, conformal mapping, with particular attention to applications.

MATH 515 Numerical Analysis I

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 310, or MATH 201 and MATH 185. Knowledge of a programming language recommended. Solutions of equations, interpolation and approximation, numerical integration, iterative methods for solving linear equations, calculation of eigenvalues and eigenvectors. Selected algorithms may be programmed for solution on computers.

MATH 516 Numerical Analysis II

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 515. Numerical solution of initial value problems in ordinary differential equations, two-point boundary value problems. Introduction to numerical techniques for solving partial differential equations. Selected algorithms may be programmed for solution on computers.

MATH 517-518 Methods of Applied Mathematics

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: MATH 301, MATH 307 and MATH 300 or knowledge equivalent to MATH 300. Vector analysis, matrices, complex analysis, special functions, Legendre and Hermite polynomials. Fourier series, Laplace transforms, integral equations, partial differential equations, boundary-value and initial-value problems.

MATH 520/OPER 520 Game Theory and Linear Programming

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 310. The mathematical basis of game theory and linear programming. Matrix games, linear inequalities and convexity, the mini-max theorems in linear programming, computational methods and applications.

MATH 521 Introduction to Algebraic Number Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 501. Introduction to algebraic numbers and algebraic number fields with emphasis on quadratic and cyclotomic fields. Units, primes, unique factorization.

MATH 525 Introduction to Combinatorial Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 300 and MATH 310, or permission of instructor. Introduction to the problems and methods of solution in the enumeration, existence and construction of some discrete mathematical structures. Discussion of generating functions, recurrence relations, Ramsey's theorem, matching theory, combinatorial designs, Latin squares and linear coding theory.

MATH 530 The History of Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisites: 17 credits at the 200 level or above in mathematical sciences or permission of instructor. Surveys major trends in the development of mathematics from ancient times through the 19th century and considers the cultural and social contexts of mathematical activity. Either MATH 530 or MATH 531 (but not both) may be applied to the M.S. in Mathematical Sciences or Computer Science. Both MATH 530 and MATH 531 may be applied to the M.Ed. in Curriculum and Instruction with a concentration in secondary education/mathematics.

MATH 531 Expositions in Modern Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Six credits at the 400 level or above in mathematical sciences. Studies descriptively several major ideas relevant to present-day mathematics, such as the advent of pure abstraction, difficulties in the logical foundations of mathematics, the impact of mathematics and statistics in the 20th century, and the computer revolution. Either MATH 530 or MATH 531 (but not both) may be applied to the M.S. in Mathematical Sciences or Computer Science. Both MATH 530 and MATH 531 may be applied to the M.Ed. in Curriculum and Instruction with a concentration in secondary education/mathematics.

MATH 532 Ordinary Differential Equations I

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 301 and 310 or the equivalent. MATH 507 is recommended. Existence and uniqueness for systems, linear systems, fundamental matrix solutions, matrix exponential, nonlinear systems, plane autonomous systems and introduction to stability.

MATH 554 Using Technology in the Teaching of Mathematics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MATH 200 and STAT 212 and six additional credits of mathematical science courses and permission of the instructor. Using graphing calculators, CBLs (calculator based labs) and computer software packages in teaching topics in algebra, geometry, trigonometry, statistics, finance and calculus. Not applicable toward M.S. in Mathematical Sciences.

MATH 555/ENGR 555 Dynamics and Multivariable Control I

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 301 and 310 or the equivalent. Systems of differential equations with controls, linear control systems, controllability, observability, introduction to feedback control and stabilization.

MATH 591 Topics in Mathematics

Semester course; 1-3 credits. May be repeated for credit with different topics. Prerequisite: Permission of the instructor. Open to qualified undergraduates. A study of selected topics in mathematical sciences. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

MATH 601-602 Abstract Algebra I, II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MATH 501. A study of algebraic structures (including groups, rings, and fields), Galois theory, homomorphisms, subalgebras, direct products, direct decompositions, subdirect decompositions, free algebras, varieties of algebras.

MATH 603-604 Advanced Probability Theory

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: MATH 508, and STAT 503 or STAT 513. A measure-theoretic approach to the theory of probability. Borel sets, probability measures, and random variables. Special topics include characteristic functions, modes of convergence, and elements of stochastic processes.

MATH 607-608 Real Analysis I, II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MATH 508. The real number system, Lebesgue measure, functions of bounded variation, differentiation and integration, the L < sup > p < /sup > - spaces, introduction to Banach and Hilbert spaces, general measure theory, and the Lebesgue-Stieltjes integral.

MATH 611-612 Complex Analysis I, II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MATH 508. Elementary functions, analyticity, Cauchy's theorem and integral formula, Taylor and Laurent series, poles, residues, analytic continuation, Riemann surfaces, periodic functions, conformal mapping, and applications.

MATH 615 Topics in Numerical Analysis

Semester course; 3 lecture hours. 3 credits. May be taken twice for credit. Prerequisites: MATH 515, MATH 516 and permission of instructor. Special topics in computer methods for numerical analysis selected from such subjects as analysis of numerical methods for solving ordinary differential equations; elliptic, hyperbolic, and parabolic partial differential equations; solutions of large linear systems by iterative methods.

MATH 617-618 Applied Mathematics I, II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: MATH 517-518. Partial differential equations; equations of Helmholtz, Laplace, and Poisson; the diffusion equation, integral transforms, Green's function methods, calculus of variation, eigenvalues and eigenfunctions by variational methods, integral equations, and Fredholm and Hilbert-Schmidt theories.

MATH 619 Operational Methods

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 508. Transform methods applied to existence theory, explicit solutions to problems of mathematical physics, distributions of Schwartz and Gelfand Silov, kernel theorems of Schwartz, mathematical framework of quantum field theory.

MATH 620 Theory of Partial Differential Equations

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 301 and MATH 508. Classification of partial differential equations; elliptic, hyperbolic, and parabolic equation; potential theory, techniques of solving various partial differential equations; application to electromagnetism and solid mechanics.

MATH 621 Boundary-Value Problems

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 517-518. Survey of boundary-value problems, approximate analytic solutions such as Galerkin's method and the Ritz method; application to heat transfer, fluid mechanics, and potential theory.

MATH 632 Ordinary Differential Equations II

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 507 and 532, or permission of instructor. Existence and uniqueness theory, invariant manifolds associated with equilibria and Lyapunov stability analysis.

MATH 655/ENGR 655 Dynamics and Multivariable Control II

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 555 and MATH 507 recommended, or permission of instructor. Control problems for nonlinear systems of ordinary differential equations, methods of feedback control to achieve control objectives.

MATH 661 Number and Operations

Semester course; 3 lecture hours. 3 credits. Ways of representing numbers, relationships between numbers, number systems, the meanings of operations and how they relate to one another, and computation within the number system as a foundation for algebra; episodes in history and development of the number system; and examination of the developmental sequence and learning trajectory as children learn number concepts. A core course for preparation as a K-8 mathematics specialist. Not applicable to M.S. in Mathematical Sciences.

MATH 662 Geometry and Measurement

Semester course; 3 lecture hours. 3 credits. Explorations of the foundations of informal measurement and geometry in one, two and three dimensions. The van Hiele model for geometric learning is used as a framework for how children build their understanding of length, area, volume, angles and geometric relationships. Visualization, spatial reasoning and geometric modeling are stressed. As appropriate, transofrmational geometry, congruence, similarity and geometric constructions will be discussed. A core course of preparation as a K-8 mathematics specialist. Not applicable to M.S. in Mathematical Sciences.

MATH 663 Functions and Algebra

Semester course; 3 lecture hours. 3 credits. Examination of representation and analysis of mathematical situations and structures using generalization and algebraic symbols and reasoning. Attention will be given to the transition from arithmetic to algebra, working with quantitative change, and the description of and prediction of change. A core course for preparation as a K-8 mathematics specialist. Not applicable to M.S. in Mathematical Sciences.

MATH 664 Statistics and Probability

Semester course; 3 lecture hours. 3 credits. An introduction to probability, descriptive statistics and data analysis; exploration of randomness, data representation and modeling. Descriptive statistics will include measures of central tendency, dispersion, distributions and regression. Analysis of experiments requiring hypothesizing, experimental design and data gathering. A core course for preparation as a K-8 mathematics specialist. Not applicable to M.S. in Mathematical Sciences.

MATH 665 Rational Numbers and Proportional Reasoning

Semester course; 3 lecture hours. 3 credits. Basic number strands in fractions and rational numbers, decimals and percents; ratios and proportions in the school curriculum. Interpretations, computations and estimation with a corrdinated program of activities that develop both rational number concepts and skills and proportional reasoning. A core course for preparation as a K-8 mathematics specialist. Not applicable to M.S. in Mathematical Sciences.

MATH 690 Research Seminar

Semester course; 1 credit. May be repeated for credit. Prerequisite: Graduate standing. Discussion of topics in the mathematical sciences as stimulated by independent reading in selected areas and at least one oral presentation by each student.

MATH 691 Special Topics in Mathematics

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit. Prerequisite: Permission of instructor. A detailed study of selected topics in mathematics. Possible topics include commutative rings and algebras, topological groups, special functions, Fourier analysis, abstract harmonic analysis, operator theory, functional analysis, differential geometry, Banach algebras and control theory.

MATH 697 Directed Research

Semester course; variable hours. 1-3 credits per semester. May be repeated for credit. Prerequisite: Graduate standing. Supervised individual research and study in an area not covered in the present curriculum or in one which significantly extends present coverage. Research culminates with an oral presentation and submission of a written version of this presentation to the supervising faculty member.

MATH 698 Thesis

Hours to be arranged. 1-3 credits. A total of 3 or 6 credits may be applied to the M.S. in Mathematical Sciences/Applied Mathematics or to the M.S. in Mathematical Sciences/Mathematics. May be repeated for credit. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis as described in this bulletin. Grade of "S," "U" or "F" may be assigned in this course.

Media, Art and Text(MATX)

MATX 601 Texts and Textuality

Semester course; 3 lecture hours. 3 credits. Explores theories of texts and textuality as they relate to the study of media, the arts and discourse of any kind.

MATX 602 History of Media, Art and Text

Semester course; 3 lecture hours. 3 credits. Examines the history of communication technologies in their social and cultural contexts. Students will explore how the interactions between communication practices and technologies are related to institutions, identity formation, cultural values, social practices and economic conditions.

MATX 603 History of Multimedia and Interdisciplinarity

Semester course; 3 lecture hours. 3 credits. Explores the history and the theoretical implications of disciplinary structures as well as interdisciplinarity and history of various media.

MATX 604 Production and Application Workshop

Semester course; 3 lecture hours. 3 credits. Requires the participants to work collaboratively to create an interdisciplinary product (performance, text, sculpture, etc.) in one or more media. The product will be archived in a Web-accessible format.

MATX 690 Seminar in Media, Art and Text

Semester course; 3 lecture hours. 3 credits. Graduate-level research and reading centered on interdisciplinary study.

MATX 696 Internship

Semester course; variable hours. 1-3 credits; may be repeated for a maximum of 6 credits. Planned experiences approved by student's adviser under the supervision of professionals and evaluated by university faculty.

MATX 791 Directed Study

Semester course; variable hours. 1-3 credits; may be repeated for credit. Focuses on a selected topic chosen by student and approved by student's adviser.

MATX 897 Dissertation Project

Semester course; variable hours. 1-12 credits; may be repeated for credit. Research and work leading to the completion of the dissertation project.

Military Science(MILS)

MILS 101 Military Science and Leadership: Foundations of Officership

Semester course; 1 lecture hour. 1 credit. Introduces the student to issues and competencies that are essential to a commissioned officer's responsibilities. These initial lessons establish a framework for understanding officership, leadership and Army values. Additionally the semester addresses "life skills" including fitness and time management. The course is designed to give the student accurate insight into the Army profession and the officer's role within the Army.
Effective Fall 2006 MILS 101 Military Science and Leadership: Foundations of Officership
Semester course; 1 lecture hour. 1 credit. Introduces students to fundamental components of service as an officer in the U.S. Army. Forms building blocks of progressive lessons in values, fitness, leadership and officership. Also addresses "life skills" including communications theory and practice (written and oral) and interpersonal relationships.

MILS 102 Military Science and Leadership: Basic Leadership

Semester course; 1 lecture hour. 1 credit. Establishes foundation of basic leadership fundamentals such as problem solving, communications, briefings and effective writing, goal setting, techniques for improving listening and speaking skills, and an introduction to counseling.
Effective Fall 2006 MILS 102 Military Science and Leadership: Introduction to Leadership
Semester course; 1 lecture hour. 1 credit. Introduces students to "life skills" of problem solving, decision making and leadership. Designed to help students be more effective as leaders, both immediately on campus and in the long term in either military or civilian life. Introduces students to fundamental officer skills such as map reading, land navigation, tactics and leadership values/actions. Using these basic skills, students will build a rudimentary understanding of the core competencies necessary to become an Army officer and leader.

MILS 201 Military Science and Leadership: Individual Leadership Studies

Semester course; 2 lecture hours. 2 credits. Designed to develop the student's knowledge of self, self-confidence and individual leadership skills. Through experiential learning activities, students develop problem-solving and critical thinking skills, and apply communication feedback, and conflict resolution skills.
Effective Fall 2006 MILS 201 Military Science and Leadership: Innovative Team Leadership
Semester course; 2 lecture hours. 2 credits. Prerequisites: MILS 101 and 102 or permission of department chair. Explores the dimensions of creative and innovative tactical leadership strategies and styles by examining team dynamics and two historical leadership theories that form the basis of the Army leadership framework. Aspects of personal motivation and team building are practiced by planning, executing and assessing team exercises, and by participating in leadership labs. The course continues to develop knowledge of leadership values and attributes through understanding Army rank, structure and duties as well as broadening knowledge of land navigation and squad tactics. Case studies provide a tangible context for learning the Soldiers Creed and Warrior Ethos as they apply in the contemporary operating environment.

MILS 202 Military Science and Leadership: Leadership and Teamwork

Semester course; 2 lecture hours. 2 credits. Prerequisite: MILS 201 or permission of the instructor. Focuses on self-development guided by knowledge of self and group processes. Experiential learning activities are designed to challenge a student's current beliefs, knowledge and skills. Examines how to build successful teams, various methods for influencing action, effective communication in setting and achieving goals, the importance of timing the decision, creativity in the problem-solving process, and obtaining team buy-in through immediate feedback.
Effective Fall 2006 MILS 202 Military Science and Leadership: Foundations of Tactical Leadership
Semester course; 2 lecture hours. 2 credits. Prerequisite: MILS 201 or permission of department chair. Examines the challenges of leading tactical teams in the complex contemporary operating environment (COE). Highlights dimensions of terrain analysis, patrolling and operation orders. Continued study of the theoretical basis of the Army leadership framework explores the dynamics of adaptive leadership in the context of military operations. Cadets develop greater self-awareness as they assess their own leadership styles and practice communication and team-building skills. COE case studies give insight into the importance and practice of teamwork and tactics in real-world scenarios.

MILS 203 Basic Military Science

0-6 credits. Optional ROTC Basic Camp. Five weeks of training at a military installation. Travel pay and salary stipend provided through the military science department. Student not obligated to any military service. Basic Camp graduates are eligible to enroll in advanced military sciences courses.
Effective Fall 2006 MILS 203 Military Science and Leadership: Leader's Training Course
0-6 credits. Prerequisites: Enrollment in the ROTC program, military service obligation and permission of department chair. Five-week summer course consisting of leadership training at Fort Knox, Ky. Completion of this course equates to completion of MILS 101, 102, 201 and 202, and enables students to enroll in the advanced military leadership courses. Amount of academic credit awarded depends upon amount of basic military science credit previously earned. Travel pay and salary provided through Department of Military Science and Leadership. Graded pass/fail.

MILS 301 Military Science and Leadership: Leadership and Problem Solving

Semester course; 3 lecture hours. 3 credits. Prerequisites: MILS 101, MILS 102, MILS 201 and MILS 202, or MILS 203, or permission of department chair. Students conduct self-assessment of leadership style, develop personal fitness regimen, and learn to plan and conduct individual/small unit tactical training while testing reasoning and problem-solving techniques. Students receive direct feedback on leadership abilities.
Effective Fall 2006 MILS 301 Military Science and Leadership: Adaptive Team Leadership
Semester course; 3 lecture hours. 3 credits. Prerequisites: MILS 101, 102, 201 and 202 (or MILS 203), permission of department chair and military service obligation. Challenges cadets to study, practice and evaluate adaptive team leadership skills as they are presented with the demands of the ROTC Leader Development and Assessment Course. Challenging scenarios related to small unit tactical operations are used to develop self-awareness and critical thinking skills. Cadets receive systematic and specific feedback on leadership abilities.

MILS 302 Military Science and Leadership: Leadership and Ethics

Semester course; 3 lecture hours. 3 credits. Prerequisite: MILS 301 or approval by department chair. Examines the role communications, values and ethics play in effective leadership. Topics include ethical decision-making, consideration of others, spirituality in the military and a survey of Army leadership doctrine. Emphasis on improving oral and written communication abilities.
Effective Fall 2006 MILS 302 Military Science and Leadership: Leadership in Changing Environments
Semester course; 3 lecture hours. 3 credits. Prerequisite: MILS 301 or permission of department chair. Provides instruction and case studies that build upon leadership competencies and military skills attained in MILS 301 in preparation for future responsibilities as Army officers. Specific instruction is given in individual leader development, planning and execution of small unit operations, individual and team development, and the Army as a career choice.

MILS 306 Military Science

0 credit. Prerequisite: MILS 302 and successful completion of four basic military science courses or MILS 203 Basic Military Science for six credits. ROTC National Advanced Leadership Camp. The ROTC camp summer practicum is six weeks long. Individual and group experience for application of leadership training. Exposure to leadership situations that require decisions made under physical and mental stress conditions.

MILS 401 Military Science and Leadership: Leadership and Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: MILS 301 and MILS 302, or permission of department chair. Develops student proficiency in planning and executing complex operations, functioning as a member of a staff, and mentoring subordinates. Students explore training management, methods of effective staff collaboration and developmental counseling techniques.
Effective Fall 2006 < p > < b > MILS 401 Military Science and Leadership: Developing Adaptive Leaders < /b > < br >
Semester course; 3 lecture hours. 3 credits. Prerequisite: MILS 302 or permission of department chair. Develops student proficiency in planning, executing and assessing complex operations, functioning as a member of a staff, and providing performance feedback to subordinates. Cadets are given situational opportunities to assess risk, make ethical decisions and lead fellow ROTC cadets. Lessons on military justice and personnel processes prepare cadets to make the transition to becoming Army officers. MS IV (senior) cadets lead lower-level cadets. Both classroom and battalion leadership experiences are designed to prepare MS IV cadets for their first unit of assignment. Cadets identify responsibilities of key staff, coordinate staff roles and use battalion operations situations to teach, train and develop subordinates. < /p >

MILS 402 Military Science and Leadership: Officership

Semester course; 3 lecture hours. 3 credits. Prerequisites: MILS 301, MILS 302 and MILS 401, or permission of department chair. Study includes case study analysis of military law and practical exercises on establishing an ethical command climate. Students must complete a semester-long Senior Leadership project that requires them to plan, organize, collaborate, analyze and demonstrate their leadership skills.
Effective Fall 2006 < p > < b > MILS 402 Military Science and Leadership: Leadership in a Complex World < /b > < br >
Semester course; 3 lecture hours. 3 credits. Prerequisites: MILS 301, 302 and 401, or permission of department chair. Explores the dynamics of leading in the complex situations of current military operations in the contemporary operating environment. Cadets examine differences in customs and courtesies, military law, principles of war, and rules of engagement in the face of international terrorism. Cadets also explore aspects of interacting with non-government organizations, civilians on the battlefield and host nation support. Course places significant emphasis on preparing cadets for Basic Officer Leadership courses and their first unit of assignment. Utilizes case studies, scenarios and "What now, Lieutenant?" exercises to prepare cadets to face the complex ethical and practical demands of leading as a commissioned officer in the U.S. Army. < /p >

Operations Research(OPER)

OPER 327/MATH 327 Mathematical Modeling

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 200. Fundamental concepts of mathematical modeling. Topics may include differential equation models, optimization models and probabilistic models. Practical problems will be discussed throughout.

OPER 490/STAT 490 Communications in Statistics and Operations Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 200 and STAT 314 or OPER 327, or permission of the instructor. Designed to help students attain proficiency in professional and academic communication in the context of statistics and operations research. Focus on the discipline-specific communication skills necessary to excel in careers or graduate studies in these disciplines.

OPER 520/MATH 520 Game Theory and Linear Programming

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 310. The mathematical basis of game theory and linear programming. Matrix games, linear inequalities and convexity, the mini-max theorems in linear programming, computational methods and applications.

OPER 527 Deterministic Operations Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 245 or 255, MATH 310 or permission of the instructor. Introduction to decision making using mathematical programming and system optimization. Topics include linear programming and the simplex method, nonlinear optimization and evolutionary methods. Applications to manufacturing, transportation, inventory control, project management and scheduling problems.

OPER 528 Stochastic Operations Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 245 or 255, MATH/STAT 309, and MATH 310 or equivalent. Introduction to decision making under uncertainty and the modeling of stochastic system. Topics include decision analysis, decision trees, attitudes to risk and the concept of utility, Monte Carlo simulation and risk analysis, discrete Markov Chains, birth-death processes and queuing models. Applications to decision problems in business and engineering will be discussed.

OPER 591 Topics in Operations Research

Semester course; 1-3 lecture hours. 1-3 credits. May be taken more than once for credit. Prerequisite: Permission of the instructor. A detailed study of selected topics in operations research.

OPER 631 Mathematical Programming

Semester course; 3 lecture hours. 3 credits. Prerequisite: OPER 527. Necessary and sufficient conditions for optimal solutions. Duality theory. Theoretical and practical development of solution techniques for operations research problems. Some current algorithms will be discussed.

OPER 635 Network Models and Graph Theory

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 or permission of instructor. This course will focus on optimization models for network problems, as well as on the underlying graph theoretic structure for such models. Emphasis will be on solution procedures and applications with some discussion of related implementation issues. The course will concentrate on the study of polynomial-time algorithms for well-solved problems. May also include treatment of solution techniques for NP-hard network problems. Possible topics for the course include, but are not limited to, maximum flows/minimum cuts in networks, minimum spanning trees, minimum cost flows, matching and assignment, shortest path problems, traveling salesman problems and multicommodity flows.

OPER 639 Practical Optimization

Semester course; 3 lecture hours. 3 credits. Prerequisites: OPER 527 and CMSC 255. The application of optimization theory toward the solution of practical problems in operations research. The use and analysis of computer programs available to solve such problems. The algorithms used in these programs will be discussed from a practical and theoretical point of view.

OPER 641 Discrete Event System Simulation

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 541 or equivalent or permission of instructor. An introduction to the application and theoretical background of system simulation. Topics include systems concepts, modeling systems using discrete events and the modeling of manufacturing and materials handling systems, computer systems and service systems through simulation. Theoretical topics include random variable generation, model verification and validation, statistical analysis of output, variance reduction techniques and optimization via simulation. A high-level simulation language will be utilized. Students will complete and present a simulation project.

OPER 643 Decision and Risk Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH/STAT 309. This course presents the decision and risk analysis theory and methodology. Decision analysis applies to hard problems involving sequential decisions, major uncertainties, significant outcomes, and complex values. The course includes: decision structuring with influence diagrams and decision trees; modeling uncertainty with subjective probabilities; sensitivity analysis and the value of information; and modeling preferences with utility functions. Decision and risk analysis applications in business and government are considered.

OPER 645 Queuing Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: OPER 528 or STAT 503. This operations research course provides a development of some basic queuing systems. Such systems will include birth-death queues, as well as the M/G/I and GI/M/S queuing systems. Other topics may include the GI/G/I queues, overflow queues, and some basic queuing networks.

OPER 647 Multiobjective Decision Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: OPER 643 or permission of instructor. Introduction to the mathematical foundations of multiattribute utility theory. Topics covered include: structuring objectives; tradeoffs under certainty; unidimensional utility theory; multiattribute preferences under uncertainty; preferences over time; and aggregation of individual preferences. Real world applications will be discussed throughout.

OPER 648/STAT 648 Systems Reliability Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 541 or equivalent, or permission of instructor. An introduction to engineering reliability and risk analysis, specifically failure data analysis, maintenance problems, system reliability and probabilistic risk assessment. Applications in computer science and engineering will include stochastic characterization of wear in hardware systems and the development of failure models for software systems. Decision problems such as the optimal maintenance of repairable systems and optimal testing policies for hardware and software systems will be examined. The analysis of risk through fault trees, event trees and accident precursor analysis also will be discussed.

OPER 649/STAT 649 Statistical Quality Control

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 541 or equivalent, or permission of instructor. Demonstrates how statistics and data analysis can be applied effectively to process control and management. Topics include the definition of quality, its measurement through statistical techniques, variable and attribute control charts, CUSUM charts, multivariate control charts, process capability analysis, design of experiments, and classical and Bayesian acceptance sampling. Statistical software will be used to apply the techniques to real-life case studies from manufacturing and service industries.

OPER 690/STAT 690 Research and Communications Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisites: 9 graduate credits in operations research (OPER) and/or statistics (STAT) and permission of the instructor. Designed to help students attain proficiency in professional and academic communication and research in the context of statistics and operations research. The course focuses on the discipline-specific communication and research skills necessary to excel in careers or graduate studies in these disciplines.

OPER 691 Special Topics in Operations Research

Semester course; 1-3 lecture hours. 1-3 credits. May be taken more than once for credit. Prerequisite: Permission of the instructor. A detailed study of selected topics in operations research.

OPER 696/STAT 696 Applied Project

Semester course; variable hours (to be arranged). 1-3 credits. A total of three credits will be applied to the M.S. in Mathematical Sciences (operations research or statistics concentration). Can be repeated for credit. Prerequisite: STAT/OPER 690 or permission of the faculty adviser. Designed to allow students to apply concepts and theories learned in other courses to a practical situation. Includes the selection, written description, completion and written report of the project and a presentation of the findings. Students may not receive credit for both OPER/STAT 696 and OPER/STAT 698.

OPER 697 Directed Research

Semester course; variable hours. 1-3 credits. May be taken more than once for credit. Prerequisite: Graduate standing. Supervised individual research and study in an area not covered in the present curriculum or in one which significantly extends present coverage. Research culminates with an oral presentation and submission of a written version of this presentation to the supervising faculty member.

OPER 698 Thesis

Hours to be arranged. 1-3 credits. A total of 3 or 6 credits may be applied to the M.S. in Mathematical Sciences/Operations Research. (A total of 3 credits for an expository thesis or a total of 6 credits for a research thesis.) May be taken more than once for credit. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis as described in this bulletin. Grade of "S," "U" or "F" may be assigned in this course.

Public Administration(PADM)

PADM 583 Effective Managerial Communications

Semester course; 1 lecture hour. 1 credit. Describes and explains the communications process as it applies in public organizations. Acquaints students with the theoretical basis of interpersonal communications and with applied methodologies from a managerial perspective.

PADM 584 Planned Organizational Change

Semester course; 1 lecture hour. 1 credit. Describes and explains strategies and tactics of planned organizational change. Emphasis is placed on the change process in organized situations and on various strategies and tactics the manager may employ to achieve desired change in his or her organization.

PADM 585 Power, Influence and Organizational Competence

Semester course; 1 lecture hour. 1 credit. This course will explore the strategies and tactics of power and influence use in large-scale public organizations. A framework for use of influence strategies will be presented and tactical methodologies will be examined through case study and simulation.

PADM 591 Topic Seminar

Semester course; 3 lecture hours. 3 credits. Seminar in contemporary public administration issues.

PADM 601/GVPA 601 Principles of Public Administration

Semester course; 3 lecture hours. 3 credits. Dynamics of governmental administration including administrative principles, decision making, communication, leadership, organizational models, and the social, economic, legal, and political milieu of administration.

PADM 602 Public Administration Theory

Semester course; 3 lecture hours. 3 credits. Examines historical and contemporary public administration theories and paradigms. Emphasizes the practical significance of such theories for both macro and micro issues in public administration.

PADM 603 Politics and Economics

Semester course; 3 lecture hours. 3 credits. Examines political and economic institutions and concepts as they affect and are affected by the practice of public administration. Topics include microeconomics and the public sector; the interrelationship between the private and public sectors; macroeconomics concepts and related institutions.

PADM 604 Comparative Public Institutions

Semester course; 3 lecture hours. 3 credits. Applies a comparative methodology to explore theories and models of public institutions in the United States and in selected developed and developing countries. Focuses on administrative structures and practices, with emphasis on the relationship between administrative practice and cultural, and political context. Institutions examined will be changed periodically to focus on interjurisdictional comparisons within the United States - at the local, state, and federal levels - as well as among other countries and the United States.

PADM 605/SOCY 605 Survey Research Methods

Semester course; 3 lecture hours. 3 credits. Prerequisites: SOCY 601, SOCY 602 and SOCY/STAT 608, or permission of instructor. Examines all major areas of survey research methodology including sampling, design, data collection methods, questionnaire design, data analysis, and data processing. Addresses problems specific to survey research, such as telephone interviewing, constructing large representative samples, and nonresponse rates.

PADM 606 Government Management Models

Semester course; 3 lecture hours. 3 credits. An examination of current thought and research on management theory and organizational design in government. Theory and research from diverse sources, i.e., political science, sociology, industrial psychology, and administrative science will be explored to provide each student with the macro conceptual framework necessary for development or refinement of effective public management skills.

PADM 607 Public Human Resource Management

Semester course; 3 lecture hours. 3 credits. The general concepts, principles, and techniques of personnel administration and employee relations as applied in governmental units and agencies.

PADM 609 Financial Management in Government

Semester course; 3 lecture hours. 3 credits. The general concepts, principles and techniques of financial management as they are applied in governmental units and agencies. Students specializing in nonprofit organizations may substitute PADM 659 for this core course.

PADM 621 Organizational Behavior and Management in Government

Semester course; 3 lecture hours. 3 credits. The general concepts, principles, and theories of management and organizational behavior as they relate to the administration of governmental units and agencies are dealt with in lecture, discussion, and workshop formats.

PADM 622 Public Sector Budgeting

Semester course; 3 lecture hours. 3 credits. Prerequisite: PADM 609. Advanced theory and practice of public agency budgeting in the decision-making process and its impact on policy-making. Topics include alternative budgeting systems, capital planning and budgeting, budget execution, budgeting analysis techniques, and revenue and expenditure forecasting.

PADM 623/GVPA 623/CRJS 623/URSP 623 Research Methods for Government and Public Affairs

Semester course; 3 lecture hours. 3 credits. Prerequisite for PADM 624. Introduction to the scope and methods of applied research for the public sector. Focuses on problem structuring through logical methods, exploring problems through observation and other methods of data collection, analyzing and summarizing findings using both qualitative and quantitative methods.

PADM 624 Quantitative Methods for Public Administration

Semester course; 3 lecture hours. 3 credits. Prerequisite: PADM 623 or permission of the instructor. Introduction to statistical methods for use in managerial decision making, policy analysis, and social science research. Descriptive and inferential statistics are explored through computations and using SPSS/PC computer software.

PADM 625/GVPA 625 Public Policy Analysis

Semester course; 3 lecture hours. 3 credits. The examination of various methods for identifying and structuring public policy problems and issues, formulating and analyzing alternative responses, recommending policy actions for decision making, and designing and evaluating implementation plans and the means to monitor and evaluate the resulting policy outcomes.

PADM 626 Intergovernmental Relations

3 lecture hours. 3 credits. Focuses on various models of federalism and examines the pragmatic evolution of federal, state, and local intergovernmental relations in the United States. Topics include policy implementation and implications, fiscal transfers, and local government cooperation and conflict in the metropolis.

PADM 627 Workshop in Policy Analysis and Evaluation

Semester course; 3 lecture hours. 3 credits. Prerequisites: PADM 624 and PADM 625, or permission of the instructor. This course is project-oriented, emphasizing practical experience in the design and conduct of policy analysis or program evaluation studies. Emphasizes political environment and client relationships.

PADM 628/ENVS 628 Environmental Policy and Administration

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. This course explores the relationship between environmental policy and its implementation within a democratic political system. It includes an investigation of basic concepts that underlie environmental policy and the difficulties encountered when attempting to apply them in a real-world setting. It also surveys a variety of tools and methodologies that may be useful in attempting to develop and implement environmental policy.

PADM 630/URSP 630 Strategic Planning and Management in the Public Sector

3 lecture hours. 3 credits. Explores the benefits and limitations of strategic planning and management in the public sector, examines approaches to strategic management, especially in terms of the role and behavior of top management, and provides an introduction to the analytic and process methods used in strategic planning and management.

PADM 637 Organic Human Resources Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: PADM 607 or equivalent. An examination of current thought, research, and personnel management theory and practice in government that is person-oriented is presented in this course. Topics include rank-in-the-person personnel systems; career development, executive personnel systems; forecasting human resource needs; individual-based performance evaluation; employee assistance programs; and special emphasis program.

PADM 642 Grants Management

Semester course; 3 lecture hours. 3 credits. Principles and practices of managing federal and state funds and implementing a grant-funded program. Topics include federal grant-making process, applying for a grant, developing grant accounting systems, joint funding, disputes, appeals and remedies, and close-out procedures.

PADM 650 Principles of Nonprofit Management

Semester course; 3 lecture hours. 3 credits. Explores the history, theories and dynamics of not-for-profit organizations in the United States, with focus on organizations with local or regional services areas. Emphasizes political, legal, cultural, and constituent environments; revenue generation; decision making, communications leadership; and organizational models. Compares the mission and operations of nonprofit organizations, government organizations, and for-profit enterprises in the delivery of services.

PADM 652 Administrative Law

Semester course; 3 lecture hours. 3 credits. The course considers the administrative process from the perspective of rule making and decision making within the framework of public agencies. It will examine the development of the law, the use and control over administrative discretion, legislative and judicial controls over the administrative process, and remedies for improper administrative acts.

PADM 654 Program Design and Evaluation in the Nonprofit Sector

Semester course; 3 lecture hours. 3 credits. Prerequisites: PADM 623 and PADM 624, or permission of instructor. Designed to train students of nonprofit administration and management in the principles of program design and evaluation. Students will be introduced to the theoretical, organizational, political and ethical foundations of the program as well as practical research design and methodologies, both qualitative and quantitative.

PADM 656 Fund Development for the Nonprofit Sector

Semester course; 3 lecture hours. 3 credits. Students will study the multiple methods and sources for funding nonprofit organizations, the various methods for identifying and securing funding resources and for differentiating among them. Sources of funding that will be explored include corporate, annual, planned giving/endowment, individual, major gift, the use of special events and direct mail. Grant writing will be explored in detail. Students will examine ethical issues related to fund raising as well as the stewardship of funds received.

PADM 657 Nonprofit Advocacy and Government Relations

Semester course; 3 lecture hours. 3 credits. Addresses the growth and expansion of the nonprofit sector's relationship to the government sector both in the United States and internationally. Students will study historical and current partnerships with and regulation by government entities. Students also will study the nonprofit organization's advocacy role on behalf of its missions and beneficiaries, the scope of permitted lobbying and political activities, the state's role in regulating speech by nonprofits and government funding of service delivery through religious-based organizations.

PADM 659 Financial Management for Nonprofit Organizations

Semester course; 3 lecture hours. 3 credits. Designed to introduce students to the financial practices of nonprofit organizations including budgeting, forecasting, accounting, auditing, and debt and cash management. The general concepts, principles and techniques of financia management will be studied in the context of the political, behavioral and social environments in which the nonprofit organization operates in order to determine the best manner for achieving the objectives of the nonprofit financial administrator/manager. This course may be substituted for the core course, PADM 609 Financial Management in Government, for students pursuing a nonprofit specialization.

PADM 660 Community Power Dynamics

Semester course; 3 lecture hours. 3 credits. Examination of the location of power in the American community, operational concepts and general methodological approaches defined, empirical findings based on various methodological approaches, conclusions on community political systems and power.

PADM 661 Nonprofit Law, Governance and Ethics

Semester course; 3 lecture hours. 3 credits. Examines fundamental governance issues in nonprofit corporations with a focus on boards of trustees and their fiduciary responsibilities as established by law as well as moral imperatives stemming from their actions on behalf of the public interest. The ethical dimensions of work in nonprofit organizations are explored with specific emphasis on risk management, tax liability and human resource management.

PADM 662 Advanced Topics in Revenue and Taxation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 616 or permission of instructor. An advanced examination of governmental revenue and taxation policies, tax incidence, and alternative funding techniques.

PADM 664 Local Government Administration

Semester course; 3 lecture hours. 3 credits. An intensive examination of the major functional responsibilities with a special emphasis on the organization, standards, operational imperatives, interrelationship with other functions, and special management problems at the local level, including small and rural jurisdictions.

PADM 670 Advanced Public Financial Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: PADM 609 and ECON 616, or permission of department. Brings together specialty aspects of public financial management such as economic and political implications, practical skill-building, operational financial administration issues and tactics, and accounting principles and approaches, and integrates these disparate segments of public finance. The emphasis is on policy-level implications and strategies of public financial management strategies of executive planning, analysis, and management of the financial sector of public organizations.

PADM 675 Comparative Public Administration

Semester course; 3 lecture hours. 3 credits. Explores methodology, theories, and models used in comparative approach to public administration, functional processes of administration in selected developing and developed countries, and role of bureaucracy in development and nation building.

PADM 680 Executive Leadership Seminar

Semester course; 3 lecture hours. 3 credits. Explores aspects of current interest in leadership style, skills, and roles. This course allows participants to explore areas of personal interest in contemporary public management leadership theory and practice and to share findings in seminar format.

PADM 681 Governmental Administrative Decision-making Processes

Semester course; 3 lecture hours. 3 credits. Identification of alternative decision making processes in public sector management environments. Choosing the proper method of the appropriate management-level theory and method of controlling administrative decisions within governmental organizations. Dealing with political, budgetary and personal constraints in achieving organizational goals.

PADM 682 Advanced Public Human Resources Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: PADM 607 or equivalent. Public personnel management is analyzed in process and systems perspectives, with specific emphasis on the interrelatedness of discrete system components with other systems. Attention is given to the integration of personnel elements through the development of feedback systems, positive and negative impacts' analyses, and personnel policy development and implementation.

PADM 683/PHIL 683/GVPA 683 Administrative Ethics

Semester course; 2 or 3 lecture hours. 2 or 3 credits. A philosophical investigation into the problems of making ethical decisions, focusing on issues likely to confront the public administrator. Examples of such issues are equity in social services delivery, affirmative action, loyalty to the bureaucracy vs. "whistle blowing," and conflicts of interest between personal and public interest.

PADM 689 Seminar in Public Administration: Integration of Theory and Practice

Semester course; 3 lecture hours. 3 credits. Prerequisites: 24 credits in public administration or permission of instructor. Integration of public management and administration theory and practice; goal setting for professional growth and approaches to life long continuing self-development; integration of theory, models, knowledge, skills, behaviors, values, ethics, and philosophy of public management and administration. This is a capstone, required course for M.P.A. students.

PADM 690 Reading Seminar

3 credits. Prerequisites: 24 credits in public administration or permission of instructor. A reading and writing intensive Internet course which may be taken in lieu of PADM 689. Students will read up to 15 newly published titles in public administration and related fields, write reviews of each and post them on the course Web site forum for peer review and critique.

PADM 691 Topics in Public Administration

Semester course; 1, 2 or 3 lecture hours. Variable credit. Course may be repeated with different topics as approved. Prerequisite: Permission of instructor. An in-depth study of a selected topic in public administration. See the Schedule of Classes for specific topics to be offered each semester.

PADM 693 Public Administration Practicum

3 credits. A professional internship in public service for those students without significant professional-level experience in a public agency.

PADM 697 Directed Research in Public Administration

Semester course; 1-6 credits. Prerequisite: Permission of instructor. Independent research into public administration problems, issues, applications, and theories related to student's field of concentration.

Philosophy(PHIL)

PHIL 101 Introduction to Philosophy

Semester course; 3 lecture hours. 3 credits. An introduction to some of the main branches of philosophy. Some of the issues that might be addressed are: What is knowledge? Is reason or experience the basis for all knowledge? Can we have knowledge of the past or of the future? What is truth? Does God exist? Is there a mental realm separate from the material realm? Are the laws of nature deterministic? Do we have free will? What makes an action morally permissible? What is the proper role of the state in regulating our lives? This course is directed primarily at first and second year students.

PHIL 103 Ancient Greek and Medieval Western Philosophy

Semester courses; 3 lecture hours. 3 credits. A survey of Western philosophy from the ancient Greeks (e.g., Socrates, Plato and Aristotle) through the medieval period (e.g., Augustine and St. Thomas Aquinas).

PHIL 104 Modern Western Philosophy

Semester course; 3 lecture hours. 3 credits. A survey of Western philosophy from the Renaissance to the 19th century (e.g., Hobbes, Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, Kant, Hegel and Marx).

PHIL 211 History of Ethics

Semester course; 3 lecture hours. 3 credits. Corequisite: ENGL 200 or equivalent. A philosophical investigation of the main concepts and theories of ethics and their application to fundamental moral questions, as illustrated by the ethical systems of such historically important Western philosophers as Plato, Aristotle, Augustine, Hume, Mill and Kant.
Effective Fall 2006 PHIL 211 History of Ethics
Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGL 101 or equivalent. A philosophical investigation of the main concepts and theories of ethics and their application to fundamental moral questions, as illustrated by the ethical systems of such historically important Western philosophers as Plato, Aristotle, Augustine, Hume, Mill and Kant.

PHIL 212 Ethics and Applications

Semester course; 3 lecture hours. 3 credits. Credit may be received for only one of PHIL 212, 213 or 214. Corequisite: ENGL 200 or equivalent. A philosophical investigation of the main concepts and theories of ethics, with applications to fundamental moral questions as they arise in different areas. Such problems as abortion, the welfare of animals, world hunger, pornography, capital punishment, nuclear defense, sexual behavior, environmental ethics and reverse discrimination may be used as illustrations.
Effective Fall 2006 PHIL 212 Ethics and Applications
Semester course; 3 lecture hours. 3 credits. Credit may be received for only one of PHIL 212, 213 or 214. Prerequisite: ENGL 101 or equivalent. A philosophical investigation of the main concepts and theories of ethics, with applications to fundamental moral questions as they arise in different areas. Such problems as abortion, the welfare of animals, world hunger, pornography, capital punishment, nuclear defense, sexual behavior, environmental ethics and reverse discrimination may be used as illustrations.

PHIL 213 Ethics and Health Care

Semester course; 3 lecture hours. 3 credits. Credit may be received for only one of PHIL 212, 213 or 214. Corequisite: ENGL 200 or equivalent. A philosophical investigation of the main concepts and theories of ethics, with applications to fundamental moral questions as they arise in health care. The following issues may be used as illustrations: abortion, euthanasia and the right to die, human experimentation, treating mental illness, genetic technologies, the concepts of health and disease and the funding of health care.
Effective Fall 2006 PHIL 213 Ethics and Health Care
Semester course; 3 lecture hours. 3 credits. Credit may be received for only one of PHIL 212, 213 or 214. Prerequisite: ENGL 101 or equivalent. A philosophical investigation of the main concepts and theories of ethics, with applications to fundamental moral questions as they arise in health care. The following issues may be used as illustrations: abortion, euthanasia and the right to die, human experimentation, treating mental illness, genetic technologies, the concepts of health and disease, and the funding of health care.

PHIL 214 Ethics and Business

Semester course; 3 lecture hours. 3 credits. Credit may be received for only one of PHIL 212, 213 or 214. Corequisite: ENGL 200 or equivalent. A philosophical investigation of the main concepts and theories of ethics, with applications to fundamental moral questions as they arise in business. The following issues may be used as illustration: affirmative action, investment in unethical companies or countries, product safety, whistle blowing and advertising.
Effective Fall 2006 PHIL 214 Ethics and Business
Semester course; 3 lecture hours. 3 credits. Credit may be received for only one of PHIL 212, 213 or 214. Prerequisite: ENGL 101 or equivalent. A philosophical investigation of the main concepts and theories of ethics, with applications to fundamental moral questions as they arise in business. The following issues may be used as illustration: affirmative action, investment in unethical companies or countries, product safety, whistle blowing and advertising.

PHIL 221 Critical Thinking

Semester course; 3 lecture hours. 3 credits. An introduction to inductive and deductive reasoning, with emphasis on common errors and fallacies.

PHIL 222 Logic

Semester course; 3 lecture hours. 3 credits. An evaluation of deductive arguments utilizing the methods of symbolic logic.

PHIL 291 Topics in Philosophy

Semester course; variable hours. 1-4 credits. Prerequisite: As specified in the Schedule of Classes or written permission of instructor. An introductory study of an individual philosopher, a particular philosophical problem or a narrowly defined period or school. See the Schedule of Classes for specific topics to be offered each semester.

PHIL 301 Mind and Reality

Semester course; 3 lecture hours. 3 credits. Prerequisites: 9 credits in philosophy including PHIL 221 or PHIL 222, and one of PHIL 101, PHIL 103 or PHIL 104, or permission of instructor. An examination of central metaphysical issues, for example, the mind-body problem, free will, causality, action, realism and the problems of universals.

PHIL 302 Reason and Knowledge

Semester course; 3 lecture hours. 3 credits. Prerequisites: 9 credits in philosophy including PHIL 221 or PHIL 222, and one of PHIL 101, PHIL 103 or PHIL 104, or permission of instructor. An examination of central epistemological issues, for example, the problem of justification, empirical knowledge, perception, rationality and truth.

PHIL 303 Philosophy of Language

Semester course; 3 lecture hours. 3 credits. Prerequisites: 9 credits in philosophy including PHIL 222 and 6 additional credits, at least 3 of which must be from PHIL 101, PHIL 103 or PHIL 104, or permission of the instructor. An examination of central issues in the philosophy of language; for example, the nature of meaning and reference, reductionism, properties of languages and the character of artificial symbols systems.

PHIL 320 Philosophy of Law

Semester course; 3 lecture hours. 3 credits. Prerequisites: 9 credits in philosophy, which must include PHIL 221 or PHIL 222, and one of PHIL 211, PHIL 212, PHIL 213, or PHIL 214, or permission of instructor. A critical examination of the nature of law and criminal justice in the light of important human values. The following topics will be considered: the nature of law and legal reasoning, the legal enforcement of morality, and such controversies as punishment versus rehabilitation and the right to due process versus the need for public safety.

PHIL 326/RELS 326 Existentialism

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits in philosophy (exclusive of PHIL 221 and PHIL 222) or permission of instructor. An examination of the nature of truth, freedom, responsibility, individuality and interpersonal relations as found in some principal writings of Kierkegaard, Nietzsche, Jaspers, Sartre, Heidegger, Camus, Buber and Marcel.

PHIL 327 Ethical Theory

Semester course; 3 lecture hours. 3 credits. Prerequisites: 9 credits in philosophy, which must include PHIL 221 or PHIL 222, and one of PHIL 211, PHIL 212, PHIL 213, or PHIL 214, or permission of instructor. A study of the problems of philosophical ethics, including relativism, egoism, utilitarianism, intrinsic value and the meaning and justification of ethical principles. Both historical and contemporary thinkers will be considered.

PHIL 331 Philosophy of Science

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of philosophy and 6 credits of natural sciences courses. An examination of the bases of scientific inquiry in both the natural and social sciences; including a study of such topics as hypothesis formation and testing, and the nature of scientific laws, theories and explanations.

PHIL 335 Social and Political Philosophy

Semester course; 3 lecture hours. 3 credits. Prerequisites: 9 credits in philosophy, which must include PHIL 221 or PHIL 222, and one of PHIL 211, PHIL 212, PHIL 213, or PHIL 214, or permission of instructor. A critical examination of political power and of the relationship between the individual and society. Possible topics include: anarchism and the justification of having a state at all; political views about what sort of state is justified (e.g., conservatism, liberalism, communitarianism, feminism, Marxism); private vs. collective property; market vs. planned economies; democracy vs. totalitarianism; and civil disobedience and revolution.

PHIL 340 Philosophy for Children

Semester course; 3 lecture hours. 3 credits. Prerequisites: Two philosophy courses, which must include at least one of PHIL 101, 103 or 104. A service-learning course requiring at least 15 hours of service in which students will be required to lead philosophical discussions with primary/secondary schoolchildren. An analysis of perennial philosophical questions and problems with the aim of introducing them to children. Some of the questions that might be addressed include: What is happiness? What is justice? What is a mind? Can a mind exist apart from a body? Can machines think? What is time? What is knoweledge? What are the limits of human knowledge? Service-learning course.

PHIL 342/RELS 342 Buddhist Reasoning and Debate

Semester course; 4 lecture hours. 4 credits. A basic introduction to perception, logic and epistemology in Buddhist thought. The course is designed to convey basic reasoning skills including formation of arguments, checking arguments for validity, and developing techniques and strategies for rational discourse.

PHIL 391 Topics in Philosophy

Semester course; variable hours. 1-4 credits. Prerequisite: As specified in the Schedule of Classes or permission of instructor. A study of an individual philosopher, a particular philosophical problem or a narrowly defined period or school. See the Schedule of Classes for specific topics to be offered each semester.

PHIL 408/RELS 408 Indian Tradition

Semester course; 3 lecture hours. 3 credits. Prerequisites: At least six credits in philosophy or religious studies courses. A systematic analysis of the major theories of Indian religious and philosophical thought: Vedas, Upanishads, Gita, Charvaka, Jainism, Buddhism, the six systems of Hinduism and contemporary development.

PHIL 410/RELS 410/INTL 410 The Chinese Tradition in Philosophy

Semester course; 3 lecture hours. 3 credits. A study of the development of Confucianism, of alternative ways of thought prior to the fall of the Han Dynasty and of neo-Confucianism. The systems of thought are examined in the light of their social, political and religious impact on China, Korea and Japan.

PHIL 412/RELS 412/INTL 412 Zen Buddhism

Semester course; 3 lecture hours. 3 credits. A study of Zen Buddhism, including backgrounds in Indian philosophy and practice, development in China and Korea, and present day Zen theory and practice in Japan and in Western countries.

PHIL 421 Aesthetics

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits in philosophy (exclusive of PHIL 221 and PHIL 222) or permission of instructor. A critical survey of philosophies of art from antiquity to the 20th century. Topics include: the nature of art, creativity, aesthetic experience and aesthetic judgments.

PHIL 430/RELS 430 Philosophy of Religion

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits in philosophy (exclusive of PHIL 221 and PHIL 222) or permission of instructor. A critical analysis of such topics as the concept of God, arguments for the existence of God, the problem of evil, the concept of faith, religious language and the conceptual problems posed by the plurality of religions.

PHIL 440/RELS 440 Mysticism

Semester course; 3 lecture hours. 3 credits. Prerequisite: One course in philosophy or religious studies. A critical analysis of the varieties of mysticism in world religions. Arguments for and against mysticism will be emphasized. Mysticism will be related to art, psychology, science, philosophy, theology and magic.

PHIL 490 Seminar in Philosophy

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisite: One of PHIL 301, 302, 303, 320, 327, 335 or permission of instructor in exceptional cases. Research and analysis of selected philosophical topic in a seminar setting.

PHIL 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 6 credits per semester; maximum total of 12 credits for all independent study courses. Open generally to students of only junior or senior standing who have acquired at least 12 credits in the departmental discipline. Determination of the amount of credit and permission of instructor and department chair must be procured prior to registration of the course. An independent study course to allow interested majors in philosophy to do research, under the direction of a professor qualified in that field, in an area of major interest.

PHIL 496 Senior Research Project

Semester course; 1-4 credits. Prerequisites: senior status; two courses from PHIL 301, PHIL 302, PHIL 303, PHIL 320, PHIL 327, PHIL 335, PHIL 391; and written approval by faculty supervisor. An individual research project to develop a polished journal-length research paper. This course is intended primarily for students who wish to develop a dossier paper for submission to a philosophy graduate program.

PHIL 521, 522 Aesthetics

Semester courses; 3 lecture hours. 3, 3 credits. A critical survey of aesthetics from antiquity to the 20th century. First semester: antiquity to the Renaissance; Second semester: the Renaissance to the present. Topics to be considered include the nature of art, aesthetic experience, the aesthetic analysis in the arts of painting, music, architecture, and the motion picture.

PHIL 591 Topics in Philosophy

Semester course; variable hours. 1-4 credits. Prerequisite: Written permission of instructor or graduate standing. A graduate level, in-department study of an individual philosopher, a particular philosophical problem or a narrowly defined period or school. See the Schedule of Classes for specific topics to be offered each semester.

PHIL 592 Independent Study

Semester course; 1-4 credits. An independent study course to allow graduate students to do research, under the direction of a professor qualified in that field, in an area of major interest.

PHIL 601 Principles of Ethics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing. An examination of major ethical theories and their application to contemporary issues in medicine, science, and public policy.

PHIL 602 Biomedical Ethics

Semester course; 3 lecture hours. 3 credits. An examination of ethical theory and its application to moral problems in medicine and biotechnology.

PHIL 635 Philosophy of the Social Sciences

Semester course; 3 lecture hours. 3 credits. A philosophical study of the nature of science and scientific explanation, with emphasis upon the social sciences. Topics include the philosophical analysis of objectivity in the social sciences, theories of human action, and the relation of social sciences to the physical sciences.

PHIL 683/PADM 683/GVPA 683 Administrative Ethics

Semester course; 2 or 3 hours. 2 or 3 credits. A philosophical investigation into the problems of making ethical decisions, focusing on issues likely to confront the public administrator. Examples of such issues are equity in social services delivery, affirmative action, loyalty to the bureaucracy vs. "whistle blowing," and conflicts of interest between personal and public interest.

PHIL 691 Topics in Philosophy

Semester course; variable hours. 1-4 credits. Prerequisite: Written permission of instructor or graduate standing. A graduate level, in-depth study of an individual philosopher, a particular philosophical problem, or a narrowly defined period or school. See the Schedule of Classes for specific topics to be offered each semester.

PHIL 692 Independent Study

Semester course; variable hours. 1-4 credits. Open to graduate students only. An independent study course to allow graduate students to do research, under the direction of a professor qualified in that field, in an area of major interest.

PHIL 713/PPAD 713 Ethics and Public Policy

Semester course; 3 lecture hours. 3 credits. Doctoral students only. An examination of the main theories of morality and justice. These theories' implications for public policy will be discussed.

Physics(PHYS)

PHYS 101 Foundations of Physics

Semester course; 3 lecture hours. 3 credits. For non-science majors. Introduction to the fundamental ideas of physics. The course covers selected topics in mechanics, heat, optics, electricity and magnetism and modern physics. Not applicable toward the physics major. An optional laboratory may be taken with this course. See PHYZ 101L.

PHYS 103 Elementary Astronomy

Semester course; 3 lecture hours. 3 credits. A descriptive approach to astronomy dealing with basic features of our solar system, our galaxy and the universe. Not applicable toward physics major. An optional laboratory may be taken with this course. See PHYZ 103L.

PHYS 107 Wonders of Technology

Semester course; 5 lecture/laboratory/recitation hours. 4 credits. Introduction to physics concepts involved in everyday technological applications. The course covers selected topics in mechanics, heat, optics, electricity and magnetism, and modern physics by depicting their role in common devices. The laboratory focuses on applications of physics principles to everyday real-life situations. Not applicable toward the physics major.

PHYS 201-202 General Physics

Continuous courses; 3 lecture and 3 laboratory hours. 4-4 credits. Prerequisite: MATH 151. Designed primarily for life-science majors. First semester: basic concepts of motion, waves and heat. Second semester: basic concepts of electricity, magnetism, light and modern physics. Not applicable toward physics major.

PHYS 207 University Physics I

Semester course; 3 lecture, 1 recitation and 3 laboratory hours. 5 credits. Corequisite: MATH 200. A vector-and calculus-based introduction to the fundamental concepts of mechanics, heat and wave motion.

PHYS 208 University Physics II

Semester course; 3 lecture, 1 recitation and 3 laboratory hours. 5 credits. Prerequisite: PHYS 207. Corequisite: MATH 201. A vector- and calculus-based introduction to the fundamentals of electricity, magnetism and optics.

PHYS 291 Topics in Physical Science

Semester course; 1-3 lecture or laboratory hours. 1-3 credits per semester. A study of a selected topic in physics, astronomy, geology, meteorology or oceanography. Not applicable toward physics major. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

PHYS 301 Classical Mechanics I

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 208 and MATH 301. Corequisite: MATH 307. Review of vector calculus. Newtonian mechanics: single particle, oscillations, motion under central forces and dynamics of a systems of particles.

PHYS 302 Classical Mechanics II

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 301 and MATH 307. Motion in noninertial frames, dynamics of rigid bodies, coupled oscillators, continuous systems and wave equations in one dimension.

PHYS 307/MHIS 307 The Physics of Sound and Music

Semester course; 3 lecture hours. 3 credits. Prerequisites: A 100- or 200-level physics course or equivalent and the ability to read music or sing or play a musical instrument, or permission of instructor. Basics of the physics of waves and sound. Fourier synthesis, tone quality, human ear and voice, musical temperament and pitch, physics of musical instruments, electronic synthesizers, sound recording and reproduction, room and auditorium acoustics. Not applicable toward the physics major.

PHYS 315/ENVS 315 Energy and the Environment

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior or senior standing. A study of society's demands for energy, how it is currently being met, the environmental consequences thereof and some discussion of alternatives. Open to non-physics majors; not applicable to the physics major.

PHYS 320 Modern Physics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 208 and MATH 301. Corequisite: MATH 307. Foundations of modern physics including special relativity, thermal radiation and quantization, wave-particle duality of radiation and matter, Schroedinger equation, atomic, nuclear and particle physics, and molecular structure and spectra. A continuation of PHYS 208.

PHYS 325 Visualization of Physics Using Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 207-208 and PHYS 320, or permission of instructor. Visualization of various areas of physics using the Mathematica language for performing numerical calculations and producing graphics and animations. Examples will be taken from classical mechanics, classical electromagnetism, modern physics, statistical mechanics and condensed matter physics.

PHYS 340 Statistical Mechanics and Thermodynamics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 301 and MATH 307. Microscopic theory of temperature, heat and entropy, kinetic theory, multicomponent systems, and quantum statistics. Mathematical relationships of thermodynamics.

PHYS 376 Electromagnetism

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 301 and MATH 307. Electrostatics, magnetism and electromagnetic properties of matter, Maxwell's equations, electromagnetic waves, boundary conditions, and polarization.

PHYS 380 Quantum Physics I

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 320 and MATH 307, or permission of instructor. Brief introduction to the correspondence between classical and quantum mechanics, Schroedinger wave equation, operator methods in quantum mechanics, angular momentum and conservation laws, solution to harmonic oscillator and the hydrogen atom, magnetic dipole momentum and spin.

PHYS 391 Topics in Physics

Semester course; 1-3 lecture hours. 1-3 credits per semester. Maximum total of 6 credits. In-depth study of a selected topic in physics or physics-related technology, usually at a level requiring only elementary algebra. Not applicable toward physics major. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

PHYS 397 Directed Study

Semester course; variable hours. 1-3 credits per semester. Maximum of 3 credits applicable toward physics major requirement; maximum total of 4 credits. Open to nonmajors. Determination of amount of credit and permission of instructor must be obtained before registration of course. Intended to allow nonmajors and majors to examine in detail an area of physics or physics-related technology not otherwise available in upper-level courses. May involve either directed readings or directed laboratory work.

PHYS 420 Quantum Physics II

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHYS 380 or permission of instructor. Transition rates, addition of angular momentum, multi-electron atoms-ground state, X-ray and optical excitations, time independent perturbation theory, relativistic hydrogen atom and the structure of atoms, collision theory, nuclear structure, elementary particles and their symmetries.

PHYS 422 Optics

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHYS 376 or permission of instructor. Comprehensive study of propagation of light, including geometrical optics, polarization, interference, diffraction, Fourier optics and quantum optics.

PHYS 440 Introduction to Condensed Matter Physics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 376 and PHYS 380. Structure and bonding in solids, phonons, free electron Fermi gas, energy bands, semiconductors, Fermi surface, optical properties and magnetism.

PHYS 450 Senior Physics Laboratory

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: PHYS 301, PHYS 320 and PHYZ 320L. Experiments in condensed matter physics with an introduction to the instrumentation and data analysis used in the research laboratory.

PHYS 490 Seminar in Conceptual Physics

Semester course; 1 lecture and 1 recitation hours. 1 credit. Prerequisites: PHYS 376 and PHYS 420. Attend weekly physics colloquia, practice oral presentation of ideas and problems. Assessment of general physics background.

PHYS 491 Topics in Physics

Semester course; 3 lecture hours. 3 credits. Maximum of 3 credits applicable toward physics major requirement; maximum total of 6 credits. An in-depth study of a selected topic in physics. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

PHYS 492 Independent Study

Semester course; variable hours. 1-3 credits per semester. Maximum of 3 credits applicable toward physics major requirement; maximum total of 8 credits. Open generally to students of only junior or senior standing who have acquired at least 12 credits in the departmental discipline. Determination of the amount of credit and permission of instructor and department chair must be procured prior to registration of the course. Independent projects in experimental or theoretical physics.

PHYS 508 The Physical Science of Space for Teachers

Semester course; 3 credits. Prerequisites: B.S. or B.A. degree with at least two mathematics and two science courses or permission of instructor. The course is designed for the secondary physical science and physics teachers. The physical science phenomena of the solar system and the universe: mechanics, electromagnetism, optics and energy are presented for the teacher. The course curriculum closely follows the Virginia Science Standards of Learning for Physics and Physical Science. The course makes use of the Virginia Science Museum's interactive physical science exhibit galleries (aerospace, force and motion, waves and patterns, light and vision matter, crystals and electromagnetism as well as the Digistar planetarium and telescopes.

PHYS 509 Experiencing Science for Teachers

Semester course; 3 lecture hours. 3 credits. Prerequisites: B.S. or B.A. degree with at least two mathematics and two science courses or permission of instructor. Designed to give physical science and physics teachers an understanding of the methods and processes actually used by scientists in different disciplines. Students repeat classic experiments, read from original works, keep detailed research journals, participate in laboratory experiments, engage in the peer review process and present results of projects in colloquium format. The course meets at the Science Museum of Virginia and uses the interactive science exhibits; visits to science sites in the area.

PHYS 510 Physical Science Demonstrations

Semester course; 3 credits. Prerequisite: PHYS 509 or permission of instructor. The course is designed to give the working secondary physical science and physics teacher a depth of experience in designing and effectively using experiments to interpret phenomena for students. Participants learn the essentials of developing effective apparatus for investigations, interactive exhibits and demonstrations in the physical sciences. Students will undertake and present a major project as part of the course.

PHYS 520 Introduction to Radiation Therapy Physics Laboratory

Semester course; 2 laboratory hours. 1 credit. Provides practical exercises in the radiation measurement devices and quality assurance procedures commonly employed in radiation therapy physics. Measurements of beam characteristics for treatment machines, including electron linear accelerators, and radioactive sources, including high dose rate brachytherapy are investigated.

PHYS 550 Techniques in Material Research

Semester course; 4 laboratory and 2 lecture hours. 3 credits. Prerequisite: Laboratory equivalent to PHYS 320L or PHYS 450. This course focuses on the application of modern characterization techniques in materials research. Techniques to be studied include high-resolution X-ray diffraction, low-energy electron diffraction, light-energy electron diffraction, scanning-tunneling microscopy, molecular beam epitaxy, Auger electron spectroscopy and X-ray photoemission spectroscopy.

PHYS 563 Radiological Physics and Radiation Dosimetry

Semester course; 3 lecture hours. 3 credits. Prerequisites: Equivalent of PHYS 376 and PHYS 380 or permission of instructor. Covers the fundamental conceptual, mathematical and physical aspects of radiation interactions with matter and energy deposition, including a thorough understanding of basic quantities and units. Application to the principles and methods of radiation detection and dosimetry will be emphasized.

PHYS 567 Introduction to Radiation Therapy Physics

Semester course; 3 lecture hours. 3 credits. Covers the fundamental conceptual and technical aspects of the use of ionizing radiation to evoke a therapeutic response/benefit to patients. Treatment planning and dose calculations for external beam radiation therapy and brachytherapy are emphasized.

PHYS 571 Theoretical Mechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 301 and MATH 301, or permission of instructor. An introduction to advanced dynamics involving the Lagrangian and Hamiltonian formalisms.

PHYS 573 Analytical Methods in Physics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 301, PHYS 376 and PHYS 380, or permission of instructor. Theoretical and numerical techniques in solving differential equations in condensed matter. Classification of electronic states in solids and clusters using groups, infinite series approximations, calculus of residues and causality.

PHYS 576 Electromagnetic Theory

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 376 and MATH 301, or permission of instructor. Maxwell's equations of electromagnetism, vector and scalar potentials, electromagnetic waves and radiation theory.

PHYS 580 Quantum Mechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 380 and MATH 307, or permission of instructor. Theoretical quantum descriptions with emphasis upon mathematical techniques. Schrodinger equation, hydrogen atom, eigenfunctions and eigenvalues, angular momentum and spin and perturbation theory.

PHYS 591 Topics in Physics

Semester course; 3 lecture hours. 1-3 credits. Open to graduate students and to undergraduate students with advanced standing. An in-depth study of a selected topic in advanced physics. See the Schedule of Classes for specific topics to be offered each semester and prerequisites. Applicable toward physics major requirements.

PHYS 601 Health Physics

Semester course; 3 lecture hours. 3 credits. Theoretical foundation and practical application of health physics as applied to diagnostic radiology, nuclear medicine and radiation therapy. Regulatory and scientific aspects of the subject are covered. Mathematical models and physical principles of radioactive decay and radiation interactions are used to assess the relative values of different radiation safety practices.

PHYS 630 Radiobiology for the Medical Physicist

Semester course; 3 lecture hours. 3 credits. Covers the fundamental aspects of radiobiology with specific emphasis on relative biological effectiveness and linear energy transfer, the oxygen effect, radiation carcinogenesis, DNA repair, hereditary effects of radiation, radiation-induced cell killing, cellular responses to radiation including cell cycle effects and activation of cell signal transduction pathways, early and late effects of radiation, and time, dose and fractionation in radiotherapy.

PHYS 633 Advanced Radiation Therapy Physics

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisites: PHYS 563 and PHYS 567 or instructor's permission. The course presents a survey of modern developments and methodological tools used in the following areas of radiation oncology physics: experimental dosimetry, computational dosimetry, quality assurance and commissioning, and advanced treatment planning and delivery modalities. By means of hands-on projects and literature reviews, students will become acquainted with the medical physics literature and acquire practical skills in selected areas. The course consists of a coordinated set of didactic lectures and laboratory projects.

PHYS 635 Physics of Nuclear Medicine, Radiography and CT

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Covers the physics of nuclear medicine imaging (including PET), X-ray production, radiography and computed tomography. Emphasis will be placed on the physical foundations of currently used diagnostic techniques and their relevance to the clinical setting. The classroom lectures will be enhanced through a series of integrated laboratory exercises.

PHYS 636 Physics of MRI

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Covers the physics of magnetic resonance imaging. Emphasis will be placed on the physical foundations of currently used diagnostic techniques and their relevance to the clinical setting. The classroom lectures will be enhanced through a series of integrated laboratory exercises.

PHYS 641 Solid State Physics

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 510, PHYS 302 and MATH 317, or permission of instructor. Study of structure and electronic properties of materials in the solid phase.

PHYS 650 Subatomic Physics I

Semester course; 3 credits. Prerequisites: PHYS 576, PHYS 580 and CHEM 510. Studies of nuclei and elementary particles, reaction dynamics, particle accelerators, detection devices, particle classification, symmetries and conservation laws, quantum electrodynamics, the weak interaction, quantum chromodynamics, unified theories, the nuclear shell model and collective model, and nuclear reactions. Offered in cooperation with Virginia State University.

PHYS 651 Subatomic Physics II

Semester course; 3 credits. Prerequisite: PHYS 650. A continuation of PHYS 650. Offered in cooperation with Virginia State University.

PHYS 661 Surface and Materials Physics

Semester course; 3 credits. Prerequisites: PHYS 641, CHEM 510 or permission of instructor. This course will focus on the physics of surface, interfacial and other nanostructured material systems, and the experimental techniques used to assay their geometric and electronic properties. Topics include ultra-high vacuum techniques and design, surface geometric and electronic structure, adsorbates on surfaces and interface formation, thin film growth, and layered systems. Characterization techniques to be discussed include geometric probes (STM, AFM, RHEED, LEED, AFM, XRD) and synchrotron radiation based electronic structure probes (PES, SXF, NEXAFS).

PHYS 663 Studies in Nuclear Physics

Semester course; 3 credits. Credits for only two televised courses will count toward degree requirements. Courses televised by the Virginia Cooperative Graduate Engineering Program. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

PHYS 670 Conceptual Physics for Teachers I

Semester course; 4 studio hours. 3 credits. Prerequisites: PHYS 508, PHYS 509 and PHYS 510, or permission of instructor. First of the sequence 670-672. Development of the methodology for the experimental design at middle and high school level, concentrating on the science of measurement, materials structure and characterization, and light and optical properties of matter. The 670-672 sequence uses and develops computer-based experiments and interactive multimedia materials for use in the classroom. The course contains examples of vertical integration of technological applications of physical principles across disciplines.

PHYS 671 Conceptual Physics for Teachers II

Semester course; 4 studio hours. 3 credits. Prerequisite: PHYS 670 or permission of instructor. Second of the sequence PHYS 670-672. Development of the methodology for experimental design at middle and high school level, concentrating on sound and acoustics, electromagnetism and classical mechanics.

PHYS 672 Conceptual Physics for Teachers III

Semester course; 4 studio hours. 3 credits. Prerequisite: PHYS 671 or permission of instructor. Third of the sequence PHYS 670-672. Development of the methodology for the experimental design at middle and high school level, concentrating on heat, thermodynamics and modern physics.

PHYS 682 Clinical Rotations in Medical Physics

Semester course; variable hours. 1-3 credits. May be repeated for credit. Prerequisites: At least one graduate medical physics course and permission of instructor. Clinical rotations in various medical physics sub-specialties.

PHYS 689 Medical Physics Literature Review

Semester course; 1 lecture hour. 1 credit. Review and discussion of relevant journal articles from the medical physics literature. May be repeated for credit with instructor's permission.

PHYS 690 Research Seminar

Semester course; 1 credit. May be repeated for a maximum of 4 credits. Examines current problems and developments in physics.

PHYS 691 Special Topics

Semester course; 3 credits. Prerequisites: At least one graduate-level physics course and permission of instructor. Selected topics in physics from such areas as statistical physics, quantum field theory, semi-conductor device physics, general relativity, electronic structure of solids, thin-film fabrication techniques, superconductivity, nuclear magnetic resonance techniques, crystallography, and nuclear physics.

PHYS 697 Directed Research

Semester course; 1-15 credits. May be repeated for credit. Prerequisites: At least one graduate-level physics course and permission of instructor. Research leading to the M.S. and Ph.D.degrees.

Physics Lab(PHYZ)

PHYZ 101L Foundations of Physics Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: PHYS 101. An optional laboratory consisting of experiments and activities correlated with PHYS 101.

PHYZ 103L Elementary Astronomy Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: PHYS 103. An optional laboratory course consisting of experiments and activities related to PHYS 103.

PHYZ 320L Modern Physics Laboratory

Semester course; 3 laboratory hours. 1 credit. Pre- or corequisite: PHYS 320. Experimental work correlated with PHYS 320.

Political Science(POLI)

POLI 103 U.S. Government

Semester course; 3 lecture hours. 3 credits. A study of American national government focusing on its underlying political ideas, constitutional basis, major institutions, and their interaction in the determination of public policy.

POLI 105/INTL 105 International Relations

Semester course; 3 lecture hours. 3 credits. An introductory analysis of interstate relations and world affairs. Attention focuses on theories of international politics, military capabilities and their application, international organizations, global economic trends, domestic sources of state behavior and other selected issues as appropriate.

POLI 107 Political Theory

Semester course; 3 lecture hours. 3 credits. Introduces students to the great thinkers and ideas of political theory. Provides an analysis of the relationship between ethics and politics in contemporary democracy and current challenges to traditional democratic theory. Topics discussed may include the nature of human existence and civilization; political obligations between the state and the citizen and among citizens; attempts to justify authority; the content and uses of power; and the right to disobedience and resistance, freedom, social justice, and equality.

POLI 109 Comparative Politics

Semester course; 3 lecture hours. 3 credits. Introduces students to the ways in which societies around the world govern themselves. Covers such topics as the historical evolution of the political system, political processes and institutions, and key issues in contemporary public policy for a globally representative group of 10 to 15 countries.

POLI 201 Introduction to Politics

Semester course; 3 lecture hours. 3 credits. This course examines the basic concepts involved in the study of politics. Topics include nature of the state, purpose of government, justice, power, etc.

POLI 205/SOCY 205 Introduction to Social Science Computing

Short course; 4 lecture/laboratory hours. 5 weeks. 1 credit. An introduction to the use of SPSS for storage, retrieval and exploration of social science data.

POLI 301 U.S. Parties and Elections

Semester course; 3 lecture hours. 3 credits. An overview of U.S. political parties and elections. Topics will include the history, organization and methods of U.S. political parties, presidential nominations and elections; Congressional elections.

POLI 302/AFAM 302 Politics of the Civil Rights Movement

Semester course; 3 lecture hours. 3 credits. The main objectives of the course are to introduce and examine the personalities and activities of the modern Civil Rights Movement. The course provides the historical background leading up to the peak years of the struggle for racial equality in America.

POLI 303 Public Opinion, Polling and the Media

Semester course; 3 lecture hours. 3 credits. Study of the interplay among the mass media, political campaigns and public opinion. Topics include public opinion and its measurement, how campaigns use public opinion polling and the impact of the media on public opinion.

POLI 306 The Congress

Semester course; 3 lecture hours. 3 credits. A study of the behavior of legislators and the structures and processes of legislative decision making in the U.S. Congress. Analysis will include both the internal and external environment of congressional policy making, and an assessment of the impact of congressional policy.

POLI 308 U.S. Presidency

Semester course; 3 lecture hours. 3 credits. A political and institutional study of the chief executive, focusing especially on the presidential personality and relations with Congress, the bureaucracy, the courts and the shaping of domestic and foreign policy.

POLI 310 Public Policy

Semester course; 3 lecture hours. 3 credits. An analytical survey of policy formulation and implementation in the United States, together with an examination of the impact of policy upon individuals and groups in American society.

POLI 311/ENVS 311 Politics of the Environment

Semester course; 3 lecture hours. 3 credits. An exploration of the current controversy about environmental politics and the issues and crisis it centers on. Special attention will be given to the constitutional, political and geographical factors in the development of environmental policy and the organized effort to deal with governmental actions and inaction and its impact on policy outcomes.

POLI 314 U.S. Constitutional Law

Semester course; 3 lecture hours. 3 credits. A survey of the development of the Constitution through judicial interpretation. Topics to be covered include an introduction to the operation of the Supreme Court, decisions on federalism, the powers of Congress, the president, the judiciary and civil rights and civil liberties.

POLI 315 Courts and Politics

Semester course; 3 lecture hours. 3 credits. Prerequisite: POLI 314. A study of theories and models of judicial decision making in the Supreme Court, focusing on judicial structure and procedures, policy-making analysis, political ideology, and judicial activism.

POLI 316/WMNS 316 Women and the Law

Semester course; 3 lecture hours. 3 credits. This course will introduce students to the history, politics and status of women under the American legal system. Topics to be covered may include equal protection, sexual violence, the particular rights of women of color and lesbians, reproductive rights, women criminals and women in the legal profession.

POLI 318/AFAM 318/WMNS 318 Politics of Race, Class and Gender

Semester course; 3 lecture hours. 3 credits. A study of the racial, class and gender influences on the history and development of political values, conflicts, processes, structures and public policy in the United States.

POLI 319/WMNS 319 Women and American Politics

Semester course; 3 lecture hours. 3 credits. This course analyzes the participation of women in American politics. Attention is given to both women's historical and contemporary roles in politics, their participation as voters and citizens, and their behavior as candidates and office holders. Additional topics may include workplace, family and education issues and reproductive rights.

POLI 320/SOCY 320 Research Methods in the Social Sciences

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Current methods of research in the social sciences. Includes a brief introduction to the use of SPSS for storage, retrieval and exploration of social science data.

POLI 321 City Politics

Semester course; 3 lecture hours. 3 credits. An examination of urban political power and influence, governance, and public policy. Topics include: power and influence, governmental structures and the political process, public policy, and service delivery.

POLI 322 State and Local Government and Politics

Semester course; 3 lecture hours. 3 credits. An examination of the politics and governance of states and localities. Attention is devoted to political culture, interest groups, political parties, the legislative, executive and judicial components of state government, along with the structure and political processes of local governments.

POLI 323 Virginia Government and Politics

Semester course; 3 lecture hours. 3 credits. An examination of Virginia state government and politics, with appropriate attention given to political culture, interest groups, political parties, the media and the legislative, executive and judicial branches of government.

POLI 329 Intergovernmental Relations

Semester course; 3 lecture hours. 3 credits. An examination of vertical and horizontal intergovernmental relations. Attention will be given to the major variants of federalism. The role of categorical and block grants in programmatic federalism will be assessed. Trends in intergovernmental relations will be advanced.

POLI 331 Public Administration

Semester course; 3 lecture hours. 3 credits. A study of the concepts and practices of public administration in the United States. Particular attention will be given to the administrative procedures and practices of the national government and of the government in Virginia.

POLI 341, 342 History of Political Thought

Semester courses; 3 lecture hours. 3-3 credits. A survey of political thought from the time of Plato to the present. First semester: leading political ideas of the ancient and medieval periods. Second semester: modern and contemporary thought.

POLI 343/AFAM 343 Black Political Thought

Semester course; 3 lecture hours. 3 credits. An historical and sociological perspective on the political and social ideas of black thinkers from David Walker to the present.

POLI 344 Contemporary Political Theory

Semester course; 3 lecture hours. 3 credits. This course provides a survey of recent trends in political theory. It examines updates of the major ideological traditions, arguments about the nature of modernity and recent developments in environment, feminist and non-Western thought.

POLI 345/AFAM 345 African-American Politics

Semester course; 3 lecture hours. 3 credits. In this course, students will discuss and analyze the dynamics of the black experience in the American political system. The status of African Americans in the United States and the struggle for racial equality will be examined, as will the manner in which American institutions have responded to these phenomena. Students will examine the race/class metric in African-American politics, particularly policies of Affirmative Action as a black progress strategy.

POLI 351/INTL 351 Governments and Politics of the Middle East

Semester course; 3 lecture hours. 3 credits. A comparative analysis of political systems in the Middle East including the study of contemporary aspects of traditionalism, the political nature of transition, the instruments of political modernization and evolution and revolution in the political process of Middle Eastern states. The course will explore the primary bases of cleavage and conflict and the principal forces that shape the policies and political dynamics of the region.

POLI 352/INTL 352 European Governments and Politics

Semester course; 3 lecture hours. 3 credits. A comparative study of the political systems of selected western and eastern European countries.

POLI 353/INTL 353 Latin American Governments and Politics

Semester course; 3 lecture hours. 3 credits. A survey of politics characteristic of Latin American systems, including democratic reformism, military authoritarianism and revolutionary socialism. The course also examines the contemporary problems of fledgling democracies as they cope with economic and debt crises and various opposition challenges.

POLI 354/INTL 354 Russian and Post-Soviet Politics

Semester course; 3 lecture hours. 3 credits. A study of the origins, institutions, processes and disintegration of the Soviet political system, and the ongoing reform efforts during the post-Soviet period. Special emphasis is placed on the politics of the transition to a democratic political system and a market economy. Other topics include nationality issues, social problems and foreign policy.

POLI 355/INTL 355 Asian Governments and Politics

Semester course; 3 lecture hours. 3 credits. A comparative analysis of the politics and governments of major Asian states, with a focus on Japan, China and India.

POLI 356/AFAM 356/INTL 356 Government and Politics of Africa

Semester course; 3 lecture hours. 3 credits. This course will introduce the student to the basic outlines of government and politics in Africa. The course will consider such topics as colonialism, elitism and nationalism and modernization strategies. Using the comparative approach, the course will primarily focus on West, East and Central Africa.

POLI 357/AFAM 357/INTL 357 Politics of Southern Africa

Semester course; 3 lecture hours. 3 credits. An examination of racial and political developments in the southern tip of Africa. While South Africa will be the primary focus of analysis, other countries in the region such as Zimbabwe, Angola and Mozambique will be studied.

POLI 358/INTL 358 Concepts of Comparative Government

Semester course; 3 lecture hours. 3 credits. Comparative study of politics and governments. Introduces concepts and theories used in the study of political systems. Topics include democratization and democratic governance, the role of the state, one-party and military regimes, revolution, and economic and political development.

POLI 361/INTL 361 Issues in World Politics

Semester course; 3 lecture hours. 3 credits. An exploration of several significant issues in world politics. Topics may include peacekeeping and collective security, international economic competitiveness, global environmental politics as well as selected others. Topics will vary with current events and trends in the international arena.

POLI 362/INTL 362 International Organizations and Institutions

Semester course; 3 lecture hours. 3 credits. A study of the background development structure and operations of organizations and institutions such as the United Nations, the European Community, the Organization of American States.

POLI 363/INTL 363 U.S. Foreign Policy

Semester course; 3 lecture hours. 3 credits. An analytical survey of processes and practices in the formulation of U.S. foreign policy, including an introduction to the goals, problems of implementation and current challenges faced by policy makers.

POLI 364/INTL 364 Vietnam

Semester course; 3 lecture hours. 3 credits. An analysis of the complete record of the conflict in Vietnam. The primary focus will be on the period of United States involvement. The course will examine closely how and why the United States became involved in Vietnam and what impact the Vietnam war has had on political institutions and behavior. In particular, the course will examine what impact the period of U.S. involvement has had upon U.S. foreign policy. The course also will consider additional topics including: public opinion and the war, the relationship between president and Congress in light of the war and contemporary U.S. politics as a backlash against the political movements of the 1960s.

POLI 365/INTL 365 International Political Economy

3 lecture hours. 3 credits. A survey of both theoretical and current policy issues in international political economy. Theories to be covered include liberalism, mercantilism, Marxism, regionalism, world systems theory and others. Policy issues include differing styles of capitalism in the industrialized world, the political economy of development, the politics of international corporate alliances and others.

POLI 366/WMNS 366/INTL 368 Women and Global Politics

Semester course; 3 lecture hours. 3 credits. A study of women and globa politics, providing both a feminist re-examination of traditional international-relations theories and a comparative analysis of the political, legal and economic status of the world's women. The impact of women on global political institutions such as the United Nations will be addressed as well as other feminist and grass roots means of taking political action.

POLI 367/CRJS 367/HSEP 301 Terrorism

Semester course; 3 lecture hours. 3 credits. Prerequisites: HSEP 101, POLI 103 and POLI 105 or permission of instructor. A survey of the modern problem of terrorism with an emphasis on the political nature of terrorist acts. Examines the history of terrorism, domestically within the U.S. and internationally, the role of religion, the structures and operations of terrorist organizations, as well as counterterrorism policies and policy making.

POLI 391 Topics in Political Science

Semester course; 3 lecture hours. 3 credits. Maximum total of 9 credits in all departmental topics courses may be applied to the major. An intensive survey of a specialized field of political interest. See the Schedule of Classes for specific topics to be offered each semester.

POLI 420 Seminar in Urban Politics

Semester course; 3 lecture hours. 3 credits. Attention will be devoted to concerns bearing on community power and influence, the dynamics of the urban political process, the nature of urban public policy and metropolitan governmental structure.

POLI 432 Bureaucratic Politics

Semester course; 3 lecture hours. 3 credits. Prerequisite: POLI 331. An analysis of the nature of bureaucracy and bureaucratic phenomena in American governments; the role and involvement of the bureaucracy in politics and the policy-making process. Primary focus on theories and approaches to understanding the central role of bureaucracy in modern society and its use and abuse of power.

POLI 448 Scope and Method of Political Science

Semester course; 3 lecture hours. 3 credits. Prerequisites: POLI 103 and 201, or permission of instructor. A comprehensive and systematic study of the philosophy of political science, various theories seeking to explain political phenomena and some of the techniques of political analysis.

POLI 452/INTL 452 Seminar in the Politics of Developing Areas

Semester course; 3 lecture hours. 3 credits. Analysis of the processes of political and economic development. Includes a study of various challenges facing developing countries, such as economic inequalities, environmental degradation, mass political participation, military coups, revolution and civil war.

POLI 468/INTL 468 Seminar on Comparative Foreign Policy

Semester course; 3 lecture hours. 3 credits. A study of theories, models and hypotheses of foreign policy behavior in various types of political systems with emphasis on empirical research and analysis of differences and similarities.

POLI 490 Senior Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisites: 24 credits in political science courses or permission of instructor. A capstone course examining the major ideas and debates in each of the four sub-fields of the discipline of political science: American government, political theory, comparative politics and international relations. Students are required to produce a research project on a critical issue in one of the sub-fields.

POLI 491 Topics in Political Science

Semester course; 3 lecture hours. 3 credits. Maximum total of 9 credits in all departmental topics courses may be applied to the major. An intensive survey of a specialized field of political interest. See the Schedule of Classes for specific topics to be offered each semester.

POLI 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 4 credits per semester; maximum total of 6 credits for all independent study courses. Open generally to students of only junior or senior standing who have acquired at least 12 credits in political science. Determination of the amount of credit and permission of the instructor and department chair must be obtained prior to registration of the course. An independent study course that allows a political science major or other student who meets the requirement to do research, under the direction of an instructor qualified in that area, in a subject or field of major interest.

POLI 493/URSP 493 Urban Government Internship

Semester course; 150 clock hours at a local legislative body or administrative agency. 3 credits. May be repeated once for a maximum of 6 credits or 300 clock hours. Approval of selection committee required. Under supervision of a faculty committee and a field supervisor, the internship is designed to present opportunities for qualified students to acquire exposure to aspects of public decision-making processes by participation in (1) local legislative bodies of the Richmond metropolitan area; (2) local and regional administrative agencies and commissions; and (3) private organizations that have demonstrated interest in local government and politics.

POLI 553 The Military in Politics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. The course will examine the pervasive character and growing importance of the military in the governmental and policy-making processes. It will include a study of the history of civil-military relations, and the changing dynamics of the relationship that occurs in response to changes in social and political contexts and as a result of technological changes in the military and warfare.

POLI 591 Topics in Political Science

Semester course; 3 credits. An in-depth study of a selected topic in political science in a seminar environment. Intended for small groups of students interested in examining issues and problems related to aspects of the political processes.

Portuguese(PORT)

PORT 101, 102 Elementary Portuguese

Continuous courses; 5 lecture/recitation hours. 4, 4 credits. Elementary grammar, reading and oral skills.

PORT 201 Intermediate Portuguese

Semester course; 3 lecture hours. 3 credits. Continuation of the essentials of grammar, with emphasis on achieving proficiency in aural comprehension, speaking, reading and writing skills.

PORT 202 Intermediate Portuguese Readings

Semester course; 3 lecture hours. 3 credits. Prerequisite: PORT 201 or the equivalent. Designed to increase the student's proficiency through the study of selected cultural and literary texts.

Psychology(PSYC)

PSYC 101 Introduction to Psychology

Semester course; 3 lecture and 1 computer-assisted instructional hours. 4 credits. A survey of the basic principles, methods of investigation and fields of study and application. Includes individualized application of principles and methods in computerized learning activities. This course is a prerequisite for upper-level work in the field of psychology.

PSYC 201 Career Development in Psychology

Semester course; 2 lecture hours. 2 credits. Prerequisite: PSYC 101. Introduction to the discipline of psychology and the career alternatives available in various specialties. Self-assessment, career decision-making skills, educational program planning methods will be covered. Special topics will include graduate/professional school options, opportunities for minority students and job search strategies for the B.A. or B.S. psychology major.

PSYC 214 Applications of Statistics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: PSYC 101 and STAT 210. Frequency distributions, measures of central tendency and variability; sampling, probability, correlation and significance tests as applied in psychological data.

PSYC 301 Child Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. A study is made of the growth and development of the child until puberty. Childlike is viewed in terms of physical, mental, social, emotional and educational factors. PSYC 304 Life Span Developmental Psychology also may not be taken for credit.

PSYC 302 Psychology of Adolescence

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 101 and either PSYC 301 or PSYC 304. A study of mental, moral, social and physical development from puberty to maturity viewed as in child psychology. Designed for secondary school teachers, youth leaders and professional psychologists.

PSYC 303 Personal Adjustment

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Surveys major theories of personality as a basis for studying theory, research and intervention into areas that require personal adjustment. Such areas include sense of self, stress and coping, work and career and several varieties of interpersonal relationships. Positive adjustment and growth as well as problems are discussed.

PSYC 304 Life Span Developmental Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Reviews the basic concepts and principles of physical, cognitive and social development at each major stage of life-prenatal, infancy, toddlerhood, preschool, middle childhood, adolescence, adulthood and old age. Consideration is given to the study of development at each stage of life and to different theoretical explanations for development. PSYC 301 Child Psychology may not also be taken for credit.

PSYC 305/EDUS 305 Educational Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. The application of psychological principles to the teaching-learning process with special emphasis on theories of learning and development.

PSYC 306 Psychology of Adult Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 101 and either PSYC 301 or PSYC 304. The life stages and transitions of the young adult, middle age and young-old phases of the life cycle are considered, following a review of methods of research within life-span development psychology. Topics include the impact of events such as birth of the first child, job relocation, mid-life re-evaluation and anticipated retirement.

PSYC 307/LFSC 307 Community Solutions: Multiple Perspectives

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Explores possibilities for addressing social concerns of the Richmond community by understanding the complex nature of social issues as essential to their successful amelioration via perspectives of life and social sciences. Toward this end, expertise from the social sciences, the life sciences and the community are integrated. Includes a service-learning experience (a 20-hour volunteer requirement).

PSYC 308 Stress and its Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Physiological and psychological aspects of stressors and the stress response. Review of principles, research and methods of stress management, such as relaxation, self-suggestions, meditation and biofeedback.

PSYC 309 Personality

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. The study of the various approaches to understanding human behavior in terms of personality theory. Various theories will be examined for commonality and uniqueness in assumptions, dynamics and development of personality.

PSYC 310 Industrial Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Application of psychological principles and techniques to problems in personnel management and human engineering; recruitment, selection, training and placement in industry; criteria in testing and test development; morale evaluation and improvement, employee counseling; work-management communications; human engineering in equipment design, quality control, working conditions and safety.

PSYC 317 Experimental Methods

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: PSYC 101 and PSYC 214. Introduction to experimental procedures and laboratory techniques in psychology. Demonstrations and experiments in sensation, perception, learning, emotion and motivation.

PSYC 318 Principles of Psychological Tests and Measurements

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 101 and PSYC 214. Concepts in psychological measurement and a survey of commonly used tests; testing procedures and rationale underlying these tests; tests of intelligence, aptitude, achievement, interest and personality critically examined, procedures described for selecting and evaluating specific group tests in these areas.

PSYC 321 Social Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Survey theory and research in social psychology. Topics include interpersonal and social influence processes, attitudes and social cognition, the impact of personality on social behavior, conformity, leadership and small group behavior.

PSYC 322/AFAM 322 Personality and Behavior of the African American

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. A study of personality factors such as motivation, ego-functioning and the socialization processes, with special emphasis on living conditions of African Americans.

PSYC 323 Interpersonal Relations

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Analyzes human relations from various theoretical perspectives. Typical topics include the effects of attraction, friendship, love and dependency on relationships; the evolution of relationships from initiation through termination. Strategies for increasing effectiveness of communication between individuals also are addressed.

PSYC 333/RELS 333 Psychology and Religious Experience

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Religious belief and experience as viewed by major psychological theorists. How psychological methodology has been used to study religious experience. Topics include personality factors and development, conversion experiences, religious experiences and mental health and human values.

PSYC 335/WMNS 335 Psychology of Women

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Overview of issues in psychology relevant to women. Topics include: research methods of women's issues; sex-role socialization; women and hormones; psychological androgyny; personality theory and counseling strategies for women; women and language; women and violence; and rape and abuse.

PSYC 340 Introduction to the Helping Relationship

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Overview to the dynamics of communication in a helping relationship. Didactic material includes the principles of empathy, nonverbal behavior, problem solving, crisis intervention and interview techniques. Basic paraprofessional counselor skills will be demonstrated and practiced through structured exercises.

PSYC 341/SOCY 341 Group Dynamics

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Social and psychological principles and research related to the individual in groups. Specific topics include motivation for individuals forming and joining groups, performance and productivity of group members, group leadership and majority and minority influence. The group will be examined in relation to the larger society and as a subculture in itself.

PSYC 401 Physiological Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Data from the fields of anatomy and physiology are presented, and their implications for psychology are discussed. The central nervous system, internal environment, vision, audition, reflexes, emotion, learning behavior disorders and their physiological components. Behavior of the human organisms is studied from the biopsychological point of view.

PSYC 404/SOCY 404 Social Psychology of Emotions

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 101, SOCY 101. An examination of the social shaping of emotion as well as its function in maintaining the social process. Cross-cultural uniformities and diversity in basic emotions and their expression are addressed as wel as selected social psychological theories of emotions.

PSYC 406 Perception

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Perception of information from sensory systems with concentration on vision and hearing. Research and theories on how we learn and judge color, form, movement, depth and how individuals integrate these in object identification.

PSYC 407 Psychology of the Abnormal

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Development of personality is discussed, with emphasis on factors leading to maladjustment. Lectures and reading cover the symptom groups of emotional disorders of both psychological and organic origin. Methods of assessing and treating these disorders are surveyed.

PSYC 410 Principles of Learning and Cognition

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Comprehensive treatment of learning and cognition with emphasis on humans, from behavioral, cognitive, biological and developmental viewpoints. Topics include conditioning, information processing, memory, sociobiology and cognitive and moral development.

PSYC 412 Health Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 101 and PSYC 308 or PSYC 401, or permission of instructor. Application of the principles and techniques of psychology to the field of medicine, to health maintenance and to illness. The integration of theoretical, research and applied issues is emphasized in the analysis of such topics as psychological/behavioral factors contributing to and protecting against physical illness (stress, smoking, exercise), factors relating to treatment and recovery (coping, treatment compliance), psychological problems resulting from illness and injury, and specific techniques and problem areas in health psychology (such as biofeedback, pain management, pediatric psychology, geropsychology, rehabilitation psychology and lifestyle change.)

PSYC 414/WMNS 414 Psychology of Women's Health

Semester course; 3 lecture hours. 3 credits. Overviews the psychological research on women's health. Topics include health behavior change, personality and individual differences, cognitive factors, disease-specific behaviors and interventions.

PSYC 426 Child Psychopathology

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 101 and either PSYC 301 or PSYC 304. Principal childhood behavioral abnormalities. A review of causes, assessment and diagnostic methods, and treatment, intervention and prevention approaches.

PSYC 451 History of Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101, junior or senior standing. Traces the history of ideas about mind and behavior as they relate to the theory and practice of psychology.

PSYC 491 Topics in Psychology

Semester course; 3 lecture hours. 3 credits. Maximum total of 6 credits in topics courses. Prerequisite: PSYC 101. An in-depth study of selected topics and issues in psychology. See the Schedule of Classes for specific topics to be offered.

PSYC 492 Independent Study

Semester course; variable hours. 1, 2 or 3 credits per semester. Maximum of 6 credits for all independent study courses. PSYC 492, PSYC 493 or PSYC 494 may be repeated for a total of 6 credits but a maximum of 12 credits total for all three courses. Prerequisite: PSYC 101. Open only to students of junior or senior standing who have acquired at least 12 credits in the departmental discipline. Determination of the amount of credit and permission of instructor and department chair must be procured prior to registration of the course. Independent study is defined as student-conceived and initiated readings or research project which is supervised by a psychology faculty member. An oral examination or written, comprehensive paper is required at the end of the semester.

PSYC 493 Fieldwork: Human Services

Semester course; 3 credits. PSYC 492, PSYC 493 and PSYC 494 may be repeated for a total of 6 credits but a maximum of 12 credits total for all three courses is allowed. Prerequisite: Permission of instructor. Students are placed in an agency, which will provide supervised work experience in various aspects of helping other people. The setting might be a government or private community agency, or a corporation, depending on the student's goals. The student works eight hours per week at the placement site, attends several group discussion sessions during the semester and completes written assignments. This course is designed to enhance the psychology major's career pursuits for either graduate-level training or post-baccalaureate employment.

PSYC 494 Research Internship in Psychology

Semester course; variable hours. 1, 2 or 3 credits per semester. May be repeated for a maximum of 6 credits with adviser's approval. PSYC 492, PSYC 493 or PSYC 494 may be repeated for a total of 6 credits but a maximum of 12 credits total for all three courses. Prerequisites: PSYC 101 and permission of faculty research supervisor must be obtained prior to registration. PSYC 214 and PSYC 317, or permission of supervisor. Students will work on various phases of a research project (design, data collection, data analysis, manuscript writing) under a psychology faculty member's close supervision. This course is designed to enhance the psychology major's career pursuits for either graduate-level training or post-baccalaureate employment.

PSYC 497 Honors Seminar

Semester course; 2 lecture hours. 2 credits. Prerequisites: PSYC 101 and junior standing and admission to the Honors in Psychology Program. Pre- or corequisite: PSYC 317. An introduction to the scientific process, particularly as applied to the field of psychology. Prepares students for future research experience and surveys current research, opportunities for post-graduate study and professional development in psychology.

PSYC 498-499 Honors in Psychology

Continuous courses; 3 lecture hours. 2-3 credits. Prerequisites: PSYC 101 and consent of undergraduate committee of the psychology department. Discussion will include advanced research strategies, related professional issues and topics determined by the student's interest. Students are required to develop and complete a senior honors thesis, which will be the major emphasis of the second semester.

PSYC 601 Foundations of Applied Developmental Psychology

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: graduate standing in the psychology program or permission of instructor. An introduction to developmental research and theory on applied research topics. Topics include ethical issues in applied developmental science, culture, ethnicity and child development, poverty, child abuse, nontraditional families, childcare, family instability, early childhood intervention, and parenting.

PSYC 602/GRTY 602 Psychology of Aging

Semester course; 3 seminar hours. 3 credits. Prerequisite: Permission of instructor. Psychological adjustment in late life; special emphasis on personality, cognitive, and emotional development; life crises associated with the aging process. Students must complete social sciences research methods before taking this course.

PSYC 603 Developmental Processes

Semester course; 3 lecture hours. 3 credits. Cognitive, social, personality, and behavioral development across the life span is considered, with special attention to theories of development.

PSYC 604 Social Psychology of Business and Industry

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 630 or permission of instructor. The theme is the influence of organizational structure on behavior. Topics will include motivation, attitudes, job satisfaction, morale, leadership, and supervision.

PSYC 605 Social Development

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: PSYC 603 or permission of instructor. The development of social relations, focusing primarily on infancy and childhood, but also considering adulthood and aging. Attachment, parent-child interaction, peers, siblings, aggression, sex-roles, cultural determinants, deprivation and remediation, social cognition, adulthood changes, parenthood. Critical evaluation of theory and current research.

PSYC 606 Early and Middle Childhood Development

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: graduate standing in the psychology program or permission of instructor. An introduction to theory and research on children from toddlerhood to middle childhood. Topics include language, intelligence, early education, schooling, social cognition, theory of mind, attachment, social competence, emotions and socialization.

PSYC 607/EDUS 607 Advanced Educational Psychology

Semester course; 3 lecture hours. 3 credits. Application of the principles of psychology to the teaching-learning process. Discussion will focus on the comprehensive development of individual learning experiences and educational programs from the point of view of the educator and the administrator.

PSYC 608 Research in Counseling Psychology

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Graduate standing in the counseling psychology program or permission of counseling committee. An introduction to the theoretical, procedural, methodological and ethical issues encountered during the conduct of empirical research in counseling psychology. Topics include the empirical analysis of such mainstream counseling research activities as assessment, interventions, consultation, supervision, training, psychosocial factors in health and prevention, career development, the study of diversity and underrepresented populations, and professional issues in counseling psychology.

PSYC 609 Contemporary Issues in Clinical Psychology

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: first-year graduate standing in clinical psychology or permission of the instructor. Informs first-year doctoral students of the philosophy behind the training model and the requirements of the doctoral program in clinical psychology in the context of the current status of contemporary issues in the field. Includes coverage of traditional and innovative training models, research issues, the role of assessment and psychotherapy in clinical psychology, the medical vs. the behavioral model of psychopathology, relations with other mental health professions, professional issues such as licensure and credentialing, and malpractice.

PSYC 610 Attitude Theory and Research

Semester course; 3 lecture hours. 3 credits. Theory and research in attitudes. Attitude formation and change, including cognitive consistency, learning and reinforcement, social judgment, and functional theories.

PSYC 611 Contemporary Developments in Counseling Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Contemporary issues, problems, and research related to the practice of counseling psychology; their importance in developing a professional identity and sensitivity to major developments in the field; history, present status, and future directions in the field of counseling psychology.

PSYC 612 Seminar in Motivation

Semester course; 3 lecture hours. 3 credits. A survey of some theoretical views of motivation. Biological, cultural personality, and learning theories of motivation will be covered. Theoretical positions will be related to current empirical findings.

PSYC 613 Cognitive Development

Semester course; 3 lecture/discussion hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. The development of the intellectual processes, including reasoning, memory, imagery, and knowledge. Special attention will be given to theories of cognitive growth. Although the focus will be on child cognitive developments, consideration of life-span issues will be included.

PSYC 614 Infant Growth and Development

Semester course; 3 seminar hours. 3 credits. Prerequisite: PSYC 603 or permission of instructor. Sensory and behavioral capacities of the infant; cognitive, social, and emotional development in the first two years of life, with emphasis on the effects of early experience on function later in life. Consideration of the special problems associated with infant research and intervention programs.

PSYC 615/GRTY 615 Aging and Mental Disorders

Semester course; 3 lecture hours. 3 credits. The course deals with common psychological disorders and problems of late life, their etiology, methods of evaluating psychological status, and intervention strategies that have been used successfully with older persons. Topics include epidemiology of psychological disorders and mental health service utilization; late-life stressors and crises; psychology of health, illness, and disability; techniques and procedures in the evaluation of the older adult; functional and organic disorders; institutionalization; individual, group, and family therapy, behavioral techniques; peer counseling and crisis intervention; and drugs and the elderly.

PSYC 616 Psychopathology

Semester course; variable hours. 1 or 3 credits. May be taken only one time for credit toward degree. Prerequisite: Permission of instructor. Clinical and experimental contributions to the field of psychopathology, with particular attention to the roles of learning and motivation in the development of behavior disorders.

PSYC 617 Sensation and Perception

Semester course; 3 lecture hours. 3 credits. The major phenomena of vision, audition, olfaction, gustation, and the skin senses. Psychophysics and the effects of sensory deficits. The relationship of variations in environmental energy to the psychological reactions of sensing and perceiving.

PSYC 618 Seminar in Personality

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A detailed exploration of various approaches in personality. Contemporary issues in personality theory.

PSYC 619 Learning and Cognition

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Covers principles and theories of learning and cognitive psychology from simple associative learning through memory, comprehension, thinking, and social behavior.

PSYC 620 Design and Analysis of Psychological Research

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Undergraduate course in basic statistics or permission of instructor. An introduction to research design in psychology (e.g., logic behind various research designs, typical research problems). Review of principles of hypothesis testing, general linear model, analysis of variance including factorial designs with special emphasis on prior and post hoc comparisons, repeated-measures designs and mixed designs.

PSYC 621 Statistics in Psychological Research

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisite: PSYC 620. Extensive coverage of multiple regression/correlation analysis with applications in psychology. Survey of applications of multivariate statistical analyses in psychology.

PSYC 622 Physiological Correlates of Emotion

Semester course; 3 lecture/seminar hours. 3 credits. Research and theories of emotion emphasizing physiological bases, with special attention to neurological and endocrine systems. Applications to psychological functioning.

PSYC 623 Counseling Theories and Personality

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Overview of major trends in personality theory, techniques and current research in psychotherapies as they apply to counseling psychology. Includes descriptions of some brief psychoeducation and preventive interventions and stresses accountability in outcome of all interventions.

PSYC 624 Group Counseling and Psychotherapy

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Permission of instructor. Historical perspective. Basic dynamics and processes of therapeutic groups. Role and technique of the group facilitator. Examination of different theoretical approaches.

PSYC 625 Career Counseling: Theory and Practice

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Permission of instructor. Review of major theories and current research in career development. Techniques of career counseling for individuals and groups. Emphasis on late adolescent, adult, and pre-retirement populations.

PSYC 626 Single-case Experimental Design for the Clinical Research Practitioner

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Permission of instructor. Review of single-case design models that have utility for clinicians in evaluating their practice. Emphasis will be placed on the historical development of the field and on the main experimental design issues that are relevant to the conduct of single-case research.

PSYC 627 Research Methods in Clinical Psychology

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisites: PSYC 621 and graduate standing in clinical or counseling psychology, or permission of instructor. Examines the role of research in clinical psychology and experimental design issues in psychotherapy research.

PSYC 628 Psychology of Adolescence

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Theories and research on the social, personality, and cognitive development of adolescents. Emphasis is placed on the development of identity and relationships with family and peers, within the contexts of home, school, work, and community. Variations in development related to cultural differences will also be the focus, but atypical behavior will be explored. Normal adolescent behavior will also be addressed. Current research ideas will be examined.

PSYC 629 Biological Basis of Behavior

Semester course; 3 lecture hours. 3 credits. Prerequisite: An undergraduate course in physiological psychology or permission of instructor. Theory and current experimental research on the physiological and neurological concomitants of behavioral variables.

PSYC 630 Social Psychology

Semester course; 3 lecture/seminar hours. 3 credits. Topics include attitudes, social influence processes, person perception, affiliation and attraction, group processes, cultural influences on behavior, and conformity.

PSYC 632 Research Methods in Social Psychology

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisites: PSYC 621 and PSYC 630. Epistemological, methodological, technical, and ethical problems encountered during the scientific study of social psychological phenomena. Emphasizes practical experience in theory development, hypothesis derivation, research planning, data collection, reduction and analysis, and dissemination strategies.

PSYC 633 Group Dynamics

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: PSYC 630 or permission of instructor. Theoretical explanations and empirical research related to group formation, development, performance, and dissolution. Topics include obedience, conformity, group productivity, and leadership.

PSYC 634 Attribution and Social Cognition

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: PSYC 630. Analysis of the perceptual and inferential processes that influence the perceiver's understanding of others' traits and characteristics. Examines theoretical perspectives and current empirical studies of the intuitive use of behavioral data in making inferences concerning the causes of actions and events and the cognitive mechanisms that structure inferences about others' qualities.

PSYC 635 Psychology of Health and Health Care in the Elderly

Semester course; 3 lecture hours. 3 credits. Presents health psychology models, theories, and issues relating to the etiology, course, and treatment of illness in the elderly. Covers older patient-practitioner interaction, compliance, late-life stress and illness, psychosocial issues in terminal care.

PSYC 636 Research Methods in Developmental Psychology

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: PSYC 621. Research designs, methods, ethical issues, and problems specific to developmental psychology. Cross-sectional, longitudinal, and sequential strategies. Statistical issues, multivariate statistics, and choice of statistical designs appropriate for developmental research questions. Computer skills in organizing and analyzing data. Grant writing and scientific reporting.

PSYC 637 Operant Behavior

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Presents an overview of the methodology, terminology, and phenomena unique to the experimental analysis of behavior. Topics include operant methodology, schedules of reinforcement, stimulus control, acquisition of behavior, conditioned reinforcement, punishment, scheduled-induced behaviors, and use of operant techniques in drug research.

PSYC 638 The Evolution of Psychological Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: Core course in student's area of specialization or permission of instructor. A survey of the development and present state of various psychological systems. Current meta-theoretical and systematic issues in psychology.

PSYC 639 Research Methods in Biopsychology

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: Permission of instructor. Methodological, technical, and ethical problems in biopsychology. Examples are design and use of circuits in behavioral sciences, stereotaxic surgery, histology, drug procedures, research design, data collection procedures, and data analysis.

PSYC 641/GRTY 641 Survey of Psychological Assessment and Treatment of the Older Adult

3 credits. A combination didactic and skills training course; review of major treatment strategies and techniques for utilization with the older adult client with emphasis on group, individual, and paraprofessional delivery systems; evaluation of crisis intervention and consultation team approaches; lectures, demonstration, and classroom practice of actual treatment techniques.

PSYC 642/GRTY 642 Practicum in Clinical Geropsychology

3 credits. An initial practicum geared as an entry to the team practicum experience; focus on familiarizing the student with mental health service delivery systems for the elderly in the Richmond community; rotation through a limited number of facilities such as nursing homes, retirement centers, nutrition sites, emergency hotline services for the elderly, and various agencies involved in deinstitutionalization; possible extended placement in a particular facility.

PSYC 643 Principles of Psychological Measurement

Semester course; 2 lecture hours. 2 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Basic psychometric concepts to prepare the student for subsequent evaluation instruments. Origins and logic of testing, criteria for judging tests, standardization and reliability, and validity and principles of test development and construction.

PSYC 644 Individual Tests of Intelligence

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology or permission of counseling or clinical psychology program. Examines the administration, scoring, interpretation, and research foundations of the major individual tests of intelligence. Emphasizes the Wechsler scales and the measurement of adult and child intelligence. Develops psychological report writing skills.

PSYC 645 Assessment of Personality

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology, or permission of clinical or counseling psychology program and instructor. Examines use of objective and projective tests in assessment of personality. Emphasizes clinical interpretation of the Minnesota Multiphasic Personality Inventory (MMPI), and the administration and clinical interpretation of the Rorschach and Thematic Apperception Test (TAT). Stresses integrative report writing.

PSYC 646 Projective Techniques

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology or permission of counseling and clinical program committee. Projective devices for the assessment of personality. Supervised administration, scoring, interpretation, and written reports of individually administered projective personality tests.

PSYC 647 Neuropsychological Assessment

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of instructor. Psychological assessment of brain-behavior relationships in the context of neurological or neurosurgical problems. Emphasis is on current modifications of Halstead's tests and on the Reitan-Indiana Neuropsychological Battery for younger children. Laboratory requires supervised administration, scoring, and interpretations of neuropsychological test batteries.

PSYC 648 Behavioral Assessment of Clinical Problems

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of instructor. Development, evaluation, use, and interpretation of behavioral approaches to the assessment of clinical problems, including self-monitoring, behavioral ratings, and direct observational assessment procedures. Both existing instruments and procedures for designing new instruments will be discussed.

PSYC 649 Clinical Assessment of Child Disorders

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: PSYC 643 and graduate standing in clinical psychology, or permission of clinical program committee and instructor. Administration and interpretation of intellectual and personality assessment instruments for children. Laboratory requires supervised administration, scoring, interpretation, and written reports of these assessment instruments.

PSYC 650 Advanced Child Psychopathology

Semester course; variable hours. 1 or 3 credits. May be taken only one time for credit toward degree. Principal childhood behavioral abnormalities: mental retardation, psychosis, learning disabilities, speech and language problems, school-related behavioral problems, neurosis, psychosomatic disorders and juvenile delinquency. Genetic, prenatal, perinatal, postnatal and social-psychological factors related to etiology. Integration of assessment and treatment methods.

PSYC 651 Theories of Counseling and Interviewing

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: graduate standing in counseling or clinical psychology, and permission of instructor. Introduces basic principles of interviewing as they apply to theories and practice of psychotherapy and counseling. Laboratory requires video-taping of simulated counseling/psychotherapy session, modeled and role-played interviewing situation, skill development and demonstration, and evaluative interpersonal feedback.

PSYC 652 Child and Adolescent Psychotherapy

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of the instructor. Presents the major approaches to psychological interventions for children's and adolescents' behavioral and emotional disorders. Includes a review of empirical research evaluating the effectiveness of contemporary psychological interventions for specific disorders.

PSYC 653 Family Counseling and Therapy

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisites: PSYC 616, and PSYC 693 or PSYC 694, and PSYC 645; or permission of instructor. Emphasizes an applied approach to family assessment and therapy. Presents theories and concepts of major approaches to family therapy and general systems issues. Emphasizes techniques of family therapy. Involves participants in role playing, demonstration, films, and case discussion.

PSYC 654 Marriage Counseling and Therapy: Theory, Practice and Research

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology, or permission of instructor. Surveys major theories of marital interaction and counseling (as distinct from family counseling). Students perform assessment batteries and interviews and practice selected techniques of marital counseling. Participation in a research project, either library, field, or experimental research, is required.

PSYC 655 Community Interventions: Development, Implementation and Evaluation

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Provides an understanding of the concepts community, prevention, and promotion and how interventions that adopt such a perspective differ from traditional psychotherapeutic interventions in their goals and targets. Explores how to critically evaluate research related to community and preventive interventions. Emphasizes consideration of issues in designing, implementing, and evaluating community intervention projects. Provides opportunities to conduct part of the intervention in a community setting.

PSYC 656 Structured Training Groups

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Permission of instructor. This course presents an introduction to the historical roots and basic assumptions of group training methods. The specific focus is on those structured, behavioral interventions that are designed to be time limited and emphasize staff development or training needs of clients. Needs assessment, screening, program development and evaluation, consultation methods, and ethics are included as topics. Leadership styles and the composition of training grant proposals are developed and critiqued in the laboratory/experiential component of this course.

PSYC 659 Seminar in Consultation Psychology

Semester course; 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Explores theory and practice of psychological consultation using case materials, readings, and individualized projects. Covers conceptual models and role choices available to the consulting psychologist, common phases, principles, and practices found in the consultation process and program evaluation and consultation research methods and issues.

PSYC 660 Health Psychology

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 629 and graduate standing in psychology, or permission of instructor. Provides an overview of research in and applications of the principles of behavioral psychology with respect to the fields of medicine, health maintenance, and illness. Emphasizes the integration of theoretical research and applied issues in these areas. Surveys major topics in behavioral medicine, including psychophysiological disorders, compliance and adherence with health care regimens, psychological adjustment to illness and pain, behavioral dentistry, pediatric psychology, cardiovascular risk reduction, eating and sleeping disorders, behavioral pharmacology, biofeedback. Explores roles of psychologists.

PSYC 665 Psychodynamic Approaches to Psychological Treatment

Semester course; 3 credits. Prerequisite: Permission of instructor. Examines basic principles in conceptualizing and treating clients from a psychodynamic perspective. Theoretical and clinical readings and case materials are used as a basis for an in-depth analysis of psychodynamic theories and practices within a seminar format.

PSYC 666 Crisis Intervention: Theory, Research and Practice

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Review of the development of the concept of psychological crisis and of intervention programs in a range of areas such as sexual assault, natural disasters, telephone hotlines, and medical emergencies. Relevant theory and data from community psychology, laboratory and applied research, sociology, and psychiatry will be considered.

PSYC 667 Behavior Therapy

Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate standing in the psychology program or permission of instructor. Emphasizes group and individual approaches to the following general areas: observational techniques; counterconditioning and extinction procedures; techniques of positive and negative control; self-control procedures; use of modeling and role playing as change techniques; behavioral feedback and cueing procedures.

PSYC 668 Interpersonal Psychotherapy: Social Psychological Analysis

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Permission of instructor. Analysis of counseling and psychotherapy as interpersonal influence processes. Applications of social psychological theories and research to the process of therapeutic change; identification of key aspects of the change process and of how these aspects are embodied in current approaches and techniques of counseling and psychotherapy. Emphasis on experimental methods of studying change processes.

PSYC 669 Interpersonal Psychotherapy: Communication Analysis

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Permission of instructor. Theory and research in nonverbal communication. Communication theories of psychotherapy and a communication analysis of key concepts in psychotherapy.

PSYC 670 Seminar in Gestalt Therapy

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Philosophical basis, historical background, theoretical formulation, techniques, and application of Gestalt therapy. Students will have the opportunity to practice and observe the techniques.

PSYC 671 Readings and Research

Semester course; 1-3 credits. May be repeated for a maximum of 9 credits. Prerequisite: Written permission of instructor. Individual study leading to the investigation of a particular problem in a systematic fashion under the supervision of a member of the faculty.

PSYC 675 Ethical Principles of Psychology

Semester course; 2 lecture hours. 2 credits. A discussion of some of the current problems of interest to psychologists. Particular emphasis on the ethical principles of psychology, and the dilemmas encountered in the teaching, research, and applied practice of psychology.

PSYC 676 Personal Awareness in Multicultural Counseling

Semester course; 2 seminar hours and 1 hour skills-building component. 3 credits. Prerequisite: Graduate standing in the counseling psychology doctoral program or permission of the instructor. Focus on (1) self-awareness regarding cultural issues, (2) knowledge of cultural differences and (3) counseling skills with culturally different clients. This course will provide the theoretical and research knowledge base to complement students' experiential training in multicultural issues. Building on the students' knowledge of Western and non-Western psychology theories and practices, the course will help students in developing a theory of cross-cultural and multicultural counseling. The course will further focus on historical development of multiculturalism and examine existing research in this area.

PSYC 677 Minority Issues in Mental Health

Semester course; 3 lecture/seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Presents an overview of issues pertaining to the mental health of visual racial/ethnic groups (VREG) in the United States (i.e., African-Americans, Hispanics, Asian-Americans and Native Americans). Topic areas include research and psychological theories, assessment, diagnosis, ethnic identity acculturation, service utilization, the family, psychotherapy and training issues.

PSYC 690 Research Practicum

Semester course; 4 hours per credit. 1-3 credits. Available to graduate students in the psychology department with approval by their program committee. Provides the graduate student in psychology the opportunity to design and apply research skills under close faculty supervision. Involves research projects that progressively become more sophisticated as students increase their research skills.

PSYC 691 Special Topics

Semester course; 3 lecture/seminar hours. 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Theory, research, and techniques in specialized topics of current interest are presented.

PSYC 693 Counseling Practicum

Semester course; one-half day per credit. 1-3 credits. May be repeated for a maximum of 12 credits. Available only to graduate students in counseling psychology approved by the counseling program committee. A series of training experiences designed to facilitate progressively greater degrees of skill development in counseling psychology.

PSYC 694 Clinical Practicum

Semester course; one-half day per credit. 1-3 credits. May be repeated for a maximum of 12 credits. Available only to graduate students in clinical psychology approved by the clinical program committee. The graduate student in clinical psychology is given an opportunity to apply and practice interviews and diagnostic and therapeutic skills with clients requiring psychological services. Careful supervision and evaluation of the student is provided. The practicum may be located at a clinic on campus or in a hospital or other agency off campus.

PSYC 695 Practicum in Clinical or Counseling Supervision

Semester course; 4 supervisory hours. 2 credits. May be repeated for a maximum of 6 credits. Credits earned do not count as course credits toward the degree. Prerequisites: permission of instructor, enrollment in graduate program in clinical or counseling psychology, completion of 12 hours of clinical (PSYC 694) or counseling (PSYC 693) practicum. This course is an opportunity to develop, apply, and practice psychotherapy supervision skills under the direct supervision of clinical or counseling faculty members.

PSYC 696 Internship

0.5 credit. Prerequisite: Approval of the director of the program involved. The internship is one-year, full-time assignment, under supervision, to an agency approved by the student's program committee.

PSYC 700 Grant Writing

Semester course; 3 lecture hours. 3 credits. Prerequisites: two graduate courses in statistics or permission of instructor. Students are expected to enter course with a pre-approved topic identified and substantial background reading completed. Focuses on preparing an NIH grant application, using F31-F32 mechanism (predoctoral or postdoctoral National Research Service Award) as a model. Course covers elements of a grant application, details of the grant review process, and key features of successful applications. Students prepare a research plan for their own application based upon their current work.

PSYC 702/MGMT 702 Causal Analysis for Organizational Studies

Semester course; 3 lecture hours. 3 credits. Prerequisites: 2 graduate courses in statistics or permission of instructor. Focuses on conceptual and statistical issues involved with causal analysis with nonexperimental and experimental data. Course covers basic and advanced confirmatory factor analysis and structural equation techniques, with an emphasis on organizational and psychological applications.

PSYC 795 Practicum in the Teaching of College Psychology

Semester course; 3 credits. May be repeated. Prerequisites: Appointment as a graduate teaching assistant in psychology or permission of instructor. Students develop skills in the design and conduct of undergraduate courses in psychology through observation and supervised experiences: acquaints students with university, college, and department policies and resources in support of instruction; familiarizes students with disciplinary resources; assists students in evaluating personal strengths and weaknesses.

PSYC 798 M.S. Thesis

1-6 credits. May be repeated.

PSYC 898 Doctoral Dissertation

1-12 credits. May be repeated.

Religious Studies(RELS)

RELS 101 Introduction to Religious Studies

Semester course; 3 lecture hours. 3 credits. This course examines the phenomenon of religion and religious experience. Through a phenomenological approach definitions and descriptions of the major features of the religious experience and of religious establishments, including concepts of the sacred, the numinous, religious language, texts, symbols, rituals and myths are reviewed. In addition, the social, political and spiritual dimensions of religion in human culture will be investigated.

RELS 201 Biblical Hebrew

Semester course; 3 lecture hours. 3 credits. Vocabulary, elementary grammar, introduction to lexica and reading of biblical texts.

RELS 202 Biblical Hebrew

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 201. Vocabulary, elementary grammar, introduction to lexica and reading of biblical texts.

RELS 250 Death: Myth and Reality

Semester course; 3 lecture hours. 3 credits. A study of intellectual and emotional responses to death and dying with emphasis upon their role in the development of religious thought and practice. Special attention will be paid to the death theme in literature, funeral practices and beliefs concerning the afterlife in selected world religions.

RELS 280 Introduction to Catholic Studies

Semester course; 3 lecture hours. 3 credits. This course provides an introduction to Catholicism's major doctrines, figures, historical events, philosophy and ethics from its beginnings in the first centuries of the Common Era through contemporary debates over such issues as abortion, sexuality and war. Students will learn about scripture, doctrine, theology, the sacraments, art and architectures, saints, social justice and gender, and the history and role of the Church.

RELS 291 Topics in Religious Studies

Semester course; variable hours. 1-3 credits. Prerequisite: As specified by the Schedule of Classes. May be repeated with different topics for a maximum of six credits. Focused study of selected ideas, institutions, movements, time periods and/or thinkers. See Schedule of Classes for specific topic to be offered each semester.

RELS 301 Introduction to the Old Testament

Semester course; 3 lecture hours. 3 credits. A survey of the Old Testament from its beginning through the post-Exile period. Emphasis given to the literary and historical development of the text.

RELS 302 Introduction to the New Testament

Semester course; 3 lecture hours. 3 credits. A survey of the New Testament with particular emphasis given to the historical development of the Canon.

RELS 303 Intertestamental Literature and Thought

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 301 or 302. The period between the Old and New Testaments as seen through the literature of the era, with emphasis on the writings of the Apocrypha, Pseudepigrapha and Josephus.

RELS 304 Introduction to Judaism

Semester course; 3 lecture hours. 3 credits. A general survey of the dynamics and characteristic patterns of Jewish civilization encompassing history, practices and beliefs.

RELS 305 Hebrew Prophets

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 301. A survey of the literature and history of Israel as seen through the work of the writing prophets. Emphasis will be placed on the second part of the Hebrew Canon and the Book of Daniel.

RELS 307/AFAM 307/INTL 307 Black Religion

Semester course; 3 lecture hours. 3 credits. An analysis of the role of religion in the lives of blacks with an emphasis on African religions and philosophies, the black church in America, and the roles of the various faiths, sects and cults.

RELS 308/HIST 307 The High Middle Ages

Semester course; 3 lecture hours. 3 credits. A detailed historical analysis of the Gregorian Revolution, the Crusades, the 12th-century Renaissance, the Thomistic World and the death of medieval civilization.

RELS 309/HIST 309 The Reformation

Semester course; 3 lecture hours. 3 credits. A careful and intensive inquiry into the spiritual and material forces and people involved in the reformation of Christendom in 16th-century Europe.

RELS 311, 312/INTL 311, 312 Religions of the World

Semester course; 3 lecture hours. 3, 3 credits. An investigation of the historical, cultural and theological foundations and development of major world religions. First semester: Hinduism, Buddhism, Confucianism, Taoism and Shinto. Second semester: Zoroastrianism, Judaism, Christianity and Islam.

RELS 313 Life and Literature of Paul

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 302. A survey of the life and literature of Paul as given in Acts and the Epistles, involving special consideration of Paul's contribution to the expansion of Christianity.

RELS 314 Jesus in the New Testament Tradition

Semester course; 3 lecture hours. 3 credits. A study of the Christ of faith and the Jesus of history as presented in New Testament literature and as interpreted in the works of selected scholars from the Church fathers to the present.

RELS 315, 316/HIST 301, 302 The Ancient Near East

Semester course; 3 lecture hours. 3, 3 credits. A study of the ancient Near Eastern civilizations of Mesopotamia, Egypt, Anatolia and Syria-Palestine, from the preliterary period to that of the Archaemenid Empire of the Persians. First semester: preliterary period to the end of Kassite rule in Babylonia (c.-1160 B.C.). Second semester: the rise and fall of the great Neo-Assyrian, Neo-Babylonian, Hebrew and Persian Empires (c.-311 B.C.).

RELS 317/INTL 317 Islam

Semester course; 3 lecture hours. 3 credits. A study of the emergence of Islam in Arabia in the seventh century and its subsequent developments, including a look at the Qur'an (the holy book), the Prophetic traditions, the concept of God, and mysticism (sufism) and law (shari'ah) and an overview of ritual practices, fundamental beliefs, theological principles and current issues in Islam and international relationship.

RELS 318, 319/HIST 325, 326 History of the Jewish People

Semester courses; 3 lecture hours. 3, 3 credits. A study of the Jewish people from the destruction of the Second Temple in A.D. 70 to the present. First semester: Judea in Roman times, the Diaspora in Islam and in Europe, social and cultural trends and the impact of the Emancipation. Second semester: the rise of the American Jewish community, the impact of modernism and growth of Reform, the beginnings and growth of Zionism, restoration in Palestine, the Holocaust, the creation of Israel and the relations of Israel and World Jewry.

RELS 320 Taoism

Semester course; 3 lecture hours. 3 credits. A study of one of the most fundamental and influential philosophies of life in Chinese culture, focusing on the theory and practice of the basic principles of Taoism as formulated by the legendary Lao Tzu and further developed by Chuang Tzu.

RELS 322 Tibetan Buddhism

Semester course; 3 lecture hours. 3 credits. A basic introduction to the history, development and mythology of the Buddhism of Tibet focusing on the Indian heritage and shared basis of all Buddhist practices, a clear identification of the three vehicles found in Buddhism, and a careful consideration of the path of the Bodhisattva, the hero of Great Vehicle Buddhism.

RELS 326/PHIL 326 Existentialism

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits in philosophy (exclusive of logic) or permission of instructor. An examination of the nature of truth, freedom, responsibility, individuality and interpersonal relations as found in some principal writings of Kierkegaard, Nietzsche, Jaspers, Sartre, Heidegger, Camus, Buber and Marcel.

RELS 327/HIST 327 History of Christianity

Semester course; 3 lecture hours. 3 credits. An historical and theological examination of Christianity from its origin to the present. Emphasis will be upon an understanding of leading events, ideas, movements and persons in their historical settings.

RELS 333/PSYC 333 Psychology and Religious Experience

Semester course; 3 lecture hours. 3 credits. Religious belief and experience as viewed by major psychological theorists. How psychological methodology has been used to study religious experience. Topics include personality factors and development, conversion experiences, religious experiences and mental health and human values.

RELS 334 Religion in Contemporary America

Semester course; 3 lecture hours. 3 credits. This course studies the history, literature, belief patterns and unique traits of religion in the United States. The evolution of religion and religious sentiment in a modern pluralistic, democratic society, including the varieties of religious experiences in contemporary America will be reviewed.

RELS 335/HIST 335 The American Jewish Experience

Semester course; 3 lecture hours. 3 credits. The religious, social and cultural structure of American Jewry from the colonial era to the present.

RELS 340/INTL 341 Global Ethics and the World's Religions

Semester course; 3 lecture hours. 3 credits. A critical survey of ethical concepts and issues in the thought and practice of major religious traditions. Comparison of ethical perspectives on selected themes and attention to cooperative efforts toward a global ethic.

RELS 342/PHIL 342 Buddhist Reasoning and Debate

Semester course; 4 lecture hours. 4 credits. A basic introduction to perception, logic and epistemology in Buddhist thought. The course is designed to convey basic reasoning skills including formation of arguments, checking arguments for validity, and developing techniques and strategies for rational discourse.

RELS 350/INTL 360 World Classics of Spirituality

Semester course; 3 lecture hours. 3 credits. A critical reading of selected works from among the spiritual classics of Judaism, Christianity, Islam, Hinduism, Taoism and other religious traditions.

RELS 360/SOCY 360 Sociology of Religion

Semester course; 3 lecture hours. 3 credits. A systematic review and assessment of major sociological theories of and empirical research on religious behavior and groups. Topics include the structure of religious organizations; social correlates and functions of religion; denominationalism; religion and social class, social change and population.

RELS 361/ENGL 361 The Bible as Literature

Semester course; 3 lecture hours. 3 credits. Literary aspects of the Bible will be considered. Also, attention will be given to the history of the English Bible.

RELS 362 Shakespeare and Religion

Semester course; 3 lecture hours. 3 credits. An examination of the religious ideas in selected plays by William Shakespeare and their relevance to contemporary religious thought and experience. Topics include the nature of God, the meaning of life, the problem of evil, moral authority and the question of immortality as found in Shakespeare's plays.

RELS 368 Asian Religions and Asian Medicine

Semester course; 3 lecture hours. 3 credits. An introductory survey of three medical systems indigenous to Asia, including study of how these medical systems are linked in theory and practice to religions and spiritual systems. These three are Indian Ayurveda in light of Hinduism, Chinese herbal medicine and acupuncture in light of Daoism, and Tibetan medicine in light of Tibetan Buddhism.

RELS 371/WMNS 371 Islam and Women

Semester course; 3 lecture hours. 3 credits. Prerequisites: RELS 317, RELS 312 or knowledge of Islam. Critical study of the roles and rights of women in Islam.

RELS 372/WMNS 372/INTL 372 Global Women's Spirituality

Semester course; 3 lecture hours. 3 credits. Explores the spiritual writings of women in various cultures and religious traditions.

RELS 373/WMNS 373 Women and the Bible

Semester course; 3 lecture hours. 3 credits. Studies the Hebrew and Christian scriptures with emphasis on the participation and portrayal of women within these texts. Attention to traditional, feminist and womanist interpretations of the texts.

RELS 380 Contemporary Catholic Thought

Semester course; 3 lecture hours. 3 credits. A study of the contemporary Catholic Christian response to the questions, "Who is God?" and "Where/how do we experience the Sacred?" Methods of Catholic theology will be explicated and applied to the teachings of the Second Vatican Council and current responses to those teachings in such areas as sacramental worship and liturgy, and moral/ethical teachings of the Church.

RELS 401/LFSC 401 Faith and Life Sciences

Semester course; 3 lecture hours. 3 credits. Prerequisites: sophomore standing and ENGL 200. Open to students of any school or program. Explores the complex relationships between faith traditions and the life sciences. Topics include epistemology, impact of life sciences on ideas of fate and responsibility, limits of science and technology, and scientific and religious perspectives on human origins, consciousness, aggression, forgiveness, health, illness and death.

RELS 407 Modern Jewish Thought

Semester course; 3 lecture hours. 3 credits. A study of the writings of the leading Jewish thinkers of the 19th and 20th centuries. Special reference will be made to the issues arising from the encounter of Judaism with the modern world: the nature of revelation and the authority of the Torah, the nature of God, the impact of the Holocaust, the meaning of redemption and the significance of the state of Israel.

RELS 408/PHIL 408 Indian Tradition

Semester course; 3 lecture hours. 3 credits. Prerequisites: At least six credits from philosophy or religious studies courses. A systematic analysis of the major theories of Indian religious and philosophical thought: Vedas, Upanishads, Gita, Charvaka, Jainism, Buddhism, the six systems of Hinduism and contemporary developments.

RELS 409/INTL 409 Modern Islamic Thought and Global Trends

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 312 or 317, or permission of instructor. Introduces students to the integral relationship of Islam to major events of global concern and contextualizes these events into the wider modern and postmodern developments of Islamic thought and its intellectual and ideological self interrogation. This course will provide students with the opportunity to study both the background of modern Islamic thought and selected contemporary events.

RELS 410/PHIL 410/INTL 410 The Chinese Tradition in Philosophy

Semester course; 3 lecture hours. 3 credits. A study of the development of Confucianism, of alternative ways of thought prior to the fall of the Han Dynasty and of neo-Confucianism. The systems of thought are examined in the light of their social, political and religious impact on China, Korea and Japan.

RELS 412/PHIL 412/INTL 412 Zen Buddhism

Semester course; 3 lecture hours. 3 credits. A study of Zen Buddhism, including backgrounds in Indian philosophy and practice, development in China and Korea, and present day Zen theory and practice in Japan and in Western countries.

RELS 425/ANTH 425/INTL 425 Religion, Magic and Witchcraft

Semester course; 3 lecture hours. 3 credits. Prerequisites: ANTH 103 and a "C" or better in ENGL 200. A survey of the nature and variety of beliefs outside of the major streams of religious thought. Among topics considered are myth, totemism, taboo and sorcery. Emphasis on understanding supernatural beliefs and practices in relation to culture and society.

RELS 430/PHIL 430 Philosophy of Religion

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits in philosophy (exclusive of PHIL 211 and PHIL 212) or permission of instructor. An introduction to the major problems and questions of religion and reason. Special reference will be made to the nature of God, the nature of man, the problem of evil, the source of good, immortality and the basis of authority.

RELS 440/PHIL 440 Mysticism

Semester course; 3 lecture hours. 3 credits. Prerequisite: One course in philosophy or religious studies. A critical analysis of the varieties of mysticism in world religions. Arguments for and against mysticism will be emphasized. Mysticism will be related to art, psychology, science, philosophy, theology and magic.

RELS 441/INTL 441 Islamic Mysticism: the Sufis

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 312 or 317, or permission of instructor. Introduces students to the major Sufi masters and their works. It covers ideological and practical development of Islamic mysticism as compared to the developments within Islam itself.

RELS 450/INTL 449 Religion, Globalization and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: nine credits in religious studies or international studies or some combination, or permission of instructor. Explores the role religions are playing in the work of building a socially just and environmentally sustainable world community.

RELS 451/AFAM 451/INTL 451 Religion, Racism and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: nine credits in religious studies, African American studies or international studies or some combination, or permission of instructor. Explores the complex history and contemporary relationships between religion, racism and social justice.

RELS 453/WMNS 453/INTL 453 Western Religions, Women and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: at least three credits in religious studies and six credits in women's studies and/or international studies, or permission of instructor. This course explores the experience and portrayal of women in the three Abrahamic traditions: Judaism, Islam and Christianity. Study focuses on how these religions and their texts bear upon the social, economic, political and spiritual lives of women. Special attention is given to the impact of globalization and religious fundamentalism on women.

RELS 455/INTL 456 Catholic Ethics and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: six credits in religious studies. An exploration of the Catholic church's major theological, ethical, constitutional and strategic concerns, and an analysis of Catholic social teaching and its relation to current social issues such as abortion, peace and conflict, poverty, and human rights.

RELS 490 Seminar in Religious Studies

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. Prerequisites: 12 credits in religious studies courses. Research methods and bibliography in the field of religious studies; application of techniques and resources on research topics with the classroom guidance and critique.

RELS 491 Topics in Religious Studies

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. Prerequisite: Written permission of instructor. An in-depth study of selected ideas or concepts, religious thinkers or significant movements in the field of religion. See the Schedule of Classes for specific topics to be offered each semester.

RELS 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 4 credits per semester; maximum total of 6 credits for all independent study courses. Open generally to students of only junior or senior standing who have acquired at least 12 credits in the departmental discipline. Determination of the amount of credit and permission of instructor and department chair must be procured prior to registration of the course. An independent study course to allow interested students in religious studies to do research in an area of major interest under the direction of a professor qualified in that field.

RELS 499 Senior Seminar

Semester course; 1 lecture hour. 1 credit. Prerequisite: completion of 18 RELS credits at the 300- and 400-level or the equivalent. Focuses on self-assessment, compilation of a portfolio and curriculum vitae, career and graduate school preparation, and on the lifelong application of skills and knowledge acquired in the program. Students will critically assess their experience in the religious studies program.

RELS 592 Independent Study

Semester course; 1-4 credits. Determination of the amount of credit and permission of the instructor and department chair must be procured prior to registration for the course. Open only to graduate students. An independent study course to allow qualified graduate students to do research in an area of major interest.

Russian(RUSS)

In order to complete Russian through the intermediate level, a student must select RUSS 202 or 205.

RUSS 101-102 Elementary Russian

Continuous courses; 5 lecture/recitation hours. 4-4 credits. Elementary grammar, reading and oral drill.

RUSS 201 Intermediate Russian

Semester course; 3 lecture hours. 3 credits. Continuation of the essentials of grammar with emphasis on achieving proficiency in aural comprehension, speaking, reading and writing skills.

RUSS 202 Intermediate Russian Readings

Semester course; 3 lecture hours. 3 credits. Prerequisite: RUSS 201 or the equivalent. In order to complete Russian through the intermediate level, a student may select RUSS 202 or 205. Designed to increase the student's proficiency through the study of selected cultural and literary texts.

RUSS 205 Intermediate Russian Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisite: RUSS 201 or the equivalent. In order to complete Russian through the intermediate level, a student may select RUSS 202 or 205. Designed to increase the student's proficiency in the spoken language through audio-oral exercises, dialogues and free conversation.

RUSS 301, 302 Survey of Literature

Semester courses; 3 lecture hours. 3 credits. Prerequisites: RUSS 201-202 or the equivalent. Conducted in Russian. First semester: 19th century; Pushkin, Gogol, Turgenev. Second semester: late 19th and 20th centuries; Dostoevsky, Chekhov and some modern Russian writers.

RUSS 491 Topics in Russian

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for maximum of 6 credits. An in-depth study of selected topics in Russian. See the Schedule of Classes for specific topics to be offered each semester.

Social Sciences(SOCS)

Science
For interdisciplinary science courses, see INSC in these listings.

SOCS 291 Issues in Social Science

Semester course; variable hours. 1-3 credits per semester. Maximum total of 6 credits. An interdisciplinary course structured around social issues pertinent to today's society. See the Schedule of Classes for specific topics to be offered each semester and the semester credit for which each course will be offered.

SOCS 302 Diverse Families and Children in the United States

Semester course; 3 lecture hours. 3 credits. Focuses on the diversity of family life in the United States. Students are encouraged to analyze and appreciate the differences that emerge from such factors as socioeconomic status, race and ethnicity (language, religion, national origin). Attention is given to the variations and commonalities in how parents teach, guide and influence children and adolescents.

SOCS 303 Marriage and Family Relationships

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or permission of instructor. Marriage and the family in contemporary society. Topics discussed will include the effects of masculine and feminine roles on marital and parent-child relationships, how role problems are resolved, sexual adjustments, financial adjustment, family planning and retirement.

SOCS 330 The Psychology and Sociology of Death

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101 or SOCY 101. An interdisciplinary study of the encounter with death, death and personality, the organizational processing of death and demographic regularities of dying. Sociologists and psychologists jointly teach the course.

SOCS 340 Human Sexuality

Semester course; 3 lecture hours. 3 credits. A study of the variety of the forms, sources and consequences of human sexual behaviors and the attitudes, beliefs and values associated with them. The data and its analysis are directed to the significance of sex in human experience.

SOCS 350 The Construction of Culture

Semester course; 3 lecture hours. 3 credits. An examination, using methods from several disciplines, of the ways in which human beings construct the shared meanings that constitute culture.

SOCS 389 AIDS: Myths and Realities

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Presents the students with the fundamentals of infectious disease, immunology and virology as they apply to HIV disease. Students will trace the psychosocial impact the HIV pandemic has had on society since the early 1980s, and will explore the future possibilities for those who are HIV infected and/or HIV affected.

Sociology(SOCY)

SOCY 101 General Sociology

Semester course; 3 lecture hours. 3 credits. An introduction to the study of human society. The basic concepts of society and culture and their relationships to each other are studied and then used to analyze the majo social institutions.

SOCY 104/AFAM 104 Sociology of Racism

Semester course; 3 lecture hours. 3 credits. The course will explore the direct and indirect ways in which racial attitudes are acquired, their effect on the individuals and society, and the institutional and ideological manifestations of racism as a "faith system," as exploitation, and as a form of human conflict. The central focus of interest will be on black-white relationships.

SOCY 205/POLI 205 Introduction to Social Science Computing

Short course; 4 lecture/laboratory hours. 5 weeks. 1 credit. An introduction to the use of SPSS for storage, retrieval and exploration of social science data.

SOCY 206/AFAM 206/WMNS 206 African American Family Relationships

Semester course; 3 lecture hours. 3 credits. Focuses on the African American family from the 1940s to the present. Examines the values and the interpersonal/role relationships that are involved in forming and maintaining African American families in the contemporary United States. Topics include dating and sexual relationships, marital relationships, parent-child relationships and relationships with members of the extended family.

SOCY 302 Contemporary Social Problems

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. The examination from a sociological perspective of contemporary social problems such as population growth, crime, racism, family problems, substance abuse and aging in terms of their impact on American social institutions and values.

SOCY 303 Sociology of Deviant Behavior

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. An analysis of relationship between social structure, social control and patterns of social deviance; a survey and critique of present social theories in light of empirical research and application of the theories to selected problem areas.

SOCY 304/ANTH 304/WMNS 304 The Family

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or ANTH 103. The family in its social and cultural context. Analysis of child rearing, marriage, kinship, family crises and family change in various societies around the world.

SOCY 305/AFAM 305/WMNS 305 African American Family in Social Context

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or SOCY/AFAM/WMNS 206. A socio-historical examination of the development of the family system of Americans from Africa. Focuses on large-scale (macro level) processes such as changes in the major mode of economic production and in political systems and the corresponding changes in black family structure and functioning. Presents the theoretical material on African American families and social change that prepares students for further study of the family as a social institution and for the study of family policy. This course is designed to meet the needs of upper division social science majors.

SOCY 310 Social Movements and Social Conflict

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Theory and practice of social movements, community organizing and other forms of collective behavior.

SOCY 315 Education and Society

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Analysis of education as a social institution in the societal context. Cross-cultural comparative perspectives on education.

SOCY 318 Social Thought

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. A review of the ideas of major social philosophers whose works are now the foundation of much modern sociology.

SOCY 320/POLI 320 Research Methods in the Social Sciences

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Current methods of research in the social sciences. Includes a brief introduction to the use of SPSS for storage, retrieval and exploration of social science data.

SOCY 321 Class, Status, and Power

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Analysis of social mobility, class, status and power.

SOCY 322 Minority Groups in the United States

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. A study of the various racial, religious, and ethnic minority groups. Issues of power, pluralism and assimilation are addressed as well as the relationship between subcultures and the dominant culture.

SOCY 325 Analysis of Sociological Data

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Prerequisites: SOCY 320 and STAT 210. Statistical techniques used in the analysis of data from sample surveys and censuses, including tabular, graphical and inferential procedures. SPSS software will be used in the laboratory.

SOCY 327 Urban Sociology

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Origin, character and significance of urban communities. Ecological and social factors are analyzed as well as changes in urban social organization and their consequences.

SOCY 328/INTL 328 Russian Society in Transition

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or permission of the instructor. An analysis of Russian culture and social institutions as they are today and in historical perspective. Throughout the course interrelationships among politics, the economy and social life are examined, with particular emphasis on the ideological implications of Russian/Soviet architecture, art and mass media; on environmental issues and health; on social problems and the legal systems; and on gender, the work world and family interaction.

SOCY 330/INTL 330 Global Societies: Trends and Issues

Semester course; 3 lecture hours. 3 credits. Prerequisite: INTL/POLI 105 or POLI 201 or SOCY 101. An analysis of factors that are promoting the globalization of social, economic and political relations, and an inquiry into implications of these developments for individuals, localities, nations and the world community. The course will highlight the impact of culture and ethnicity, historical and emerging patterns of international business activity and their societal significance, divergent strategies for economic and social development in the world's regions, and the effects of population growth and environmental problems on public life within and among nations.

SOCY 331 Juvenile Delinquency

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Analysis of the biological, cultural, psychological and social factors involved in juvenile delinquency and their relation to current techniques of treatment, prevention and control.

SOCY 333/WMNS 333 Sociology of Sex and Gender

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or permission of instructor. A cross-cultural and evolutionary exploration of the interdependence between male and female roles in the following social institutions: family, law, economics, politics, religion, education and health.

SOCY 334/WMNS 334 Sociology of Women

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or consent of instructor. This course will examine the position and status of women across societies and the social forces that maintain existing patterns and arrangements. The integration of family and work in women's lives will be emphasized.

SOCY 336/WMNS 336 Violence Against Women

Semester course; 3 lecture hours. 3 credits. An examination of violence against women from a global and local perspective with a primary focus on violence perpetrated against women in the U.S. Requires a minimum of 20 hours of community service.

SOCY 340 Self and Society

Semester course; 3 lecture hours. 3 credits. Focused discussion of the regularities in human behavior that arise due to man's participation in social groups. Emphasis will be placed on such topics as communications, attitudes, language, interpersonal perception, personal identities and social interaction.

SOCY 341/PSYC 341 Group Dynamics

Semester course; 3 lecture hours. 3 credits. Prerequisite: PSYC 101. Social and psychological principles and research related to the individual in groups. Specific topics include motivation for individuals forming and joining groups, performance and productivity of group members, group leadership and majority and minority influence. The group will be examined in relation to the larger society and as a subculture in itself.

SOCY 352 Social Change

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. This course provides an analysis of the major theoretical perspectives, sources, processes, patterns and consequences of social change. It considers factors that stimulate or hinder the acceptance of change and the unintended consequences of change.

SOCY 360/RELS 360 Sociology of Religion

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. A systematic review and assessment of major sociological theories of and empirical research on religious behavior and groups. Topics include the structure of religious organizations; social correlates and functions of religion; denominationalism; religion and social class, social change and population.

SOCY 370 Mass Media and Society

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101, MASC 101 or POLI 103. A survey of the organization and social impact of the major types of mass media. Potential topics include the media as socializing agents; the effect of media messages on cultural patterns and social values; the impact of technology on social behavior; the role of "audiences" in interpreting media content; political and economic influences on the media industry; and the media as an instrument of social change. The structure and functions of the media in different societies will be compared.

SOCY 391 Topics in Sociology

Semester course; 3 lecture hours. 3 credits. Maximum 6 credits per semester; maximum total of 18 credits in all departmental topics courses that may be applied to the major. Check with department for specific prerequisites. A discussion of specialized areas of sociological interest. See the Schedule of Classes for specific topics to be offered each semester.

SOCY 401/AFAM 401 Americans and the U.S. Health Care System

Semester course; 3 lecture hours. 3 credits. Prerequisite: AFAM 103, AFAM 305 or permission of the instructor. Explores issues surrounding the disparity in health status and health outcomes between African Americans and other groups in the United States. Students are required to participate in an experiential exercise designed to enhance learning.

SOCY 402 Sociological Theory

Semester course; 3 lecture hours. 3 credits. Prerequisites: At least 18 credits in sociology. A study of the works of the major sociological theorists of the 20th century.

SOCY 403 Criminology

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Analysis of the nature, extent and distribution of crime, emphasizing theories of and research on causation, prediction and prevention.

SOCY 404/PSYC 404 Social Psychology of Emotions

Semester course; 3 lecture hours. 3 credits. Prerequisites: PSYC 101, SOCY 101. An examination of the social shaping of emotion as well as its function in maintaining the social process. Cross-cultural uniformities and diversity in basic emotions and their expression are addressed as wel as selected social psychological theories of emotions.

SOCY 405 Family Research

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY/ANTH/WMNS 304. Classic and contemporary issues in the scientific study of families, with an emphasis on the examination and evaluation of research.

SOCY 421 Applied Social Research

Semester course; variable hours. Variable credit. May be repeated for a total of 6 credits. Prerequisites: SOCY 320 and SOCY 325. A laboratory course providing training in the application of social research methods under laboratory and field situations to problems of mutual interest to community policy makers and professionals in the disciplines of sociology, social psychology and anthropology. This course is designed to enhance the skills of students in applied social research. With direct supervision by the instructor, individuals or small groups of students will address themselves to the tasks of defining, designing and executing research projects.

SOCY 426 Population Dynamics

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. The study of trends in fertility, mortality, population growth, distribution, migration and composition. The mutual influences of these factors and social organization.

SOCY 430 Politics, Power and Ideology

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Sociological analysis of political organization and behavior. Such subjects as distribution and uses of power, creation and management of group conflict, development and diffusion of political ideologies, and problems of bureaucracy and mass society will be considered.

SOCY 434 Sociology of Sport

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. Sport will be viewed as a major social institution within many societies. The class will study the relationship between sport and society both in terms of sport reflecting the ideology and culture of society as well as sport as an active agent of change in society. Race, gender and social class will be examined within the context of sport.

SOCY 436 Work and Management in Modern Society

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. The study of industrial plants and business organizations as social systems.

SOCY 440 Advanced Social Psychology

Semester course; 3 credits. Prerequisite: SOCY 340. The study of how human groups create the environment that, in turn, influences their individual behavior. The symbolic interactionist perspective will be thoroughly explored for its contribution to the study of persons, objects and meaning.

SOCY 445 Medical Sociology

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. A survey of the social, economic, cultural and social psychological factors in health and illness; the sociology of health and medical care organizations and settings; the sociology of health occupations; and the techniques of research in medical sociology.

SOCY 446 Sociology of Mental Disorder

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. A survey of selected social, economic, cultural and social psychological factors in mental health and illness. Such problems as defining mental illness; social factors in the distribution, diagnosis, etiology, and treatment of mental disorders; mental illness as a social role; and research methods used in the sociology of mental illness will be considered.

SOCY 470 News Media in a Democratic Society

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. A consideration of the role of the news media in society. The course examines the news industry, including its economic organization and professional norms; news media content; the impact of news media in society, especially on the democratic political process; and the significance of political and economic influences on the functioning of the new media.

SOCY 475 Organizations and Human Behavior

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. A survey of theory and research in social organizations, including the study of behavior in modern complex human organizations.

SOCY 476 Labor, Occupations and Careers

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101. An examination of labor force participation in terms of the individual worker's experience, the work setting, the nature of occupations and labor force composition.

SOCY 490 Senior Project

Semester course; 1 credit. Restricted to major. Students must register for this course with the permission of an instructor. Students are required to produce a project report that must be approved by and submitted to the instructor of the course.

SOCY 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 6 credits per semester; maximum total of 12 credits for all independent study courses. Open generally only to students of junior or senior standing who have acquired at least 12 credits in the departmental discipline. Determination of the amount of credit and permission of the instructor and department chair must be received prior to registration of the course. Cannot be used in place of existing courses.

SOCY 493 Field Research Internship

Semester course; 3 credits. Prerequisites: Applications must be approved by a faculty adviser and by the internship coordinator. For sociology and anthropology majors of junior or senior standing. This course may be repeated for a maximum of six credits. Students are placed in organizations that offer supervised work or research experience appropriate to their interests. Each student must work 150 clock hours in the organization and write a sociological analysis of experiences using appropriate fieldwork methodological techniques.

SOCY 498 Honors Research Course

Semester course; 3 credits. Prerequisites: student must be in the honors program of the department and have achieved senior status. This course will entail the planning and execution of a major research project demonstrating a thorough understanding and use of research techniques in sociological/anthropological analysis, knowledge of relevant literature, sophisticated writing and research ability under the direction of a faculty mentor.

SOCY 500 Advanced Principles of Sociology

Semester course; 3 lecture hours. 3 credits. A comprehensive analysis of the concepts and techniques useful for understanding society and culture as well as the social processes and structures operant within these spheres.

SOCY 501 The Foundations of Sociological Theory

Semester course; 3 lecture hours. 3 credits. The foundations of theoretical explanation of the social world is addressed from an historical and philosophical perspective. The emergence of contemporary sociological theory in the 19th and 20th centuries is reviewed.

SOCY 502 Contemporary Sociological Theory

Semester course; 3 lecture hours. 3 credits. A critical assessment is given of such contemporary theoretical orientations as functionalism, conflict theory, exchange theory, symbolic interactionism and phenomenology.

SOCY 508/STAT 508 Introduction to Social Statistics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduction to statistical methods applicable in a variety of settings, with emphasis on nonexperimental data. Data description and analysis including chi-square and t-tests, using a statistical computing package. Not applicable toward M.S. in Mathematical Sciences, Sociology or Computer Science.

SOCY 510 Domestic and Sexual Violence in Social Context

Semester course; 3 lecture hours. 3 credits. Students will learn about the experiences of and responses to sexual and domestic violence in specific social contexts, with a focus on less visible contexts and underserved populations. Examines violence within various family structures and intimate relationships including racial/ethnic minority and immigrant groups and gay/lesbian/bisexual/transgender relationships, in various community settings including college campuses and the military, and among people with disabilities. Guest lectures provided by community experts in these areas.

SOCY 515/INTL 500 Globalization and Transformation: Concepts and Realities

Semester course; 3 lecture hours. 3 credits. Examines how globalization significantly affects cultural processes at both local and national levels. Transformations of cultural understandings and practices under such circumstances will be explored. Virtual course components will bring causes, processes and consequences of the transformations of Western, Eastern and developing countries into focus.

SOCY 524 Aging and the Minority Community

Semester course; 3 lecture hours. 3 credits. An analysis of the relationship between the aging process and American minority communities. In addition to the sociological factors, the course will examine demographic, physiological, and psychological aspects of minority aging. Attention will also focus on dominant social problems and federal policies toward the aged.

SOCY 593 Internship in Sexual and Domestic Violence Practice and Research

Semester course; 12 hours per week. 3 credits. Provides students practical experiences working in settings that address sexual and domestic violence. Students will focus on various areas including but not limited to service provision, intervention, research and program evaluation. Students will work closely with organizations/agency staff and follow their instructions.

SOCY 601 Advanced Methods of Social Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: SOCY 320 and SOCY/STAT 508 or equivalent. Research as a systematic process involving formulation of the problem, design of the research, field operation, the processing and analysis of data, and preparation of the research report. Also considered are critical analyses of current methods, administration of research projects, and the significance of research to social action.

SOCY 602 Applications of Advanced Research Methods

Semester course; 3 lecture and conference hours. 3 credits. Prerequisites: SOCY 601 and SOCY/STAT 608. The methods of developing a research project will be analyzed from the initial problem identification, literature review, theoretical framework, through research design, and procedures.

SOCY 603 Seminar in Population Studies

Semester course; 3 lecture hours. 3 credits. Analysis of fertility, mortality, and migration from a sociodemographic perspective. Special attention will be paid to sociological determinants of demographic processes and their interrelationships.

SOCY 604 Sociology of Work in Industry

Semester course; 3 lecture hours. 3 credits. Analyses of work relations and the social structures and mechanisms that govern and arise out of them and examination of the social problems that are inherent in the characteristics that make a society an industrial society.

SOCY 605/PADM 605 Survey Research Methods

Semester course; 3 lecture hours. 3 credits. Prerequisites: SOCY 601, SOCY 602 and SOCY/STAT 608, or permission of instructor. Examines all major areas of survey research methodology including sampling, design, data collection methods, questionnaire design, data analysis, and data processing. Addresses problems specific to survey research, such as telephone interviewing, constructing large representative samples, and nonresponse rates.

SOCY 607 Seminar in Racial and Ethnic Relations in America

Semester course; 3 lecture hours. 3 credits. A study of intergroup relations in such areas as busing and school desegregation, racism, minority and athletics, the emergence of white ethnic groups in the political systems, and the position of minorities in legal, economic, and medical institutions.

SOCY 608/STAT 608 Statistics for Social Research

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: SOCY/STAT 508 or permission of instructor. Statistical methods applied in social research. Topics include analysis of variance, correlation and regression, including stepwise methods, and the analysis of discrete data. Study of a statistical package, emphasizing manipulation of survey data sets. Not applicable toward M.S. in Mathematical Sciences or Computer Science.

SOCY 609 Seminar in the Family

Semester course; 3 lecture hours. 3 credits. Analysis of contemporary family life with an emphasis on the influence of social change. Consideration of current family crises and problems.

SOCY 610 Complex Organizations

Semester course; 3 lecture hours. 3 credits. A study of complex organizations in society with emphasis on the determinants and effects of organizational structure and process.

SOCY 611 Studies in the Community

Semester course; 3 lecture hours. 3 credits. The organization of the community with emphasis on major trends in urban development and growth. The interdependence of political, social, and economic geographic units. The need for cooperative planning and control.

SOCY 612 Seminar in the Sociology of Deviant Behavior

Semester course; 3 lecture hours. 3 credits. The nature and functions of deviance. Theories and problems of social control.

SOCY 613 Social Stratification

Semester course; 3 lecture hours. 3 credits. An in-depth analysis of status differentials in society (e.g., social class, prestige, and power).

SOCY 614 Seminar in the Sociology of Education

Semester course; 3 lecture hours. A sociological analysis of education as a social institution with an emphasis on methodological issues and policy implications.

SOCY 615 Seminar in Mass Communications

Semester course; 3 lecture hours. 3 credits. Some theoretical background in sociology is recommended. A sociological analysis of contemporary media and their interrelationships with social systems, media, and national development. Special emphasis on media as instruments of social and cultural change.

SOCY 620/CRJS 620 Seminar in Criminology

Semester course; 3 lecture hours. 3 credits. Examination and analysis of social, psychological, and economic theories and correlates of criminal behavior. Typologies of offenders.

SOCY 622 Theory Construction

Semester course; 3 lecture hours. 3 credits. A consideration of recent social theorists in which emphasis is placed on the logic of theory construction.

SOCY 623 Causal Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: SOCY 602 and SOCY/STAT 608, or equivalent. An examination of the utility of causal reasoning in the social sciences and an introduction to causal modeling. Topics studied will include the development of theoretical linkages, recursive and nonrecursive path estimation, causal thinking and theoretical refinement, and policy analysis and system dynamics.

SOCY 624/GRTY 624 Community and Community Services for the Elderly

3 credits. A conceptual/theoretical overview of community focusing on the ecological, psychological, and social dimensions of community and on communities of the aged.

SOCY 625 Urban Sociology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing. A detailed analysis and examination of the social and ecological structures and processes of the modern city with primary emphasis on the macro-level organization of urban life.

SOCY 630 Social Psychology

Semester course; 3 lecture hours. 3 credits. Discussion and investigation of selected social psychological issues in sociology, as well as traditional and innovative methodology applied to these issues.

SOCY 631 Battered Women in the Criminal Justice System

Semester course; 3 lecture hours. 3 credits. Provides students with an understanding of (1) the major developments and trends in the law related to battered women in the criminal justice system; (2) the role of the various players in the criminal justice system; (3) how child abuse and sexual abuse are treated in the criminal justice system; and (4) battered women who kill and the defense of battered woman syndrome. Introduces the stages of the criminal justice system as it relates to battered women and their children.

SOCY 633 Application of the Policy Process to Issues of Violence

Semester course; 3 lecture hours. 3 credits. Offers an interdisciplinary approach to understanding different models of decision making and the policy process found at all levels of American government. The focus is on the public sector with application to private and nonprofit settings. A six-stage model of policy initiation, selection, implementation, evaluation and termination is presented and explored through the use of case studies and examples of policy initiatives related to domestic violence, sexual assault and youth violence. Prepares students to recognize and understand the key stages of and influences on the policy process and apply them in their current and future work settings.

SOCY 635 Theorizing Gender Violence

Semester course; 3 lecture hours. 3 credits. Explores the origins and maintenance of gender violence primarily in the United States. Familiarizes students with the sociological and feminist theories in order to analyze how culture and social structure contribute to and perpetuate gender violence. Also examines the social policy and research implications of various approaches.

SOCY 640 Seminar in Political Sociology

Semester course; 3 lecture hours. 3 credits. Analysis of structures and processes of political organization. Examination of the creation and management of power, diffusion and regulation of conflict, and the politics of modernization and bureaucratization.

SOCY 645 The Sociology of Health and Illness

Semester course; 3 lecture hours. 3 credits. An examination of sociocultural factors in health and illness and the influence of social factors on recovery and rehabilitation. Special attention will be paid to the methodology found in current studies.

SOCY 646 Seminar in the Sociology of Mental Health and Disorder

Semester course; 3 lecture hours. 3 credits. Seminar in social organizational causes of clinical depression, schizophrenia, neurosis, and personality disorders. Focus is on prevention through social engineering and social policy. Impact of social change, sex roles, and socialization processes on rates of mental disorder emphasized.

SOCY 650 Theories of Social and Institutional Change

Semester course; 3 lecture hours. 3 credits. A study of social change with emphasis on institutional settings. Topics examined include alternative theoretical perspectives on change, structural sources of change, approaches to planned change, and the role and function of change agents.

SOCY 660 Seminar in the Sociology of Women

Semester course; 3 lecture hours. 3 credits. An analysis of the sociological basis for the roles and status of women across cultures and the social forces that create and maintain gender hierarchy.

SOCY 690 Practicum in the Teaching of College Sociology

Semester course; 1 credit. Enables students to develop skills in the design and conduct of undergraduate courses in sociology through observation and supervised experiences. Credits not applicable toward the B.S. in Sociology.

SOCY 692 Independent Study

Semester course; 1-3 credits. A maximum of 6 credits may be submitted toward the master's degree. Prerequisites: permission of instructor and graduate program committee.

SOCY 693 Applied Research Internship

Semester course; 1 lecture and 1 laboratory hours. 2 credits. May be repeated for credit one time. Provides graduate students with direct experiences in applied social research. Requires students to attend seminars to provide an academic framework for students' participation in the research process. Utilizes laboratory work to provide a variety of experiences in the various aspects of research. Graded as pass/fail.

SOCY 698 M.S. Thesis

1-6 credits. May be repeated.

Spanish(SPAN)

Nine credits of 300-level courses in Spanish (including those specifically required for certain courses) are prerequisites to all the following courses.

Non-foreign language majors who wish to take one or two upper-level classes only need to complete SPAN 202, 205 or equivalent.

SPAN 101-102 Elementary Spanish

Continuous courses; 5 lecture/recitation hours. 4-4 credits. Elementary grammar, reading and oral drills.

SPAN 201 Intermediate Spanish

Semester course; 3 lecture hours. 3 credits. Continuation of the essentials of grammar, with emphasis on achieving proficiency in aural comprehension, speaking, reading and writing skills.

SPAN 202 Intermediate Spanish Readings

Semester course; 3 lecture hours. 3 credits. Prerequisite: SPAN 201 or the equivalent. In order to complete Spanish through the intermediate level, a student may select SPAN 202 or 205. Designed to increase the student's proficiency through the study of selected cultural and literary texts.

SPAN 205 Intermediate Spanish Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisite: SPAN 201 or the equivalent. In order to complete Spanish through the intermediate level, a student may select SPAN 202 or 205 or equivalent. Designed to increase the student's proficiency in the spoken language through audio-oral exercises, dialogues and free conversation.

SPAN 300, 301 Advanced Grammar and Writing

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisites: Spanish courses through the intermediate level or the equivalent. A systematic review of Spanish grammar with emphasis on the elements of style and vocabulary building, translation and composition.

SPAN 305 Spanish Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisites: Spanish courses through the intermediate level or the equivalent. Conducted in Spanish. Practice in the spoken language with emphasis on discussions relating to topics of current interest.

SPAN 311 Spanish Through the Media

Semester course; 3 lecture hours. 3 credits. Prerequisites: Spanish courses through the intermediate level or the equivalent. Conducted in Spanish. Further development of listening, reading, writing, speaking and cultural skills through a focus on mass media in Latin America and Spain. Spanish language and current events will be taught through direct contact with newspapers, journals, television and radio programming, and online media. Students will view programs outside of class, participate actively in class discussions, create presentations and conduct research.

SPAN 320 Civilization of Spain I

Semester course; 3 lecture hours. 3 credits. Prerequisites: Spanish courses through the intermediate level or the equivalent. Conducted in Spanish. A treatment of salient manifestations of Spanish culture and civilization from its origins to the present.

SPAN 321 Latin American Civilization I

Semester courses; 3 lecture hours. 3 credits. Prerequisites: Spanish courses through the intermediate level or the equivalent. Conducted in Spanish. A treatment of salient manifestations of Latin American culture and Civilization from pre-Columbian times to the present.

SPAN 330 Survey of Spanish Literature

Semester courses; 3 lecture hours. 3 credits. Prerequisites: Spanish courses through the intermediate level or the equivalent. Conducted in Spanish. A survey of Spanish literature up to the present.

SPAN 331/INTL 331 Survey of Latin American Literature

Semester courses; 3 lecture hours. 3 credits. Prerequisites: Spanish courses through the intermediate level or the equivalent. Conducted in Spanish. An introduction to major authors and trends up to the present.

SPAN 400 Spanish Translation

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. Integrates the basic theoretical and practical aspects of translation, focused from a perspective of applied linguistics. The course includes a workshop component and students will practice both written and oral translation of diverse texts. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 401/LING 401 Comparative Structures

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. A comparison of English and Spanish, with emphasis on pronunciation and problems encountered in the teaching of Spanish. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 402/LING 402 Language Issues in the Spanish-speaking World

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. Through a variety of topics this course explores the links between language and human behavior as exemplified by language phenomena in the Spanish-speaking world. Topics will be drawn mainly from sociolinguistics, language and culture, and education and applied linguistics. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 403 History of the Spanish Language

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. A study of the evolution of Spanish from Latin through the Middle Ages to the Modern era. Historical phonology, etymology, morphology, orthography, semantics and syntax of standard Castilian. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 404 Spanish Interpretation

Semester course; 3 lecture hours. 3 credits. Prerequisite: Completion of nine credits of Spanish at the 300 level or the equivalent. Conducted in Spanish. This course covers theoretical and practical aspects of interpretation, including simultaneous and consecutive interpretation, as well as sight translation. The course also includes a workshop component in which students will put into practice these types of interpretation.

SPAN 405-406 Spanish Language and Culture for Health Care Providers

Continuous courses; 2 lecture hours. 2-2 credits. Prerequisite: permission of instructor. Open only to students enrolled in health care programs such as nursing, medicine, allied health, pharmacy, dentistry, or health care practitioners. A survey of the changing demographics of patients in health care and the language and cultural skills required to provide adequate health care services. The communication focus includes basic structures and medical terminology used during assessments and phrases commonly used during physical examinations. This course cannot be used to fulfill requirements of general education or the Spanish major or minor.

SPAN 414 Commercial Spanish

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. This course will develop the student's ability to use the Spanish language as a means of oral and written communication in the business world. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 420 Civilization of Spain II

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level, including SPAN 320 or 321, or the equivalent (including those specifically required for certain courses). This course explores the cultural diversity and differences of Spain. Topics focus on a particular interdisciplinary theme, such as the formation of cities, ethnicity and on a particular area of Spain. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 421/INTL 421 Civilization of Latin America II

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level, including SPAN 320 or 321, or the equivalent (including those specifically required for certain courses). This course explores the cultural diversity of Latin America and the social and political forces behind cultural change. Topics will focus on a specific interdisciplinary theme, such as urban life, the politics of identity and on a specific area of Latin America. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 430 Literary Genres

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. An in-depth look at the development and expression of varieties of literature in Spanish. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 431 Literary Periods

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Conducted in Spanish. An in-depth synchronic look at movements and their context in literature in Spanish. See the Schedule of Classes for the specific topic to be offered each semester.

SPAN 485 Spanish Study Abroad

Semester course; variable hours. Variable credit. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Open to Spanish majors, minors and students in other disciplines. This course offers all students the opportunity to improve their oral and written proficiency in Spanish, to enhance their awareness of cultural diversity and to become independent learners of Spanish language and the cultures of its speakers.

SPAN 491 Topics in Spanish

Semester course; variable hours. 1-3 credits. May be repeated with different topics for a maximum of 9 credits. Prerequisite: Completion of six credits of Spanish at the 300 level or the equivalent. An in-depth study of selected topics in Spanish. See the Schedule of Classes for specific topics to be offered each semester.

SPAN 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 3 credits per semester; maximum total of 6 credits for all independent study courses in Spanish. Prerequisites: Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). Open generally only to students of junior or senior standing who have six credits of upper-level Spanish courses and/or have demonstrated a competency in the language. Determination of course content and permission of instructor and department chair must be obtained prior to registration for the course. A course designed to give students an opportunity to become involved in independent study in a literary or linguistic area or subject in which they have an interest.

SPAN 494 Spanish Interpretation and Translation Internship

Semester course; 50-150 clock hours in local, national or international internship placement where Spanish language interpretation or translation is required. 1-3 credits. Repeatable for up to 6 credits. Prerequisites: prior completion of nine credits in Spanish at the 300 level, including 300 or 301, 305, and 320 or 321, 400 and 404. Instructor's approval required. Under the supervision of both a faculty member and a field supervisor, students will apply their linguistic skills in an approved work situation. Each internship will be specifically designed in accordance with the student's linguistic level and the placement site requirements.

SPAN 495 Spanish Portfolio Seminar

Semester course; 1 lecture hour. 1 credit. Prerequisites: Completion of 15 credits at the 300 and 400 levels or the equivalent. Completion of nine credits of Spanish at the 300 level or the equivalent (including those specifically required for certain courses). This course focuses on self-assessment, compiling a portfolio, career preparation and on the life long application of skills and knowledge acquired in the program.

SPAN 533 Spanish for the Professions

Semester course; 1-4 lecture hours. 1-4 credits. May be repeated for a maximum of 8 credits. Prerequisite: Functional fluency in Spanish since the class will be taught in Spanish. An intensive study of specialized communication in Spanish. The content of this course will emphasize the knowledge and language skills for particular professions, which may include business, education, health sciences and translation. See the Schedule of Classes for specific topic offered each semester.

SPAN 543 Texts and Contexts in Spain and Latin America

Semester course; 1-4 lecture hours. 1-4 credits. May be repeated for a maximum of 8 credits. Prerequisite: Functional fluency in Spanish since the class will be taught in Spanish. An exploration of themes concerning Spain, Latin America and/or Latinos in the U.S. as reflected in a variety of textual genres, including film.

Statistical Sciences(STAT)

Students may receive credit toward graduation for only one of STAT 208, 210, 212 or 312.

STAT 208 Statistical Thinking

Semester course; 2 lecture and 1.5 laboratory hours. 3 credits. Prerequisite: MATH 131, MATH 141 or MATH 151, or satisfactory score on the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course. An exception to this policy is made in the case where the stated alternative prerequisite course has been completed at VCU. Not open to mathematical sciences or computer science majors. An exploration of the use of statistics in the world around us through in-depth case studies. Emphasis is on understanding statistical studies, charts, tables and graphs frequently seen in various media sources. Laboratories involve learning activities centered on case studies.

STAT 210 Basic Practice of Statistics

Semester course; 2 lecture and 1.5 laboratory hours. 3 credits. Prerequisite: MATH 131, MATH 141, MATH 151 or satisfactory score on the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course. An exception to this policy is made in the case where the stated alternative prerequisite course has been completed at VCU. Designed for students seeking a B.S. degree who will likely take another quantitative reasoning course for which statistics may be a prerequisite. Not open to mathematical sciences or computer science majors. Topics include examining distributions, examining relationships, producing data, sampling distributions and probability, introduction to inference.

STAT 212 Concepts of Statistics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MATH 200. An introduction to the nature of statistical thinking and the application of abstract systems to the resolution of nonabstract problems. Probability models for stochastic events. Parametric representations. Estimation, testing hypotheses and interval estimation with application to classical models. Laboratories include activity based learning and computer usage. A core course for mathematical sciences.

STAT 291 Topics in Statistics

Semester course; 1-3 lecture hours. 1-3 credits. A study of selected topics in statistics. Specific topics may fulfill general education requirements. See the Schedule of Classes for specific topics and prerequisites.

STAT 309/MATH 309 Introduction to Probability Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 201. Completion of MATH 211 or MATH 300 (or equivalent knowledge) is strongly recommended. A study of the mathematical theory of probability, including finite and infinite sample spaces, random variables, discrete and continuous distributions, mathematical expectation, functions of random variables and sampling distributions.

STAT 312 Data Analysis and Statistics for Elementary Education

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 361 and 362. Restricted to students majoring in the liberal studies concentration for early and elementary education. Understanding probability, describing data both graphically and numerically, regression/correlation, common distributions and interpretation, item analysis for tests, interpreting test scores and educational studies, experimental design and limitations, comparing results using t-tests and ANOVA. This course relies heavily on Excel as a data-analysis tool and requires one structured interaction at the elementary school level. Students may receive credit toward graduation for only one of STAT 208, 210, 212 or 312.

STAT 314 Applications of Statistics

Semester course; 4 lecture hours. 4 credits. Prerequisite: STAT 210 or 212. A study of the concepts and application of statistical methods including: estimation and hypothesis testing for two sample problems; one factor analysis of variance and multiple comparisons; randomized block designs and analysis; inferences on categorical data, including chi-square test for independence for contingency tables; simple linear regression and correlation; multiple linear regression. Special topics include distribution free (nonparametric) methods in various statistical problems, two factor analysis of variance, and the use of a statistical software package for data analysis.

STAT 321 Introduction to Statistical Computing

Semester course; 3 lecture hours. 3 credits. Prerequisites: STAT 212 and CMSC 245 or CMSC 255, and MATH 200, or their equivalents. The application of computers to statistical practice using SAS, S-PLUS, SPSS and similar statistical software. Topics include data storage and retrieval, data modification and file handling, statistical and graphical data analysis.

STAT 391 Topics in Statistics

Semester course; 1-3 lecture hours. 1-3 credits. A study of selected topics in statistics. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

STAT 404 Introduction to Statistical Inference

Semester course; 3 lecture hours. 3 credits. Prerequisites: Both STAT 212 and STAT/MATH 309, or permission of instructor. Framework for statistical inference. Point and interval estimation of population parameters. Hypothesis testing concepts, power functions, Neyman-Pearson lemma and likelihood ratio tests. Elementary decision theory concepts.

STAT 421 Computational Issues in Statistical Science

Semester course; 3 lecture hours. 3 credits. Prerequisites: STAT 212 and CMSC 245 or CMSC 255, and MATH 310, or their equivalents. Examination of the interface of statistics, computer science and numerical analysis. The course explores the fundamental problems of doing arithmetic with digital computers: rounding, truncation, errors and error propagation, stability and accuracy of algorithms. It then proceeds to examine extensions to the computation of probabilities, percentage points of probability distributions, random number generation, Monte Carlo methods and numerical methods in linear algebra. This course will require programming in higher level language.

STAT 490/OPER 490 Communications in Statistics and Operations Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 200 and STAT 314 or OPER 327, or permission of the instructor. Designed to help students attain proficiency in professional and academic communication in the context of statistics and operations research. Focus on the discipline-specific communication skills necessary to excel in careers or graduate studies in these disciplines.

STAT 492 Independent Study

Semester course; variable hours. 2, 3 or 4 credits per semester. Maximum 4 credits per semester; maximum total of 6 credits. Generally open to students of only junior or senior standing who have acquired at least 12 credits in the departmental discipline. Determination of the amount of credit and permission of instructor and department chair must be procured prior to registration of the course. The student must submit a proposal for investigating some area or problem not contained in the regular curriculum. The results of the student's study will be presented in a report.

STAT 503 Introduction to Stochastic Processes

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 307 and STAT/MATH 309. A continuation of topics given in STAT/MATH 309. An elementary introduction to stochastic processes and their applications, including Markov chains and Poisson processes.

STAT 508/SOCY 508 Introduction to Social Statistics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduction to statistical methods applicable in a variety of settings, with emphasis on nonexperimental data. Data description and analysis including chi-square and t-tests, using a statistical computing package. Not applicable toward M.S. in Mathematical Sciences, Sociology or Computer Science.

STAT 513-514/BIOS 513-514 Mathematical Statistics I-II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MATH 307. Probability, random variables and their properties, distributions, moment generating functions, limit theorems, estimators and their properties; Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

STAT 523/BIOS 523 Nonparametric Statistical Methods

Semester course; 3 lecture hours. 3 credits. Prerequisites: Any two courses of statistics or permission of instructor. Estimation and hypothesis testing when the form of the underlying distribution is unknown. One-, two- and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables and coefficients of association.

STAT 541 Applied Statistics for Engineers and Scientists

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 200-201 or equivalent, and a working knowledge of computers. An introduction to applied statistics intended primarily for students in mathematical sciences, engineering and the Commonwealth Graduate Engineering Program. The fundamental ideas of the collection and display of information, descriptive statistics and exploratory data analysis, elementary probability theory, frequency distributions and sampling are covered. Other topics include tests of hypotheses and confidence intervals for one and two sample problems; ANOVA; principles of one-factor experimental designs including randomized complete black designs, fixed and random effects and multiple comparisons; correlation and linear regression analysis; control charts; contingency tables and goodness-of-fit. Students may receive degree credit for only one of STAT 541, STAT 543 or BIOS 553.

STAT 543/BIOS 543 Statistical Methods I

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit. Students may not receive degree credit for both STAT 541 and STAT 543. STAT 543 is not applicable toward the M.S. degree in mathematical sciences or the M.S. degree in computer science.

STAT 544/BIOS 544 Statistical Methods II

Semester course; 3 lecture hours. 3 credits. Prerequisite: One of the following: STAT 314, 541, 543 or equivalent. Advanced treatment of the design of experiments and the statistical analysis of experimental data using analysis of variance (ANOVA) and multiple-regression. Includes the use of a statistical software package for data analysis.

STAT 591 Topics in Statistics

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of the instructor. Course open to qualified undergraduates. Selected topics in statistics.

STAT 608/SOCY 608 Statistics for Social Research

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: STAT/SOCY 508 or SOCY 214 or permission of instructor. Statistical methods applied in social research. Topics include analysis of variance, correlation and regression, including stepwise methods, and the analysis of discrete data. Study of a statistical package, emphasizing manipulation of survey data sets. Not applicable toward M.S. in Mathematical Sciences or Computer Science.

STAT 613-614 Stochastic Processes

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: MATH 508 and STAT 514. Introduction to the theory and applications of stochastic processes. Random walks, Markov processes, queuing theory, renewal theory, birth-death and diffusion processes. Time series, spectral analysis, filter, autocorrelation.

STAT 623 Discrete Multivariate Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 544 or STAT/SOCY 608 or equivalent. Methods for the analysis of categorical data, including logistic regression and the general log-linear model. Emphasis on social and biomedical applications of these techniques using SPSS and SAS software.

STAT 626 Complex Sampling Designs and Variance Estimation

Semester course; 3 lecture hours. 3 credits. Prerequisites: STAT 544 and 514. The analysis of data from surveys that use multistage samples, and connections to the analysis of observational studies and experiments with missing data. Computer intensive methodologies such as the jackknife and bootstrap will be introduced and applied to the problem of variance estimation in these diverse settings.

STAT 642 Design and Analysis of Experiments

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 541 or BIOS 553 or equivalent. An introduction to the design and analysis of experiments. Topics include the design and analysis of completely randomized designs, randomized block designs, Latin square designs, incomplete block designs, factorial designs, fractional factorial designs, nested designs and split-plot designs and response surface designs. Students will complete and present a research project on an advanced topic in experimental design. Applications involve the use of a statistical software package. Students may receive credit for only one of STAT 642, STAT 544 or BIOS 554.

STAT 643 Applied Linear Regression

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 200-201, STAT 212 and MATH 310 or equivalents. An introduction to the concepts and methods of linear regression analysis. Topics include simple linear regression, multiple linear regression, the impact of model misspecification, model selection criteria, residual analysis, influence diagnostics, diagnostic plots, multicollinearity, transformations and response surface methodology. Applications involve the use of a statistical software package.

STAT 644 Advanced Regression

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 643 or equivalent. Theoretical development and advanced applications of the general linear regression model and nonlinear regression models. Topics include an overview of multiple linear regression, generalized least squares and weighted regression, procedures for diagnosing and combating multicollinearity, advanced model selection criteria, influence diagnostics including multiple observation diagnostics and singular value decomposition, nonlinear regression, Poisson regression, logistic regression, generalized linear models and the exponential family, variance modeling and nonparametric regression. Applications involve the use of a statistical software package.

STAT 645 Bayesian Decision Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 514. Presents statistical decision theory and Bayesian analysis, with discussions of loss functions, risk, utility, prior information; conjugate families; posterior distributions, estimation, hypothesis testing; empirical and hierarchical Bayes analysis; and robustness.

STAT 648/OPER 648 Systems Reliability Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 541 or equivalent or permission of instructor. An introduction to engineering reliability and risk analysis, specifically failure data analysis, maintenance problems, system reliability and probabilistic risk assessment. Applications in computer science and engineering will include stochastic characterization of wear in hardware systems and the development of failure models for software systems. Decision problems such as the optimal maintenance of repairable systems and optimal testing policies for hardware and software systems will be examined. The analysis of risk through fault trees, event trees and accident precursor analysis also will be discussed.

STAT 649/OPER 649 Statistical Quality Control

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 541 or equivalent, or permission of instructor. Demonstrates how statistics and data analysis can be applied effectively to process control and management. Topics include the definition of quality, its measurement through statistical techniques, variable and attribute control charts, CUSUM charts, multivariate control charts, process capability analysis, design of experiments, and classical and Bayesian acceptance sampling. Statistical software will be used to apply the techniques to real-life case studies from manufacturing and service industries.

STAT 690/OPER 690 Research and Communications Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisites: 9 graduate credits in operations research (OPER) and/or statistics (STAT) and permission of the instructor. Designed to help students attain proficiency in professional and academic communication and research in the context of statistics and operations research. The course focuses on the discipline-specific communication and research skills necessary to excel in careers or graduate studies in these disciplines.

STAT 691 Special Topics in Statistics

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit. Prerequisite: Permission of instructor. A detailed study of selected topics in statistics.

STAT 696/OPER 696 Applied Project

Semester course; variable hours (to be arranged). 1-3 credits. A total of three credits will be applied to the M.S. in Mathematical Sciences (operations research or statistics concentration). Can be repeated for credit. Prerequisite: STAT/OPER 690 or permission of the faculty adviser. Designed to allow students to apply concepts and theories learned in other courses to a practical situation. Includes the selection, written description, completion and written report of the project and a presentation of the findings. Students may not receive credit for both OPER/STAT 696 and OPER/STAT 698.

STAT 697 Directed Research

Semester course; variable hours. 1-3 credits per semester. May be repeated for credit. Prerequisite: Graduate standing. Supervised individua research and study in an area not covered in the present curriculum or in one that significantly extends present coverage. Research culminates with an oral presentation and submission of a written version of this presentation to the supervising faculty member.

STAT 698 Thesis

Hours to be arranged. 1-3 credits. A total of 3 or 6 credits may be applied to the M.S. in Mathematical Sciences/Statistics. (A total of 3 credits for an expository thesis or a total of 6 credits for a research thesis.) May be repeated for credit. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis as described in this bulletin. Grade of "S," "U" or "F" may be assigned in this course.

University Studies(UNVS)

UNVS 291 Interdisciplinary Topics

Semester course; variable hours. 1-4 credits per semester. Maximum total of 8 credits in all university studies courses. An interdisciplinary course designed to give the student an overview of a topic not associated with a particular discipline.

Urban Studies and Planning(URSP)

URSP 116 Introduction to the City

Semester course; 3 lecture hours. 3 credits. Introduction to the various theories of urbanism and attempt to offer solutions to the problems of urban life in modern civilization. The course will survey the major works of those who have studied cities or offered solutions and alternatives to existing urban structures. The works of noted social reformers, political analysts, economists, and architects as well as urban planners will be examined through lectures, readings, films, slides, discussions and field trips (when feasible).

URSP 245 Housing and Community Revitalization

Semester course; 3 lecture hours. 3 credits. The purpose of this course is to examine housing issues as a major determinant of the make-up and the quality of community life in modern American society. Attention is given to the public and private forces that influence various components of the housing issue, such as: demand for housing; housing availability to various economic and social groups; housing design and quality (including new construction, rehabilitation, historic preservation, and adaptive re-use), housing finance and the relationship of housing to planning in metropolitan areas.

URSP 261 Design of the City

Semester course; 3 lecture hours. 3 credits. Architecture, space and activities play a special role in the overall design of the city. These elements are analyzed to understand their interrelationships and importance to a city's visual character. Architectural styles, civic art, effects of space on the individual, and methods for designing cities will be discussed. The class is for those who want to understand urban design elements and for those who will be involved in city design.

URSP 302/GEOG 302 Land Use Capability

Semester course; 3 lecture hours. 3 credits. An introduction to the principles, concepts and knowledge involved in determining the capacity of land under various conditions to support a variety of uses.

URSP 304 Urban Social Systems

Semester course; 3 lecture hours. 3 credits. A study of the growth and development of neighborhoods, cities and metropolitan systems. Analyzes origins of community interests and factors that affect the ability of communities to further their interests. Particular attention is given to how patterns of service delivery and the placement of public facilities affect community interest and whether federal or municipal departments are able to set adequate community service standards.

URSP 306/GEOG 306 Urban Economic Geography

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 162, completion of Knowledgenet assessment for Microsoft Excel or permission of instructor. Explores the nature of work as it is organized in urban businesses, the interdependence of industries and the reasons why different cities develop different types of economies. Policies and strategies for developing and maintaining healthy urban economies will be discussed in detail.

URSP 310 Introduction to Public Planning

Semester course; 3 lecture hours. 3 credits. Introduction to theory and practice of governmental planning in the United States with emphasis on urban and regional planning. Survey of the history of urban planning, current planning practice at the local level and the ethical responsibilities of planners.

URSP 313/GEOG 313 Urban Research and Field Methods

Semester course; 3 lecture hours. 3 credits. Prerequisite: STAT 210. Introduces students to a variety of field and research techniques used to gather and analyze information to study urban and regional issues. Key topics include designing a research project, developing and implementing surveys, conducting focus groups and observation, analyzing data statistically, interpreting and reporting results, and utilizing secondary information.

URSP 315 The Evolution of American Cities

Semester course; 3 lecture hours. 3 credits. A general survey of how cities developed in the United States and the factors that contributed to the process of urbanization. Emphasis is placed on the public attitudes and values that have dominated particular periods of history and how these values affected the efforts to urbanize. The American city is examined as a vital force in the economic, social and political development of modern America, as the major location for conflict between people of all persuasions, and as the home of much of what is meant by American "civilization."

URSP 316 Urban Life in Modern America

Semester course; 3 lecture hours. 3 credits. Restricted to nonmajors. Examines how a modern city functions, the public services rendered within the city and the impact of public policy on the city. The city is treated as a system consisting of economic, social and political activities that influence and are influenced by the physical/demographic environment. Each activity is studied separately with the cause-effect relationships among the activities highlighted by an analysis of public service delivery and, more generally, urban public policy.

URSP 321/ECON 321 Urban Economics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210 or ECON 203, and junior standing. An introduction to urban economics, with an emphasis on the economics of agglomeration and the role of externalities in the urban economy. Economic analysis of the provision of urban public services and urban public financing, especially in politically fragmented areas.

URSP 322 Urban Finance

Semester course; 3 lecture hours. 3 credits. Prerequisite: URSP 306. Treats the local government from a practical management perspective as an organization in a political-economic environment. The nature of city expenditures and sources of revenues are explored. Budgeting and taxing decision-making processes are explored in depth. Economic impacts of these decisions on citizens are analyzed and implications for practice drawn.

URSP 332/ENVS 332/GEOG 332 Environmental Management

Semester course; 3 lecture hours. 3 credits. An interdisciplinary review of domestic and international environmental problems and their underlying causes, current management frameworks, alternative management approaches and strategies, and barriers to their implementation. Other topics include: environmental history and economics, population growth, natural resources use, biodiversity, pollution.

URSP 340/GEOG 340/INTL 340 World Cities Outside of North America

Semester course; 3 lecture hours. 3 credits. Examines the role of cities in the development of a variety of geographical regions outside of North America. Consists of a broad overview of the historical evolution of cities, their internal structure and relation to the world system and urban problems.

URSP 350/FRLG 345/INTL 345 Great Cities of the World

Semester course; 3 lecture hours. 3 credits. May be repeated under different topics for a total of 6 credits. Prerequisite: Sophomore standing or permission of instructor. An interdisciplinary course with a focus on the origin, expansion and significance of one or more cities, the specifics of its/their culture and the role of language. Particular emphasis will be placed on relating the physical, social and economic aspects of the city's growth and development to the cultural expression of urbanism.

URSP 391 Special Topics in Urban Studies

Semester course; 1, 2 or 3 credits. Because of the changing subject matter to be treated in this course, permission of the instructor is required. Students will have an opportunity to examine in detail some questions of significance. See the Schedule of Classes for the specific topic to be offered each semester.

URSP 392 Independent Study

Semester course; 1-3 lecture hours. 1-3 credits. Junior or senior standing is required. Under supervision of a faculty adviser, who must approve the student taking the course, a student studies a topic of interest.

URSP 397, 398 Independent Study

Semester courses; 2 or 3 lecture hours. 2 or 3 credits. Junior or senior standing is required. Under supervision of a faculty adviser, whose consent is required to register, study a topic of concern to the student. Examines the role of cities in development of a variety of geographical regions outside of North America.

URSP 413 Policy Implementation

Semester course; 3 lecture hours. 3 credits. An examination of the administrative setting of government and its policy impacts on public programs, policy design and redesign, and evaluation and monitoring.

URSP 440 Senior Seminar: The Good City

Semester course; 3 lecture hours. 3 credits. Prerequisite: Senior standing. Readings, discussion and individual research into "the good city" as it is expressed theoretically and practically. Perspectives from the arts and humanities, as well as the social sciences, are brought to bear on the normative question, "What is the good city?" A research project is a requirement.

URSP 502 Global Economic Change and Geography

Semester course; 3 lecture hours. 3 credits. Examines the global economy, its changing geographies and its impact on cities and regions. Considers the role of technological progress, industrial organization and international institutions in shaping the locations of production and services. Topics include global economic trends, evolution of the industrial core and periphery, globablization of production systems, global cities, rise of knowledge-based and creative industries and transnational economic integration.

URSP 517 Historic Preservation in Planning

Semester course; 3 lecture hours. 3 credits. The course surveys the process of historic preservation that includes the evaluation of sites, identification of architectural styles, the adaptive use of sites and structures, and the various sources available for implementing preservation proposals in government or the private sector. Preservation is considered as a tool in the planning process; and its application to neighborhoods, downtowns, and other city districts is considered.

URSP 521/GEOG 521/ENVS 521 Introduction to Geographic Information Systems

Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental analysis and planning. Includes geographic and remote sensing data structures, global positioning systems, spatial analysis, geographic data standards, public domain software and data resources, and principles of cartography design. Lab exercises in the use of geographic information systems software tools.

URSP 525 Site Planning and Graphics

Semester course; 3 lecture hours. 3 credits. Addresses the environmental impacts and capacity of environmental systems in relation to the site requirements of various urban and rural situations. Introduces the use of graphics as an aid in presenting and analyzing planning and design ideas, maps and plans.

URSP 541 Urban Public Policy-making Processes

Semester course; 3 lecture hours. 3 credits. Discusses the politics of urban life. Examines the physical, demographic and economic environments in which conflict resolution occurs, as well as the actors on the local, state and federal levels that participate in the political process.

URSP 552 Urban Transportation Systems

Semester course; 3 lecture hours. 3 credits. An examination of urban requirements for mobility, transportation systems, problems of traffic, mass transit and new concepts for moving people and goods.

URSP 567 The American Suburb

Semester course; 3 lecture hours. 3 credits. Provides students with an understanding of the suburban movement in America, the elements of suburban growth and an awareness of current and emerging approaches to suburban planning and design. Includes neotraditional design, transit oriented development, new urbanism and master planned communities. A working knowledge of the U.S. Census is needed for some assignments.

URSP 605 Urban Planning History

Semester course; 3 lecture hours. 3 credits. Discusses the historical context of planning solutions to contemporary urban problems by examining the rich planning tradition since the mid-nineteenth century in the U.S. Significant plans, people and movements in the history of planning are discussed in relation to the evolving traditions of the profession.

URSP 610 Introduction to Planning

Semester course; 3 lecture hours. 3 credits. Introduces students to the planning profession. Provides an overview of the urban system and the history of planning, and covers the basics of comprehensive planning, including the context, process, agents, methods, components, and implementation. Prepares students for taking more specialized planning courses by introducing the sub-areas of planning, such as transportation planning, land use planning, environmental planning, housing, and urban design.

URSP 611 Principles of Urban Design

Semester course; 3 lecture hours. 3 credits. Principles of urban design at the micro- and macro-scale. Expression of planning objectives in physical design, with emphasis on the relationship between urban design at various scales and the needs of individuals and groups.

URSP 621 Introduction to Geographic Information Systems

Semester course; 2 lecture and 2 laboratory hours 3 credits. Introduces the components, capabilities, and functionalities of Geographic Information Systems. In addition to the concepts upon which GIS is based, how it works and what it does, this course introduces cartographic techniques necessary to design and construct effective maps with an emphasis on thematic mapping. It also examines the processing, compilation and symbolization of spatial data and the application of related analytical techniques. Laboratory work emphasizes practical applications and uses of ArcView GIS 3.x and the Spatial Analyst extension.

URSP 622 Community Socioeconomic Analysis Using GIS

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduces students to data sources and database management for community analysis using geographic information systems. Includes an overview of database structures, public domain software and data resources, descriptive statistical analysis, population projection, graphic presentation of data, and principles of cartographic design. Laboratory exercises using GIS software and public domain data to describe communities and identify planning issues. Laboratory work emphasizes practical applications and uses of ArcGIS.

URSP 623/GVPA 623/PADM 623/CRJS 623 Research Methods for Government and Public Affairs

Semester course; 3 lecture hours. 3 credits. Introduction to the scope and methods of applied research for the public sector. Focuses on problem structuring through logical methods, exploring problems through observation and other methods of data collection, analyzing and summarizing findings using both qualitative and quantitative methods.

URSP 625 Spatial Database Management and GIS Modeling

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: URSP 622. Covers advanced spatial techniques related to the creation, analysis, modeling, visualization, interpretation and management of geographic data. Provides an extensive coverage of geo-relational database concepts and design, and the applications of descriptive and predictive GIS modeling techniques using map algebra, Boolean logic and spatial statistics. Laboratory work emphasizes practical applications and uses of ArcGIS and the Model Builder, Spatial Analyst, 3D Analyst and Geostatistical Analyst extensions.

URSP 627 GIS Applications in Decision Analysis

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Covers GIS tools and techniques in relation to 3D visualization, decision analysis, program evaluation and Internet-GIS. Emphasizes the integration of exploratory/predictive spatial analyses and 3D visualization into the decision-making process. GIS tools and techniques are used to automate decision analysis and facilitate future visioning in analyzing and visualizing decision actions. Laboratory work emphasizes practical applications and uses of ArcGIS, ArcIMS and the Scenario 360 software suite.

URSP 628 Land Use Planning

Semester course; 3 lecture hours. 3 credits. Introduces students to the context, substance, practical skills, and implementation of land use planning. Covers such topics as land capacity, land use system and design, land use controls, state and regional growth management, resource land preservation, rural growth management, urban containment, and facility planning.

URSP 630/PADM 630 Strategic Planning and Management in the Public Sector

3 lecture hours. 3 credits. Explores the benefits and limitations of strategic planning and management in the public sector, examines approaches to strategic management, especially in terms of the role and behavior of top management, and provides an introduction to the analytic and process methods used in strategic planning and management.

URSP 632/GVPA 632 Planning Theory and Processes

Semester course; 3 lecture hours. 3 credits. Examines major traditions in the theory of planning in the context of actual planning processes and outcomes. Explores in depth the political, economic, and institutional constraints to effective planning and plan implementation. Discusses the planners' ethical dilemmas.

URSP 635 Legal and Legislative Foundations of Planning

Semester course; 3 lecture hours. 3 credits. Delineates the legal and legislative basis for planning at local, state, and federal levels. Judicial precedents in land use controls and environmental protection are investigated, including private controls, traditional zoning, administration of zoning ordinances, new flexible zoning concepts, development timing and growth controls, exclusionary land use practices, subdivision controls, and eminent domain regulations for environmentally sensitive areas, and environmental review.

URSP 641 Citizen Participation and Negotiation

Semester course; 3 lecture hours. 3 credits. Studying the theory and practice of citizen participation and negotiation, planners learn to work with citizens in a democratic process while practicing respect for differing views.

URSP 643 Housing Policy

Semester course; 3 lecture hours. 3 credits. Examines federal, state, and local housing policy. Discusses the issues of affordable housing, homelessness, and the private sector's contribution to housing.

URSP 647 Adaptive Reuse of Buildings

Semester course; 3 lecture hours. 3 credits. Describes from a public sector perspective identification for new uses, evaluation of benefits and preparation of implementation proposals for recycling older buildings. Discusses methods used to develop the necessary design guidelines as well as analyze these opportunities that can be a catalyst for urban revitalization.

URSP 650 Environmental Planning

Semester course; 3 lecture hours. 3 credits. Examines the impact of urban activities on the natural environment. Discusses federal, state, and local laws and policy governing air, water, waste, noise, and the natural processes of earthquakes, landslides and floods.

URSP 652 Environmental Analysis

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: URSP 650. Familiarizes students with methods to carry out an environmental analysis. Provides a deeper understanding of environmental issues.

URSP 654/ENVS 654/BIOL 654 Environmental Remote Sensing

Semester course; 3 lecture hours. 3 credits. Prerequisite: URSP/ENVS 521 or equivalent. This course provides a basic and applied understanding on the use of digital remote sensor data to detect, identify and characterize earth resources. Students are required to demonstrate an understanding of the spectral attributes of soils, vegetation and water resources through various labs involving both image- and non-image-based optical spectral data.

URSP 662 Foundations for Development Planning

Semester course; 3 lecture hours. 3 credits. Introduces public planners to the nature and development of the urban economy. Uses case study analysis of an economy's industrial structure, labor market, and other features. Considers the roles of public planners in maintaining a healthy economy.

URSP 664 Urban Economic Development Policy

Semester course; 3 lecture hours. 3 credits. Prerequisite: URSP 662. Examines the economic development planning and implementation processes through theory and case studies in urban settings. Special topics include economic development institutions and practices, small business development programs, labor force development, community-based development, and sustainable development strategies.

URSP 666 Urban Commercial Revitalization

Semester course; 3 lecture hours. 3 credits. Examines renewal of declining commercial areas in cities and towns as tools in the planning process. Discusses and applies through fieldwork, market studies and other analysis methods, strategies for revitalization, public and private project financing and development.

URSP 681 International Urban Policy and Planning

Semester course; 3 lecture hours. 3 credits. Offers a comparative analysis of planning practices and policies in both developing and developed countries. Covers such topics as local implications of globalization, regional development strategies, urban governance and management, urban economic policies, sustainable development and urban infrastructure and shelter delivery.

URSP 691 Topics in Urban and Regional Planning

Semester course; 1, 2 or 3 credits. Prerequisite: Because of the changing subject matter to be treated in this course, permission of the instructor is required. Students will have an opportunity to examine in detail some questions of significance in the field of urban and/or regional planning. See the Schedule of Classes for the specific topics to be offered each semester.

URSP 761 Planning Studio I

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: All core courses except URSP 762 and 794. Involves students as a group in a community-based planning project.

URSP 762 Planning Studio II

Semester course; 1 lecture and 10 laboratory hours. 6 credits. Prerequisite: URSP 761. Requires individual students to apply theory and methodology gained from the core courses to solve selected planning problems. With the consent of instructor and department chair, URSP 764 Thesis or Projects is acceptable substitute. Extended time may be granted with a grade of "PR." Final grade of "A," "B," "C," "D" or "F" will be awarded upon completion.

URSP 764 Thesis or Projects

2-6 credits. Prerequisites: Appropriate research methods course and permission of instructor. Planning, preparation, completion, and presentation of a thesis or project. URSP 764 is an acceptable substitute for URSP 762 Planning Studio II. Consent of instructor and chair required for this substitution.

URSP 794 Planning Practicum Seminar

Semester course; 3 credits. Provides an opportunity for a structured analysis of the student's internship experience. Professional skills are enhanced through lectures, assignments and discussions.

URSP 797 Directed Research

1-3 credits. May be repeated for a maximum of 6 credits. Prerequisites: Permission of instructor and graduate standing. Independent research into planning problems, issues, and theories.

Women's Studies(WMNS)

WMNS 201 Introduction to Women's Studies

Semester course; 3 lecture hours. 3 credits. An interdisciplinary and cross-cultural introduction to the perspectives and core concerns of women's studies.

WMNS 206/AFAM 206/SOCY 206 African American Family Relationships

Semester course; 3 lecture hours. 3 credits. Focuses on the African American family from the 1940s to the present. Examines the values and the interpersonal/role relationships that are involved in forming and maintaining African American families in the contemporary United States Topics include dating and sexual relationships, marital relationships, parent-child relationships and relationships with members of the extended family.

WMNS 236/ENGL 236 Women in Literature

Semester course; 3 lecture hours. 3 credits. An introduction to literature by and/or about women.

WMNS 291 Topics in Women's Studies

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for a total of 6 credits. An in-depth examination of specialized areas of interest in women's studies. See the Schedule of Classes for specific topics to be offered each semester.

WMNS 301 Feminist Social Theory

Semester course; 3 lecture hours. 3 credits. This course examines the major theoretical traditions and thinkers of feminist theory from the works of early liberal feminists like Wollstonecraft to the present thought of postmodern and lesbian feminists like Wittig. It examines arguments about human nature, the origins and effects of patriarchy, the conflict between equality and gender difference and feminist critiques of traditional theories of knowledge.

WMNS 304/ANTH 304/SOCY 304 The Family

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or ANTH 103. The family in its social and cultural context. Analysis of child rearing, marriage, kinship, family crises and family change in various societies around the world.

WMNS 305/AFAM 305/SOCY 305 African American Family in Social Context

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or SOCY/AFAM/WMNS 206. A socio-historical examination of the development of the family system of Americans from Africa. Focuses on large-scale (macro level) processes such as changes in the major mode of economic production and in political systems and the corresponding changes in black family structure and functioning. Presents the theoretical material on African American families and social change that prepares students for further study of the family as a social institution and for the study of family policy. This course is designed to meet the needs of upper division social science majors.

WMNS 316/POLI 316 Women and the Law

Semester course; 3 lecture hours. 3 credits. Introduces students to the history, politics and status of women under the American legal system. Topics to be covered may include equal protection, sexual violence, the particular rights of women of color and lesbians, reproductive rights of women of color and lesbians, reproductive rights, women criminals and women in the legal profession.

WMNS 318/AFAM 318/POLI 318 Politics of Race, Class and Gende

Semester course; 3 lecture hours. 3 credits. A study of the racial, class and gender influences on the history and development of political values, conflicts, processes, structures and public policy in the United States.

WMNS 319/POLI 319 Women and American Politics

Semester course; 3 lecture hours. 3 credits. This course analyzes the participation of women in American politics. Attention is given to both women's historical and contemporary roles in politics, their participation as voters and citizens, and their behavior as candidates and office holders. Additional topics may include workplace, family and education issues and reproductive rights.

WMNS 333/SOCY 333 Sociology of Sex and Gender

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or permission of instructor. A cross-cultural and evolutionary exploration of the interdependence between male and female roles in the following social institutions: family, law, economics, politics, religion, education and health.

WMNS 334/SOCY 334 Sociology of Women

Semester course; 3 lecture hours. 3 credits. Prerequisite: SOCY 101 or consent of instructor. This course will examine the position and status of women across societies and the social forces that maintain existing patterns and arrangements. The integration of family and work in women's lives will be emphasized.

WMNS 335/PSYC 335 Psychology of Women

Semester course; 3 lecture hours. 3 credits. Overview of issues in psychology relevant to women. Topics include: research methods of women's issues; sex-role socialization; women and hormones; psychological androgyny; personality theory and counseling strategies for women; women and language; women and violence; and rape and abuse.

WMNS 336/SOCY 336 Violence Against Women

Semester course; 3 lecture hours. 3 credits. An examination of violence against women from a global and local perspective with a primary focus on violence perpetrated against women in the U.S. Requires a minimum of 20 hours of community service.

WMNS 339, 340/HIST 339, 340 History of Women in Europe

Semester courses; 3 lecture hours. 3, 3 credits. A history of European women from the Greeks to the contemporary world. A major focus of both courses will be primary sources by and about women. First semester: antiquity to the Enlightenment. Second semester: French Revolution to the present.

WMNS 341/HIST 341 American Women's History

Semester course; 3 lecture hours. 3 credits. Through reading, lecture and discussion, this course analyzes historical changes in the social, cultural, political and economic position of women in America over the past three centuries. It includes such topics as the differences and similarities of women's experiences across lines of class, race and ethnicity, the struggle for suffrage and social reform, shifting gender roles and changing employment opportunities.

WMNS 352/ENGL 352 Feminist Literary Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in 200-level literature courses or equivalent. The study of contemporary feminist thought and feminist approaches to analyzing literature and culture. This course examines the history and development of feminist theory as a methodology in the humanities, explores several of the major theoretical trends of the last 30 years and examines applications of feminist theory to specific works of literature.

WMNS 366/POLI 366/INTL 368 Women and Global Politics

Semester course; 3 lecture hours. 3 credits. A study of women and global politics, providing both a feminist re-examination of traditional international-relations theories and a comparative analysis of the political, legal and economic status of the world's women. The impact of women on global political institutions such as the United Nations will be addressed as well as other feminist and grass roots means of taking political action.

WMNS 371/RELS 371 Islam and Women

Semester course; 3 lecture hours. 3 credits. Prerequisite: RELS 317, 312 or knowledge of Islam. Critical study of the roles and rights of women in Islam.

WMNS 372/RELS 372/INTL 372 Global Women's Spirituality

Semester course; 3 lecture hours. 3 credits. Explores the spiritual writings of women in various cultures and religious traditions.

WMNS 373/RELS 373 Women and the Bible

Semester course; 3 lecture hours. 3 credits. Studies the Hebrew and Christian scriptures with emphasis on the participation and portrayal of women within these texts. Attention to traditional, feminist and womanist interpretations of the texts.

WMNS 380 Lesbian and Bisexual Women

Semester course; 3 lecture hours. 3 credits. This course examines the lives of contemporary lesbian and bisexual women from psychological, sociological, developmental, political and cultural perspectives. The intersection of race, class, ethnicity, religion, age, disability and locale with lesbian/bisexual identity will be explored.

WMNS 382/CRJS 382 Women in the Justice System

Semester course; 3 lecture hours. 3 credits. Surveys the special situation of women in the justice system as offenders, as victims and as professional practitioners. Applicable laws and public policy are studied in detail. Issues are punctuated by field trips to juvenile/adult programs and institutions.

WMNS 384/ENGL 384 Women Writers

Semester course; 3 lecture hours. 3 credits. May be repeated once when a different group of writers is studied. A study of selected literature written by women and about women writers.

WMNS 387/ENGL 387 Lesbian Texts/Queer Theories

Semester course; 3 lecture hours. 3 credits. Prerequisite: 3 credits in a 200-level literature course (or equivalent). A study of queer literature and theory, focusing on writing about female same-sex desire. Explores the idea of a "lesbian subject" and a "lesbian text" through directed study of literature, film, history and theory. Considers issues of aesthetics, politics, authorship and interpretive communities and examines the intersection of social identities with particular attention to race/ethnicity, sex/gender, class and nationality.

WMNS 390/AFAM 390/HIST 390 Africa and the Americas: Slavery, Gender and Race

Semester course; 3 lecture hours. 3 credits. An examination of various aspects of slavery in Africa primarily, and selected parts of the African Diaspora including the United States, Canada and the Caribbean, with emphasis on African conditions of servility, the Atlantic slave trade and chattel slavery. The role gender and race played in slavery will be given particular attention.

WMNS 391 Topics in Women's Studies

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for a maximum of 12 credits. An in-depth examination of specialized areas of interest in women's studies. See the Schedule of Classes for specific topics to be offered each semester.

WMNS 392 Women's Health Care across the Life Span

Semester course; 3 lecture hours. 3 credits. This course is intended for upper-level undergraduate students. Introduces students to the health issues that affect women throughout the life span. The impact of physiological, psychological, cultural and political factors upon women's well-being will be addressed.

WMNS 393 Feminist Research and Methods

Semester course; 3 lecture hours. 3 credits. Completion of STAT 210 (or equivalent) is strongly recommended. Explores the implications of feminist theorizing across disciplinary and cultural contexts for both methodology and epistemology. Examines how knowledge and power intersect, how gender theory and feminist politics influence research, how the knower influences knowledge production, and how social location shapes inquiry.

WMNS 401 Topical Senior Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 credits in women's studies or permission of the instructor. Students are required to produce a senior research project on a topic related to the theme of the seminar.

WMNS 414/PSYC 414 Psychology of Women's Health

Semester course; 3 lecture hours. 3 credits. Overviews the psychological research on women's health. Topics include health behavior change, personality and individual differences, cognitive factors, disease-specific behaviors and interventions.

WMNS 452/ENGL 452/LING 452 Language and Gender

Semester course; 3 lecture hours. 3 credits. A study of relationships between the ways women and men use language, relationships between language and power and ways women and men use language reflects and reinforces cultural attitudes toward gender. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

WMNS 453/INTL 453/RELS 453 Western Religions, Women and Social Justice

Semester course; 3 lecture hours. 3 credits. Prerequisites: at least three credits in religious studies and six credits in women's studies and/or international studies, or permission of instructor. This course explores the experience and portrayal of women in the three Abrahamic traditions: Judaism, Islam and Christianity. Study focuses on how these religions and their texts bear upon the social, economic, political and spiritual lives of women. Special attention is given to the impact of globalization and religious fundamentalism on women.

WMNS 457/ARTH 457 Women, Art and Society

Semester course; 3 lecture hours. 3 credits. A re-examination of a variety of issues concerning women, art and society: the position assigned women within the history of art as it relates to historical place and the aesthetic values of the canon, the gendering of style, patronage, audience and gaze. Through a survey of images of and by women, as well as through an analysis of art historical and critical texts, this course addresses the question: "How are the processes of sexual differentiation played out across the representations of art and art history?"

WMNS 491 Topics in Women's Studies

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for a total of 12 credits. An in-depth examination of specialized areas of interest in women's studies. See the Schedule of Classes for specific topics to be offered each semester.

WMNS 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 4 credits per semester; maximum total of 4 credits in all independent study courses. Open generally to students of only junior and senior standing who have acquired at least 12 credits in women's studies courses. Determination of the amount of credit and permission of the instructor and coordinator must be obtained prior to registration for the course.

World Studies(WRLD)

WRLD 210 International Social Justice Studies

Semester course; 3 lecture hours. 3 credits. An overview of the issues, themes, disciplines, and areas of research and teaching that comprise international social justice studies in a variety of global contexts.

WRLD 220 Human Rights and Literature

Semester course; 3 lecture hours. 3 credits. A cross-cultural survey of human rights violations. The moral, political and pragmatic dimensions in the international response to violations are investigated including transnational organizations that document abuses as expressed in memoirs, eyewitness accounts, literature and film.

WRLD 359/MASC International Media Coverage: The Middle East

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 101 or MASC 151, or permission of instructor. This interdisciplinary course, explores the media's role in covering cultural, political, religious and other issues in the Middle East. Students will examine the role and impact of the media in both the United States and Middle East in shaping global and regional public opinion. Using webcam and online technology, VCU students will discuss cross-cultural perspectives with students from the other U.S. universities and universities in the Middle East.

School of Allied Health Professions

Allied Health Professions(ALHP)

ALHP 391 Special Topics

Semester course; 1-4 credits. Prerequisite: Permission of instructor. Offered for undergraduate level. Interdisciplinary study through lectures, tutorial study or independent research of selected topics not provided in other courses.

ALHP 573 Teaching in Health Professional Schools

Semester course; 3 lecture hours. 3 credits. Study of the relationships between health education and higher education in general, current essentials, standards in education for the health professions and theoretical approaches to the implementation of these standards in both academic and clinical learning. Emphasis will be placed on modes of adapting to future needs of the professions.

ALHP 582 Supervision in the Allied Health Professions

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Study of the supervisory process and staff development, training in communicatior and interpersonal skills, and public relations within the health facility.

ALHP 591 Special Topics

Semester course; 1-4 credits. Prerequisite: Permission of instructor. Interdisciplinary study through lectures, tutorial study or independent research of selected topics not provided in other courses.

ALHP 594 Health Education Practicum

Semester course; 1 lecture and 4 laboratory hours. 1-6 credits. Prerequisite: ALHP 573. Preparation, presentation and evaluation of selected educational experiences in the appropriate graduate program. Section 01: General; Section 02: Nurse Anesthesia; Section 03: Clinical Laboratory Sciences.

ALHP 596 Supervisory and Administrative Practicum in Allied Health Clinics

Semester course; 60 clinical hours per credit. 1-9 credits. Prerequisite: Permission of instructor. The course is designed for the student who will be assuming supervisory and administrative roles. Areas to be covered include clinical personnel management, budgeting and ordering of materials and equipment, consultation with physicians, developing and troubleshooting clinical methods, designing job descriptions and implementation of quality control programs. Section 01: Clinical Laboratory Sciences Section 02: Physical Therapy.

ALHP 701 Health Services Delivery Systems

Semester course; 3 credits. Examines the structure and function of the U.S. health-care delivery system, the concepts and processes of health and illness, the institutional and individual providers of health services and related theory. Focuses on interdisciplinary care. Emphasizes meeting the unique needs of ethnically and culturally diverse populations.

ALHP 702 Finance and Economic Theory for Health Care

Semester course; 3 credits. Focuses on foundational concepts of micro-economic theory and their application in analyzing health care; understanding the structure and dynamics of health-care markets; and on monitoring and controlling the allocation of resources within health organizations. Emphasizes each of the health-care disciplines and how finance and economics affect the practice of delivery and evaluation.

ALHP 708 Ethics and Health Care

Semester course; 3 credits. Applies the principles of biomedical and health-care ethics to develop a more informed understanding of ethical decision making in the formulation of health-care policy as well as within the clinical environment. Focuses on utilizing and searching biomedical ethics literature, current issues in biomedical ethics, the discipline and process of ethical reflection and case consultation.

ALHP 712 Curriculum and Communication Design for Health Care Professionals

Semester course; 3 lecture hours. 3 credits. Required course. Examines various aspects of curriculum development, including instructional design and use of multimedia technology for teacher-learner communication and learner growth and development pertinent to doctoral education. Covers relevant learning theories in higher education and implications on curriculum design. Requires students to develop a Web-based interactive, multimedia course.

ALHP 716 Grant Writing and Project Management in Health Related Sciences

Semester course; 3 credits. Examines fundamentals of allied health grant writing and proposal preparation in the health related sciences, including funding source determination, responding to an RFP, basic elements of a proposal, proposal review procedures and allocation processes. Requires development of a complete proposal and critique of existing proposals.

ALHP 718 Health Informatics

Semester course; 3 credits. Analyzes current information and management systems from an allied health sciences perspective. Emphasizes knowledge representation in health care, information needs, storage and retrieval, clinical information systems, standards of health information management and the evaluation of information management systems. Stresses the efficient and innovative use of technology.

ALHP 760 Biostatistical Methods for Health Related Sciences

Semester course; 3 credits. Examines basic concepts and techniques of statistical methods, enabling individuals to conduct scientific inquiry as well as critical appraisal of the scientific literature. Includes the collection and display of information, data analysis and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals, and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; and correlation and regression analysis.

ALHP 761 Health Related Sciences Research Design

Semester course; 3 credits. Covers the design of experimental and quasi-experimental studies in the health-care field. Emphasizes issues related to measurement, validity of designs, sampling and data collection. Focuses on the logic of causal inference, including formulation of testable hypotheses, and the design, methods and measures that facilitate research.

ALHP 762 Multivariate Statistical Methods for Health Related Sciences Research

Semester course; 3 credits. Examines multivariate statistical analysis and evaluation research methods with application to health related science research. Emphasizes data reduction techniques, factor analysis, principle components, discriminant analysis and logistic regression to analyze data in the health field.

ALHP 763 Clinical Outcomes Evaluation for Health Related Sciences

Semester course; 3 credits. Prerequisites: ALHP 760, 761 and 762. Prepares students to design, implement and interpret studies that evaluate the outcome and effectiveness of health services delivery. Emphasizes identification of emerging trends in health related sciences research, identification of meaningful research questions based on existing information and the use of primary and secondary data to assess outcomes.

ALHP 764 Advanced Methods for Health Sciences Research

Semester course; 3 credits. Examines the application of multivariate statistical analysis and evaluation methods to health related sciences research. Emphasizes advanced statistical methods (e.g., LISREL, Event History Analysis) and design to analyze panel data in the health field. Elective course.

ALHP 781 Doctoral Seminar in Health Related Sciences

Semester course; 3 credits. Prerequisite: Permission of instructor. Student's desired topic of study must be identified and approved prior to enrollment. Studies specific topics in the area of the student's specialty track.

ALHP 792 Independent Study

Semester course; 1-6 credits. May be repeated for a maximum of 6 credits. Prerequisite: Permission of instructor. Offers special individual study or research leading toward investigation in specialty track. Conducted under the guidance of a faculty adviser.

ALHP 793 Research Practicum

Semester course; 3 credits. Offers supervised investigation of selected problems in the area of the student's specialty track. Includes conducting and analyzing field research.

ALHP 890 Dissertation Seminar

Semester course; 3 credits. Deals with general purpose, content and functions of the dissertation process related to the student's specialty track. Leads to the preparation of dissertation proposal.

ALHP 899 Dissertation Research

Semester course; variable hours. Variable credit. Minimum of 9 semester hours required for Ph.D. Prerequisites: Completion of required course work and comprehensive examination. Covers dissertation research under the direction of a faculty adviser.

Clinical Laboratory Sciences(CLLS)

CLLS 201 Introduction to Clinical Laboratory Science

Semester course; 1 lecture hour. 1 credit. Open to students on the Monroe Park Campus who are interested in clinical laboratory science/medical technology as a career. Presentation and discussion of clinical laboratory science including an introduction to each of the specific areas of concentration, job opportunities in the profession and a tour of a hospital laboratory. Graded as pass/fail.

CLLS 300 Basic Concepts

Semester course; 1 lecture and 1 laboratory hours. 1.5 credits. An introduction to the basic concepts/techniques applicable to all laboratory science areas. Includes optical physics, quality control, laboratory safety, medical terminology and pipetting techniques along with other basic subjects.

CLLS 301-302 Hematology

Continuous courses; 4.5 lecture and 6 laboratory hours. 2-7.5 credits. A study of the blood and blood-forming tissues. Emphasis is placed on hematologic techniques, accurate identification of normal and abnormal cells and their correlation with normal or pathologic conditions. An introduction to the hemostatic mechanism also is presented.

CLLS 304 Urine and Body Fluid Analysis

Semester course; 1.5 lecture and 1 laboratory hours. 1-2 credits. A study of the principles and practices of urinalysis, kidney function, cerebrospinal fluid and other body fluids.

CLLS 306 Immunohematology

Semester course; 2.5 lecture and 4 laboratory hours. 2.5-4.5 credits. Prerequisite: CLLS 310. A study of the theory and principles of blood banking with an emphasis on methods and techniques used in the laboratory for cell typing, cross-matching and antibody identification.

CLLS 307 Introduction to Pathogenic Microbiology

Semester course; 3 lecture hours. 1-3 credits. May be taken as 1 credit each for study of basic parasitology, mycology or virology. Includes fundamentals of parasites, fungi and viruses as potentially pathogenic microorganisms.

CLLS 308 Pathogenic Bacteriology

Semester course; 3 lecture hours and 4 laboratory hours. 3-5 credits. Emphasis is placed on pathogenic bacteria, techniques, pathogenesis, epidemiology, isolation and identification, and antimicrobial susceptibility testing.

CLLS 310 Clinical Immunology

Semester course; 3.5 lecture and 2 laboratory hours. 3-4.5 credits. Introduces the basic principles of immunology, serology and molecular diagnostics. Emphasis is placed on laboratory evaluation of the immune response including both cellular and humoral aspects. Serologic techniques are practiced in the laboratory sessions.

CLLS 311 Clinical Chemistry and Instrumentation I

Semester course; 3 lecture and 4 laboratory hours. 3-5 credits. A study of human physiology and metabolism in health and various disease states Topics include energy and nitrogen metabolism and proteins in body fluids. Emphasis is placed on the application of quantitative analytical methods and instrumentation for the chemical characterization of body fluids to provide clinically useful information for the diagnosis and treatment of diseases.

CLLS 312 Clinical Chemistry and Instrumentation II

Semester course; 4 lecture and 2 laboratory hours. 4-5 credits. Prerequisite: CLLS 311 or permission of the instructor. A study of human physiology and metabolism in health and various disease states. Topics include water and ion balance, clinical enzymology, therapeutic drug monitoring, and toxicology. Emphasis is placed on the application of quantitative analytical methods and instrumentation for the chemical characterization of body fluids to provide clinically useful information for the diagnosis and treatment of diseases.

CLLS 337 Clinical Education

Semester course; 120 clock hours. 1 credit. Supervised clinical experience in hospitals across the state is designed to give the student a broader clinical education and to provide venipuncture experience. In addition to the application of academically acquired knowledge, this affiliation provides an opportunity for the student to correlate each area of study into one composite picture for final laboratory diagnosis. Closer working relationships with other allied health personnel is an important aspect of this affiliation. Graded as pass/fail.

CLLS 407 Interpretive Immunohematology

Semester course; 2.5 lecture hours. 2-2.5 credits. Prerequisites: CLLS 306 and 310, or permission of instructor. Advanced study of the principles of immunohematology and immunology with major emphasis on blood group systems and blood components. Includes the application of laboratory data and techniques to solve problems in blood banking and immunology.

CLLS 408 Advanced Microbiology

Semester course; 2 lecture hours. 2 credits. Prerequisites: CLLS 307 and 308, or permission of instructor. Advanced study of the principles of pathogenic microbiology. Includes the application of laboratory data and techniques to solve problems in the clinical microbiology laboratory.

CLLS 409 Interpretive Hematology

Semester course; 2 lecture hours. 2 credits. Prerequisites: CLLS 301-302 and 485, or permission of instructor. Advanced study of the principles of hematopoiesis and their pathophysiological correlation to hematological disorders. Interpretation of morphological findings are correlated with case histories. Includes homeostatic problems.

CLLS 410 Advanced Clinical Chemistry and Instrumentation

Semester course; 2 lecture hours. 2 credits. Prerequisites: CLLS 311-312, or permission of instructor. Presents an advanced study of (1) the principles of clinical chemistry as related to intermediary metabolism and pathology and (2) laboratory and hospital information systems. Includes the application of laboratory data and technologies to solve problems in analytical methods and instruments.

CLLS 411 Principles of Education/Management

Semester course; 3 lecture hours. 2.5-3.5 credits. Introduces fundamental educational theories and practice, principles of management and employee relations and health-care issues from a global perspective with an emphasis on multicultural diversity. Stresses the application of these theories in the clinical laboratory.

CLLS 412 Senior Seminar

Semester course; 1 lecture hour. 1 credit. Seminars are presented on various aspects of professionalism, experimental design and critical evaluation of scientific literature. A simulated registry exam is given at the conclusion. Graded as pass/fail.

CLLS 415 Special Topics in Clinical Laboratory Sciences

Semester course; 1-6 credits. Course provides for tutorial studies, laboratory experience and/or library assignments in specialized areas for those students who have previous course work or laboratory experience in a specific subject.

CLLS 438/HONR 492 Research Paper

Semester course; 1 lecture hour. 1 credit. This course is designed to introduce the student to the fundamentals of scientific writing.

CLLS 483 Biochemistry Practicum

Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisites: CLLS 311-312. Individual participation in hospital chemistry laboratories. Students gain practical experience in the use of procedures and instruments by working with the staff. After gaining competence, students are expected to perform and sign out routine laboratory work under supervision. Graded as pass/fail.

CLLS 485 Hematology Practicum

Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisites: CLLS 301-302. Individual participation in hospital hematology laboratories. Students gain practical experience in the use of procedures and instruments by working with the staff. After gaining competence, the students are expected to perform and sign out routine laboratory work under supervision. Graded as pass/fail.

CLLS 493 Clinical Microbiology Practicum

Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisites: CLLS 307-308. Individual participation in hospital bacteriology laboratories. Students gain practical experience in the performance and use of procedures by working with the clinical staff. After gaining competence, the students are expected to properly perform and sign out routine laboratory work under supervision. Graded as pass/fail.

CLLS 494 Miscellaneous Clinical Practicum

Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisites: CLLS 301-302, 308, 310, 311-312 or permission of instructor. Students gain practical experience in the use of instruments and the performance of procedures by working with the clinical staff. After gaining competence, students are expected to properly perform and sign out routine laboratory work under supervision. Graded as pass/fail.

CLLS 496 Blood Bank Practicum

Semester course; 40-180 clock hours. 1-4.5 credits. Prerequisite: CLLS 306. Individual participation in hospital blood bank laboratories and Virginia Blood Services. Students gain practical experience in the use of procedures and instruments by working with the staff. Donor drawing and component preparation is observed. After gaining competence, the students are expected to properly perform and sign out routine laboratory work under supervision. Graded as pass/fail.

CLLS 500 Concepts and Techniques in Clinical Laboratory Science

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Permission of instructor. Restricted to candidates in the categorical master's program. Presents the basic theoretical concepts, laboratory techniques and skills employed in the areas of clinical chemistry, hematology, immunohematology and microbiology.

CLLS 501 Instrumental Methods of Analysis I

Semester course; 2 lecture and 4 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory and comparison of laboratory instruments are discussed along with the factors affecting their operation. Laboratory exercises are designed to demonstrate the practical applications of the instruments in the research and clinical laboratory. Areas covered include basic electronics, principles of photometry, spectrophotometry, fluorometry, flame emission photometry, atomic absorption spectrophotometry and computerized instrumentation.

CLLS 502 Instrumental Methods of Analysis II

Semester course; 2 lecture and 4 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory and comparison of laboratory instruments are discussed along with the factors affecting their operation. Laboratory exercises are designed to demonstrate the practical applications of the instruments in research and clinical laboratory. Areas covered include electrophoresis, chromatography, particle counters, radio-isotope counters and clinical laboratory automation.

CLLS 508 Laboratory Diagnosis of Infectious Diseases

Semester course; 3 lecture hours. 3 credits. Applies an organ system approach to the laboratory diagnosis of infectious diseases. Emphasizes diagnostic methods to verify infections because of pathogenic micro-organisms and includes related diagnostic microbiology laboratory issues. Utilizes a distance learning format.

CLLS 580 Principles of Education/Management

Semester course; 2 lecture and 2 practicum hours. 1-3 credits. Introduces fundamental educational theories and practice, principles of management and employee relations and health-care issues from a global perspective with an emphasis on multicultural diversity. Stresses the application in the clinical laboratory. Requires a practicum in education and in management following the completion of the didactic portion.

CLLS 595 Clinical Practicum

Semester course; 80-320 clock hours. 1-4 credits. Prerequisite: At least one of the following: CLLS 301-302, 306 and 310, 307-308, 311-312, or by permission of instructor. Individual participation in a hospital laboratory in a selected specialty area: clinical chemistry, hematology, microbiology or immunohematology. Students gain practical experience in the performance of procedures and use of instruments by working with the clinical staff. After gaining competence, the students are expected to properly perform and sign out routine laboratory work under supervision. Based on adviser's recommendation and student's past experience, the course may be taken for less than four credits. Graded as pass/fail.

CLLS 600 Advanced Concepts in Clinical Laboratory Sciences

Semester course; 3 lecture hours. 3 credits. Restricted to students enrolled in Accelerated MS Program. Advanced study of the principles of clinical laboratory sciences and the pathophysiological correlation of laboratory data to disease interpretation. Includes a review and evaluation of laboratory information systems. Focuses on the applications of laboratory data and techniques to solve clinical and methodological problems.

CLLS 601 Theoretical Blood Banking

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A comprehensive study of the blood groups in man, including biochemistry, genetics and clinical significance. Topics relating to problems with antibodies to the blood group antigens are discussed.

CLLS 602 Molecular Diagnostics in Clinical Laboratory Sciences

Semester course; 3 lecture hours. 3 credits. Restricted to students in the M.S. in Clinical Laboratory Sciences' advanced master's track or permission of instructor. Provides the basic principles and techniques of molecular diagnostics and information for establishing a molecular diagnostics laboratory. Examines the utilization of molecular techniques in the clinical laboratory for patient diagnosis and therapy. Emphasizes the use of these techniques in the areas of immunology, microbiology, hematology/oncology, and inherited genetic disorders.

CLLS 605 Advanced Hematology

Semester course; 2 lecture and 2 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. Discusses advanced laboratory techniques used to analyze blood dyscrasias and hemostatic disorders. Students also may perform related laboratory tests.

CLLS 610 Interpretative Clinical Hematology

Semester course; 2 lecture hours. 2 credits. Prerequisite: Permission of instructor. Principles of hematopoiesis and related pathological and pathophysiological correlation of hematological disorders are discussed.

CLLS 690 Clinical Laboratory Sciences Seminar

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of current research and topics of interest by the departmental faculty, graduate students and visiting lecturers.

CLLS 691 Special Topics in Clinical Laboratory Sciences

Semester course; 1-4 credits. This course provides for lectures, tutorial studies and/or library assignments in specialized areas not available in formal courses or research training.

CLLS 694 Molecular Diagnostic Practicum I

Semester course; 640 clock hours. 8 credits. Prerequisite: CLLS 602. Restricted to advanced M.S. degree students or permission of instructor. Provides direct observation and practice in a molecular diagnostics laboratory with emphasis on nucleic acid extraction and molecular amplification techniques. Develops proficiency at performing, analyzing and reporting test results. Graded as pass/fail.

CLLS 695 Molecular Diagnostic Practicum II

Semester course; 320 clock hours. 4 credits. Prerequisites: CLLS 602 and CLLS 694. Restricted to advanced M.S. degree students or permission of instructor. Provides direct observation and practice in molecular diagnostics laboratory. Focuses on molecular hybridization and human identity analyses. Develops proficiency at all stages of nucleic acid analyses including performing, analyzing and reporting test results. Introduces practice issues involved in management of a molecular diagnostics laboratory. Graded as pass/fail.

CLLS 696 Advanced Blood Bank Practicum

6 laboratory hours. 2 credits. Prerequisite: CLLS 601. A laboratory course with practical experiences in resolving complex blood group serological problems and discussion of these problems. Donor phlebotomy, processing of donor units, component preparation and instruction of undergraduate clinical laboratory sciences students also are performed.

CLLS 790 Research in Clinical Laboratory Sciences

Semester course; 1-15 credits. Research leading to the M.S. degree.

Clinical Radiation Sciences(CLRS)

CLRS 101 Introduction to Clinical Radiation Sciences

Semester course; 1 lecture hour. 1 credit. Open to students on the Academic Campus who are interested in clinical radiation sciences as a career. Presentation and discussion of the art and science of medical imaging. The use of ionizing radiation will be explored from its discovery to its current application in therapy and medical diagnosis. Radiography, nuclear medicine and radiation therapy will be discussed in terms of career specialties within the profession.

CLRS 200 Medical Terminology for the Radiation Sciences

Semester course; 2 tutorial laboratory hours. 1 credit. Assists the student in building a medical vocabulary utilizing suffixes, prefixes and word roots, along with terms appropriate to body systems and organs. Emphasis is on understanding basic medical terms and gaining experience in applying that knowledge.

CLRS 201 Radiographic Imaging and Exposure I

Semester course; 2 lecture hours. 2 credits. Prerequisite: CLRS 205. Introduction to radiographic equipment and the imaging process. Covers topics including equipment operation and manipulating radiation exposure to produce quality radiographs. Presents information that prepares students for clinical practice.
Effective Spring 2007 CLRS 201 Radiographic Imaging and Exposure I
Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 205. Introduction to radiographic equipment and the imaging process. Covers topics including equipment operation and manipulating radiation exposure to produce quality radiographs. Presents information that prepares students for clinical practice. Emphasizes clinical problem solving as it relates to patient variables, pathology and technical exposure factors.

CLRS 203-204 Pathophysiology I and II

Continuous courses; 3-3 lecture hours. 3-3 credits. Prerequisites: BIOL 205 and PHIS 206. Presentation of the principles of disease and an introduction to various conditions of illness involving body systems.

CLRS 205 Exploring Radiation Sciences

Semester course; 1 lecture hour. 1 credit. A general overview of the wide variety of imaging and treatment modalities in radiation sciences will be presented. Emphasis will be on understanding how these modalities are utilized in today's complex health-care environment, as well as the role of the technologist/therapist.

CLRS 206 Cross-sectional Anatomy

Semester course; 4 tutorial laboratory hours. 2 credits. Prerequisites: BIOL 205, PHIZ 206L, or permission of instructor. A general overview of cross-sectional anatomy at representative levels will be presented. Emphasis will be on identifying major muscles, organs, bones and vessels on diagrams, photographs and images.

CLRS 208 Foundations of Patient Care

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 200 or equivalent. Legal, ethical and technical foundations of patient care will be explored with emphasis on the application of these principles to common radiologic situations.

CLRS 211 Radiographic Procedures I

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: BIOL 205, PHIS 206 and CLRS 208. Combines the study of anatomy and physiology and positioning for diagnostic radiographic examinations of the upper extremity, thorax, abdomen, lower extremity, spine, pelvis and urinary system. Requires demonstration of competence in radiographic procedures, including positioning of simulated patients, manipulation of radiographic equipment and evaluation of radiographs.

CLRS 212 Radiographic Procedures II

Semester course; 1 lecture and 3 laboratory hours. 2 credits. Prerequisite: CLRS 211. Continuation of CLRS 211 with emphasis on anatomy and physiology and positioning for diagnostic radiographic examinations of routine contrast studies and basic and advanced headwork. Requires students to demonstrate competence in radiographic procedures, including positioning of simulated patients, manipulation of radiographic equipment and evaluation of radiographs.

CLRS 232 Radiation Safety

Semester course; 2 lecture hours. 2 credits. Prerequisite: PHYS 101. Provides an overview of radiation protection as it applies to the radiation sciences. Emphasizes radiation sources, detection and regulations. Discusses radiation protection responsibilities of the radiologic technologist for patients, personnel and public.

CLRS 294 Introduction to Clinical Education I

Semester course; 60 clinical hours. 1 credit. Prerequisite: CLRS 208. Introduction to clinical experience supervised by clinical faculty and affiliate facility staff. Introduces students to the clinical process and equipment, and provides practical experience in routine, basic procedures.

CLRS 295 Introduction to Clinical Education II

Semester course; 128 clinical hours. 2 credits. Prerequisites: CLRS 201, 211, 232 and 294. Continued introduction to clinical experience supervised by clinical faculty and affiliate facility staff. Provides additional practical experience in routine, basic procedures.

CLRS 303 Orientation to Nuclear Medicine

Semester course; 1 lecture and 2 clinical hours. 2 credits. Prerequisites: CLRS 208 and CLRS 232. Designed to acquaint the student with the field of nuclear medicine in general and the Program in Nuclear Medicine Technology in particular. It also provides an introduction to clinical practice.

CLRS 305 Orientation to Radiation Therapy

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Prerequisites: CLRS 208 and CLRS 232. Introduction to the clinical process, equipment and history of radiation therapy. Information will be presented that prepares the student to begin clinical practice. Clinical rotations and lab exercises are designed to expose the student to various aspects of radiation therapy.

CLRS 309 Oncologic Patient Care

Semester course; 2 lecture hours. 2 credits. Prerequisite: CLRS 208. Covers the basic concepts of patient care specific to radiation therapy, including consideration of physical and psychological conditions. Patient interactions, patient examinations, asepsis, local and systemic reactions, nutrition and medications are discussed. Factors influencing patient health during and following a course of radiation will be identified.

CLRS 312 Radiographic Procedures III

Semester course; 2 lecture hours. 2 credits. Prerequisite: CLRS 212. Continuation of CLRS 211 and 212 to cover additional and alternative positions for routine radiographic examinations as well as special studies of circulatory, reproductive, urinary, skeletal and central nervous systems. Discusses equipment, procedures and strategies for performing pediatric, trauma, mobile and operating room radiographic exams. Includes small group simulation opportunities.

CLRS 314 Pathology and Treatment Principles I

Semester course; 4 lecture hours. 4 credits. Prerequisite: CLRS 309. Presents the fundamentals of the disease processes for cancer of the following: skin, thorax, genitourinary, gynecological, head and neck, central nervous system and breast. The malignant condition, etiology and epidemiology, patient workup, and methods of treatment are discussed. Attention to patient prognosis, treatment results and the effects of combined therapies.

Effective Spring 2007 CLRS 314 Pathology and Treatment Principles I
Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisite: CLRS 309. Presents the fundamentals of the disease processes for cancer of the following: skin, thorax, genitourinary, gynecological, head and neck, central nervous system, and breast. Discusses malignant condition, etiology and epidemiology, patient workup, and methods of treatment. Attention to patient prognosis, treatment results and the effects of combined therapies. Requires demonstration of competence in selected radiotherapeutic procedures, including positioning of simulated patients and the manipulation of equipment.

CLRS 317 Nuclear Medicine Procedures I

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 303. Presents the techniques employed in the performance of routine nuclear medicine procedures. Topics include anatomy and physiology, pathology, patient preparation, contraindications, radiopharmaceuticals, dose route of administration, biodistribution, imaging protocols, equipment setup, and common findings.

CLRS 318 Nuclear Medicine Procedures II

Semester course; 2 lecture hours. 2 credits. Prerequisite: CLRS 317. Corequisite: CLRS 322. Presents the techniques employed in the performance of routine nuclear medicine procedures. Topics include anatomy and physiology, pathology, patient preparation, contraindications, radiopharmaceuticals, dose route of administration, biodistribution, imaging protocols, equipment setup, and common findings.

CLRS 319 Nuclear Medicine Procedures III

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLRS 318 and 322. Presents the techniques employed in the performance of routine nuclear medicine procedures. Topics include anatomy and physiology, pathology, patient preparation, contraindications, radiopharmaceuticals, dose route of administration, biodistribution, imaging protocols, equipment setup and common findings.

CLRS 320 Radiographic Imaging and Exposure II

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 201. Provides in-depth exploration of sensitometry and compares principles of digital imaging to film-screen imaging. Emphasizes federal regulations and monitoring of the imaging system components that may affect radiographic quality through improper functioning.

CLRS 321 Nuclear Medicine Instrumentation and Computer Techniques I

Semester course; 2 lecture hours. 2 credits. Prerequisite: CLRS 303. Corequisite: CLRS 317. Pre- or corequisite: CMSC 128. Presentation of the operating principles of standard nuclear medicine imaging instrumentation systems with their practical applications. Topics include: Planar, SPECT and Positron Imaging devices and their associated components.

CLRS 322 Nuclear Medicine Instrumentation and Computer Techniques II

Semester course; 2 lecture hours. 2 credits. Prerequisites: CLRS 321 and CLRS 317. Pre- or corequisite: CMSC 128. Corequisite: CLRS 318. Combines the principles of nuclear medicine instrumentation with practical operation of the equipment. Instruments presented: survey meters, dose calibration, counting devices and image processing computers.

CLRS 323 Radiation Therapy, Techniques and Applications

Semester course; 4 lecture hours. 4 credits. Presents the basic concepts of dosimetry and treatment planning. Various external beam techniques and applications, depth dose data and summation of isodose curves are discussed. Modalities of treatment, patient setup, dose measurement and verification also are included.

CLRS 331 Radiographic Imaging Equipment

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 320. Presents the principles and operation of general and specialized X-ray equipment. Emphasizes the equipment necessary to perform radiographic, fluoroscopic and tomographic examinations.

CLRS 332 Radiographic Pathology

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLRS 204 and CLRS 393, or permission of instructor. Provides introduction to the study of radiographic pathology through reading and observation of film interpretation. Emphasizes recognition of common disease processes as demonstrated radiographically and, via advanced imaging modalities; where appropriate, understanding how to vary positioning and techniques to produce optimally diagnostic images; and the role of different imaging modalities in the evaluation of disease.

CLRS 341 Radiation Physics

Semester course; 2 lecture hours. 2 credits. Prerequisite: PHYS 101. Discusses fundamentals of the atom, electricity and magnetism. Emphasizes the production of X- and gamma rays; and the interaction of radiation with matter.

CLRS 342 Physics for Radiation Therapy

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLRS 323 and CLRS 341. Includes a discussion of the properties of electromagnetic and particulate radiation. Details of production, interactions, treatment units, measurement of radiation, radioactivity and brachytherapy are presented.

CLRS 344 Physics for Nuclear Medicine

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 341. Topics in physics relevant to nuclear medicine technology will be presented. Topics include nuclear decay, nuclear interactions, production of radionuclides, gamma-ray spectroscopy, theory of nuclear medicine instrumentation, image processing and topographic reconstruction.

CLRS 390 Research Methods in the Radiation Sciences

Semester course; 2 lecture hours. 2 credits. Prerequisite: ENGL 200. Pre- or corequisite: STAT 210. The fundamentals of the research process will be presented for analysis and discussion. Elements of research appropriate to the radiation sciences will be reviewed. Emphasis will be on the ability to critically review research studies along with the selection and design of a research project.

CLRS 393-394 Clinical Education I and II

Continuous courses; variable clinical hours. 3-5 credits. Prerequisites: CLRS 208, CLRS 232 and CLRS 201, or CLRS 303 or CLRS 305. Clinical experience supervised by clinical faculty and affiliate facility staff. Students gain practical experience in routine, basic procedures and observe more advanced procedures.

CLRS 395 Clinical Education III

Semester course; variable clinical hours. 5-6 credits. Prerequisite: CLRS 394. Clinical experience supervised by clinical faculty and affiliate facility staff. Students gain additional practical experience in routine as well as advanced procedures.

CLRS 398 Introduction to Research

Semester course; 1 credit. Prerequisite: CLRS 390. Provides students the opportunity to explore and investigate a topic of special interest in their area of concentration under the supervision of a faculty adviser. Emphasizes the application of research concepts to writing a research project proposal.

CLRS 403 Advanced Patient Care for the Imaging Professional

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 208 Foundations of Patient Care or permission of instructor. Explores advanced patient care techniques and age-specific considerations in the radiation sciences. Emphasizes the application of advanced patient care principles.

CLRS 405 Principles of Mammography

Semester course; 2 lecture hours. 2 credits. Prerequisites: CLRS 201 and CLRS 320, or permission of instructor. Presentations and discussions designed to provide an overview of the principles of mammography. Topics include history, anatomy, physiology and pathology of the breast; exposure techniques; and quality control. Focuses on routine and specialized positioning of the breast and image evaluation to prepare students for practical experience in mammography.

CLRS 406 Introduction to MRI

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 341 or permission of instructor. An introduction to the elements of magnetic resonance imaging, including instrumentation, physical principles, image production and quality, MR safety, magnetic resonance angiography and imaging applications.

CLRS 408 Introduction to Computed Tomography (CT)

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 206 and 341 or permission of instructor. This course provides the student with an overview of computed tomography. Topics include computed tomography physical principles, data acquisition/image reconstruction, equipment and terminology. Imaging parameters, patient care issues (i.e., preparation, monitoring) quality control and clinical application in medical imaging also will be introduced. Lastly, emerging technologies/techniques and special studies involving computed tomography will be discussed.

CLRS 410 Routine Computed Tomography Procedures

Semester course; 1 lecture hour. 1 credit. Prerequisites: CLRS 206 and 408, or permission of instructor. Presents routine procedures used in computed tomography imaging. Reviews examinations and protocols involving the head, chest, abdomen and extremities.

CLRS 412 Radiation Therapy Treatment Planning

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: CLRS 323 and 342 or permission of instructor. An introduction to routine 2-D and 3-D treatment planning for the most common forms of cancer including prostate, rectum, lung, breast and head and neck regions. Simulated lab training using the ADAC Pinnacle treatment planning system will be included. Emphasis will be on the rationale and process of treatment planning for patients undergoing radiation therapy.

CLRS 415 Pathology and Treatment Principles II

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: CLRS 309 and 314. A continuation of CLRS 314. Presents the fundamentals of the disease process for the following cancers: gastrointestinal, lymphomas and hematological malignancies, bone tumors, childhood tumors, and eye and orbital tumors. Discusses patient workup and prognosis, treatment results, and the effects of combined therapies. Radiotherapeutic emergencies, palliation and combined modality treatment also will be discussed. Requires demonstration of competence in selected radiotherapeutic procedures, including positioning of simulated patients and the manipulation of equipment.

CLRS 417 Nuclear Medicine Procedures IV

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 319. Presents the techniques employed in the performance of advanced nuclear medicine procedures. Topics include anatomy and physiology, pathology, patient preparation, contraindications, radiopharmaceuticals, dose route of administration, biodistribution, imaging protocols, equipment setup, and common findings.

CLRS 430 Radiobiology

Semester course; 2 lecture hours. 2 credits. Prerequisite: CLRS 232 or permission of instructor. Presents the principles of biologic responses to radiation, including factors influencing radiation effects, tissue sensitivity and tolerance. Clinical application in radiography, nuclear medicine and radiation therapy are reviewed.

CLRS 453 Quality Management in Nuclear Medicine

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: CLRS 322. Explores the quality assurance parameters in a nuclear medicine department. Emphasis is given to the performance of tests to assess survey meters, spectrometers, dose calibrators, gamma cameras and SPECT imaging systems. Additionally, quality assurance is discussed in terms of radiopharmaceuticals, radioimmunoassay laboratories and patient management.

CLRS 455 Quality Management in Radiation Therapy

Semester course; 2 lecture hours. 2 credits. Prerequisite: CLRS 323. Designed to provide the student with knowledge of the concepts and principles of quality assurance. The performance of various tests including purpose, sources of malfunction and action guidelines will be discussed.

CLRS 461 Radiopharmaceutical: Preparation and Quality Control

Semester course; 2 lecture hours. 2 credits. Prerequisites: CLRS 303 and two semesters of general chemistry. Provides the technical knowledge necessary for the preparation and quality control of radiopharmaceutical agents for in-vivo and in-vitro nuclear medicine studies.

CLRS 471-472 Radiology Imaging Procedures for Radiologist Assistants I and II

Continuous courses; 3-3 lecture hours. 3-3 credits. Prerequisites: CLRS 402 and 403, and CLRZ 403L or permission of instructor. Establishes a framework for radiologist assistants' participation in patient examinations for diagnostic inspection and/or therapeutic treatment. Emphasizes establishment of fundamental radiology procedures that follow American College of Radiology Standards for principles and practices producing high-quality radiographic care. Includes basic radiology procedures in genitourinary, gastrointestinal, pediatric, thoracic, musculoskeletal selections and vascular/interventional specialties. Addresses legal, ethical and professional issues concerning radiologist assistants.

CLRS 475 Medical Imaging Fundamentals for Radiologist Assistants

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLRS 402 and 403, and CLRZ 403L or permission of instructor. Promotes an understanding of methods and techniques for the systematic observation of static and dynamic diagnostic images for the purpose of evaluating the presence of abnormalities, anomalies and pathological conditions. Includes protocols for drafting memoranda of initial observations based on image assessment.

CLRS 480 Applied Radiology Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Departmental approval. Relates basic concepts in management to the radiologic environment and explores the relationship between the radiologic facility and the health care system.

CLRS 488 Senior Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisite: Senior standing in department. Designed to allow students to integrate the various individual courses into a single perspective as it relates to the radiation sciences. Addresses timely professional issues, including the need for lifelong learning and participation in professional organizations, as well as preparing for certification and future employment.

CLRS 492 Directed Study: Radiation Sciences

Semester course; 1-4 credits. Maximum of 6 credits can apply to graduation requirements. Prerequisite: Permission of department chair. Provides the opportunity for individualized research projects, tutorial studies, special clinical work or other topics not available in formal course work.

CLRS 493 Clinical Education IV

Semester course; variable clinical hours. 1-7 credits. Prerequisite: CLRS 395. Clinical experience supervised by clinical faculty and affiliate facility staff. Students gain additional practical experience in routine, basic and advanced procedures.

CLRS 494 Clinical Education V

Semester course; variable clinical hours. 1-7 credits. Prerequisite: CLRS 493. Clinical experience supervised by clinical faculty and affiliate facility staff. Students gain additional practical experience in routine, basic and advanced procedures.

CLRS 498 Senior Project

Semester course; 2 credits. Prerequisites: CLRS 390, 398 and senior standing in department. Provides students the opportunity to investigate a topic of special interest in their area of concentration. Emphasizes the application of research concepts in the design, implementation and presentation of a project under the supervision of a faculty adviser.

Clinical Radiation Sciences Lab(CLRZ)

CLRZ 201L Radiographic Imaging and Exposure I Laboratory

Semester course; 2 laboratory hours. 1 credit. Prerequisites: CLRS 205 and CLRS 208. Pre- or corequisite: CLRS 201. Designed to introduce students to the fundamentals of radiographic image production. Requires performance of laboratory exercises to become familiar with equipment operation and manipulate radiation exposure variables to produce quality images.

CLRZ 320L Radiographic Imaging and Exposure II Laboratory

Semester course; 2 laboratory hours. 1 credit. Prerequisite: CLRS 201. Pre- or corequisite: CLRS 320. Requires students to perform laboratory exercises to manipulate a variety of variables and analyze their effect on the radiographic image. Focuses on developing problem-solving skills to produce optimal quality in images. Applies exposure factors to digital imaging for comparison to film-screen imaging.

CLRZ 328L Nuclear Medicine Instrumentation and Image Processing Laboratory

Semester course; 2 laboratory hours. 1 credit. Prerequisites: CLRS 317 and 321. Corequisites: CLRS 318 and 322. Presentation of the applications and techniques employed in the fundamentals of nuclear medicine detection instruments and hands-on processing of various nuclear medicine imaging procedures. Topics include operation of the single and multiple channel analyzer, spectrometers, uptake probe and well counter, GM survey meter and the dose calibrator. Image processing will be performed with nuclear medicine cardiac, renal, gastric emptying and tumor images varying the display parameters and reconstruction filters.

CLRZ 403L Advanced Patient Care for the Imaging Professional

Semester course; 2 laboratory hours. 1 credit. Prerequisite: CLRS 208 Foundations of Patient Care or permission of instructor. Can be taken concurrently with or subsequent to CLRS 403. This course provides simulated experience in performing advanced patient care techniques related to the radiation sciences. Topics include cardiac rhythm interpretation, advanced cardiac life support, urinary catheterization, tracheostomy care, basic laboratory skills, basic respiratory therapy skills, pulse oximetry, IV therapy and pharmacology, and conscious sedation.

CLRZ 405L Principles of Mammography Lab

Semester course; 2 laboratory hours. 1 credit. Prerequisites: CLRS 201 and CLRS 320, or permission of instructor. Can be taken concurrently with or subsequently to CLRS 405. Provides simulated experience in performing positioning of the breast. Students will be expected to demonstrate competence in positioning the breast phantom for a variety of routine and specialized projections. In addition, quality control procedures specific to mammography will be performed.

Gerontology(GRTY)

GRTY 410 Introduction to Gerontology

3 credits. A survey of the field of aging with attention to physical, psychological, social, economic and cultural ramifications of age.

GRTY 501 Physiological Aging

3 credits. This course is taught at an introductory level in contrast to the more substantive background required for GRTY 601. Distinguishes between normal aging and those chronic illnesses often associated with aging in humans. This course would be valuable to those interested in the general processes of human aging.

GRTY 601 Biological and Physiological Aging

3 credits. Biological theories of aging; cellular, physical, systemic and sensory change; health maintenance.

GRTY 602/PSYC 602 Psychology of Aging

Semester course; 3 seminar hours. 3 credits. Prerequisite: Permission of instructor. Students must complete social sciences research methods before taking this course. Psychological adjustment in late life; special emphasis on personality, cognitive and emotional development; life crises associated with the aging process.

GRTY 603 Social Science Research Methods Applied to Gerontology

3 credits. Prerequisite: Graduate statistics. Application of social science methods and techniques to study of the aged; data sources; types of problems encountered; data analysis; research reporting; use of research findings.

GRTY 604 Problems, Issues and Trends in Gerontology

3 credits. Application of knowledge in analysis of problems confronting aged persons; social issues and legislation; service delivery programs; current trends in gerontology.

GRTY 605 Social Gerontology

3 credits. Focuses on the sociopsychological and sociological aspects of aging. Various sociopsychological and social theories of aging will be discussed. The course will provide a broad overview of several general topics such as the demography of aging, politics and economics of aging, and cross-cultural aspects of aging. The course will offer an in-depth analysis of particular role changes that accompany aging (i.e., retirement, widowhood, institutionalization).

GRTY 606 Aging and Human Values

3 credits. Identification and analysis of value systems of the aged, exploration of religious beliefs; death and dying; moral, ethical and legal rights; human values and dignity.

GRTY 607 Field Study in Gerontology

3 credits. Systematic exploration and study in the field of an actual problem, issue or task germane to the student's gerontology concentration. Application of specific concepts and approaches to assessment analysis. Arranged in consultation with the student's program adviser.

GRTY 608 Advanced Topics in Problems, Issues and Trends in Gerontology

Semester course; 3 lecture hours. 3 credits. Explores key issues and trends resulting from the aging of the society. Focuses on the development of responsive programs and services for older persons, and examines issues related to incipient and proposed changes to society's response to the health, income, health care financing and long-term and family support needs of aging persons.

GRTY 612 Recreation, Leisure and Aging

3 credits. An analysis of the quality and quantity of leisure in maximizing the quality of life for the older person. Focus will be on concepts of leisure; the interrelationship of leisure service delivery systems and other supportive services; the meaning of leisure to the elderly in the community and within institutional settings; and innovative programming.

GRTY 615/PSYC 615 Aging and Mental Disorders

Semester course; 3 lecture hours. 3 credits. The course deals with common psychological disorders and problems of late life, their etiology, methods of evaluating psychological status and intervention strategies that have been used successfully with older persons. Topics include epidemiology of psychological disorders and mental health service utilization; late-life stressors and crises; psychology of health, illness and disability; techniques and procedures in the evaluation of the older adult; functional and organic disorders; institutionalization; individual, group and family therapy; behavioral techniques; peer counseling and crisis intervention; and drugs and the elderly.

GRTY 616 Geriatric Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an overview of the process in geriatric rehabilitation with an assessment, psychosocial aspects and rural issues in rehabilitation. Considers major disabling conditions in late life, and emphasizes the nature of the interdisciplinary rehabilitation process with aging clients.

GRTY 624/SOCY 624 Community and Community Services for the Elderly

3 credits. A conceptual/theoretical overview of community focusing on the ecological, psychological and social dimensions of community and on communities of the aged.

GRTY 625 Aging and the Minority Community

3 credits. An analysis of the relationship between the aging process and American minority communities. In addition to the sociological factors, the course will examine demographic, physiological and psychological aspects of minority aging. Attention also will focus on dominant social problems and federal policies toward the aged.

GRTY 627 Psychology of Health and Health Care for the Elderly

Focuses on factors in the etiology, course and treatment of illness; patient/practitioner relationship; patient compliance and psychosocial issues in terminal care.

GRTY 629/PATC 629 Spirituality and Aging

Semester course; 2 or 3 lecture hours. 2 or 3 credits. Explores the spiritual, psychological and social dynamics associated with aging. Provides special attention to the spiritual and emotional impact on caregivers who work with aging patients.

GRTY 638 Long-term Care Administration

3 credits. Focuses on unique knowledge and skills considered essential to effective long-term care administration. Emphasis is on the professional role of the long-term care administrator in providing for the health and social needs of the chronically ill and elderly. Applied skills in addressing the technical, human and conceptual problems unique to LTC are addressed through cases and field exercises.

GRTY 641/PSYC 641 Survey of Psychological Assessment and Treatment of the Older Adult

3 credits. A combination didactic and skills training course; review of major treatment strategies and techniques for utilization with the older adult client with emphasis on group, individual and paraprofessional delivery systems; evaluation of crisis intervention and consultation team approaches; lectures, demonstration and classroom practice of actual treatment techniques.

GRTY 642/PSYC 642 Practicum in Clinical Geropsychology

3 credits. An initial practicum geared as an entry to the team practicum experience; focus on familiarizing the student with mental health service delivery systems for the elderly in the Richmond community; rotation through a limited number of facilities such as nursing homes, retirement centers, nutrition sites, emergency hotline services for the elderly, and various agencies involved in deinstitutionalization; possible extended placement in a particular facility.

GRTY 691 Topical Seminar

3 credits. Seminars on specialized areas of gerontological interest. Examples of special topic courses taught in previous years: nutrition and aging; psychophysiology and neurobiology of aging; wellness and aging; and preretirement planning.

GRTY 692 Independent Studies

1-3 credits. Directed in-depth independent study of a particular problem or topic in gerontology about which an interest or talent has been demonstrated.

GRTY 792 Independent Studies for Master's-/Ph.D.-level Students

Semester course; 3 credits. Independent study in selected area under supervision of gerontology faculty. Focuses on in-depth research and analysis of a major focus area of gerontology, leading to a comprehensive, publishable quality review paper. Emphasizes integrating previous graduate training into aging topical area.

GRTY 798-799 Thesis

3-6 credits. A research study of a topic or problem approved by the thesis committee and completed in accordance with the acceptable standards for thesis writing.

Health Administration/Executive(HADE)

HADE 602 Health Systems Organization, Financing and Performance

Semester course; 3 credits. Examines the structure, functioning and financing of the U.S. health services system. Emphasizes foundational concepts for understanding and analyzing patterns of health and illness; health care cost, quality, access and utilization; workforce; competition in health care markets; and supplier, provider and payer effectiveness and efficiency.

HADE 606 Health Care Managerial Accounting

Semester course; 3 credits. Prerequisite: Permission of the instructor. A foundation course covering health care financial accounting, financial statement analysis, budgeting, reimbursement, costing and short-term decision making. Emphasizes accounting concepts and using financial data in management of providers and payers.

HADE 607 Financial Management in Health Organizations

Semester course; 3 credits. Prerequisite: HADE 606. Examines theory and techniques of managerial corporate management as applied to health service providers and insurers including time value of money, working capital management, capital budgeting techniques, cash flow analysis and capital structure planning.

HADE 610 Health Care Management Decision Support Systems

Semester course; 3 credits. Application of operations research and industrial engineering techniques to increasing health service organization production efficiency. Managerial applications of production planning/control and decision models in health service organizations are emphasized.

HADE 611 Health Care Law and Bioethics

Semester course; 3 credits. Presents elements of law and legal principles as they apply to the administration of hospitals and heath care systems. Emphasizes medical malpractice, medical-legal issues, informed consent, antitrust, heath care business law and bioethics. Provides a legal foundation for the practice of health administration and clinical ethics through the use of case law and case analysis.

HADE 612 Health Information Systems and Performance

Semester course; 3 credits. Prerequisite: HADE 610 and permission of the instructor. Analyzes current information and management systems including workforce planning and productivity, financial planning and monitoring, quality assurance, staffing and scheduling, administrative information systems and patient care systems. Evaluates alternative uses of computer technology in health care.

HADE 613 Employment and Labor Law for Health Care Organizations

Semester course; 1 credit. Presents elements of law and legal principles as they apply to the organization and delivery of health services as embodied in employment and labor arrangements. Emphasizes discrimination law, sexual harassment, wage and hour laws, and disability law. Course will be taught using applied problems and case methodology.

HADE 614 Health Care Marketing

Semester course; 3 credits. Fundamental theories, concepts and techniques of marketing applied to the distinctive properties of health care services. Emphasizes the role of marketing and aligning organizational capacity and health care needs; market analysis and planning; strategic marketing management; tactical marketing mix design designing and managing service delivery systems and developing new offerings.

HADE 615 Managerial Epidemiology

Semester course; 2 credits. Focuses on analytical techniques to study and measure the health or populations and to evaluate programs. Topics covered include health status measurement, evaluation design and managerial applications of epidemiology.

HADE 621 Advanced Medical Informatics: Technology, Strategy and Performance

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADE 612 and permission of the instructor. Focuses on using technology for improving operational efficiencies, quality of care and market competitiveness. Explores various application technologies within the framework of technology-strategy-performance including: telemedicine, cyber surgery, Web-enabled clinical information systems, clinical decision support systems, artificial intelligence and expert systems, and risk-adjusted outcome assessment systems.

HADE 624 Health Economics

Semester course; 3 credits. Foundational concepts of microeconomic theory and their application in analyzing health care policy; understanding the structure and dynamics of health care markets; and monitoring and controlling the allocation of resources within health organizations.

HADE 631 Managed Care

Semester course; 3 credits. Prerequisites: two semesters of graduate work and permission of the instructor. Examines the relationships between purchasers and providers of health care services and the development of new systems of financing and delivery that seek to improve performance and accountability.

HADE 645 Health Care Organization and Management Theory

Semester course; 3 credits. A survey of contemporary organization and management theory focusing on concepts and techniques particularly relevant to health service financing and delivery organizations. Emphasizes the health care organization's environment, goals, strategy, structure and management processes.

HADE 646 Organization Behavior and Design in Health Care Management

Semester course; 3 credits. Surveys the key concepts of organization behavior and design as they apply to health care management. Focuses on both micro and macro issues, including: designing and coordinating structures and jobs, managing teams and workgroups, assessing organizational effectiveness, managing organizational politics and conflicts, understanding organizational culture, fostering innovation and creativity, and addressing the organizational psychology of the health care workforce.

HADE 648 Strategic Management in Health Care Organizations

Semester course; 3 credits. Focuses on the formulation, implementation, and evaluation of strategy in health care financing/delivery organizations. Emphasizes concepts dealing with industry structure; the strategic management process; achieving and sustaining competitive advantage.

HADE 650 Human Resource and Career Planning in Health Care Organizations

Semester course; 1 lecture hour. 1 credit. Provides an overview of human resources management and career planning strategies. Discusses the activities of strategic human resource management, identifies the strategic human resource needs of contemporary health care organizations and explores techniques for addressing specific professional issues (i.e., dual careers, career barriers and plateaus, work/life balance, networking). Each student will identify personal and professional strengths and goals, and develop a strategic career plan and support documents.

HADE 681 Special Topics in Health Administration

Variable hours. 1-3 credits. Investigate a specialized content area in a semester-long, seminar format. Topics may change from semester to semester.

HADE 690 Leadership and Health Care Organizations

Semester course; 3 credits. Analyzes the current management/leadership role of the health care executive. Focuses on the requisite knowledge, skills and values essential to success. Involves students in assessing their own leadership styles and skills and discussing key concepts of leadership in various health care organizations and structures.

HADE 691 Health Care Organization Diagnosis and Planning

1 credit. Provides an opportunity for students to integrate as well as apply knowledge gleaned from prior course work and to share individual experiences in assessment of and correction of organizational problems that are either operational or strategic.

HADE 692 Independent Study in Health Administration

Variable hours. Variable credit. Offered in all semesters for students to investigate and study topics of major interest.

Health Administration(HADM)

HADM 602 Health System Organization, Financing and Performance

Semester course; 3 lecture hours. 3 credits. Examines the structure, functioning and financing of the U.S. health services system. Emphasizes foundational concepts for understanding and analyzing patterns of health and illness; health care cost, quality, access and utilization; workforce; competition in health care markets; and supplier, provider and payer effectiveness and efficiency.

HADM 606 Health Care Managerial Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisite: Financial Accounting. A foundation course covering health care financial accounting, financial statement analysis, budgeting, reimbursement, costing and short-term decision making. Emphasizes accounting concepts and using financial data in management of providers and payers.

HADM 607 Financial Management in Health Organizations

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 606. Examines theory and techniques of corporate financial management as applied to health services providers and insurers including time value of money, working capital management, capital budgeting techniques, cash flow analysis and capital structure planning.

HADM 608 Seminar in Health Care Finance

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 606 and HADM 607. Advanced studies of financial issues and the application of analytic tools in case studies and exercises. Designed to enhance and strengthen the knowledge and skills provided in the graduate program's foundation and required courses in accounting and finance.

HADM 609 Health Systems Evaluation and Epidemiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Upper-division course in statistics or business statistics. Introduces principles and methods employed in evaluation research and program evaluation as these relate to health services. Topics covered include health status measurement, evaluation design and managerial applications of epidemiology.

HADM 610 Health Care Management Decision Support Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 609. Applications of traditional industrial engineering techniques in health care institutions. Applications of operations research techniques to health care planning, control and decision making including deterministic, and stochastic decision analysis models and their use in health service administration.

HADM 611 Hospital and Medical Law

Semester course; 4 lecture hours. 4 credits. Examines basic principles and practices of law affecting hospitals and medical practice: the legal aspects of patient care and treatment, medical services, and other hospital-patient related functions and employment law.

HADM 612 Health Information Systems and Performance

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 609 and HADM 610. Analysis of current information and management systems including workforce planning and productivity, financial planning and monitoring, quality assurance, staffing and scheduling, administrative information systems and patient care systems. Evaluation of alternative uses of computer technology in health care.

HADM 614 Health Care Marketing

Semester course; 3 lecture hours. 3 credits. Foundational theories, concepts and techniques of marketing applied to the distinctive properties of health care services. Emphasis placed on the role of marketing and aligning organizational capacity and health care needs; market analysis and planning; strategic marketing management; tactical marketing mix design; designing and managing service delivery systems and developing new offerings.

HADM 615 Health Care Politics and Policy

Semester course; 3 lecture hours. 3 credits. Examines the political process with particular emphasis on the impact of politics on health care. Focuses on current political issues in the health field, examining conflicts and anticipating effects on the health system.

HADM 621 Advanced Medical Informatics: Technology-Strategy-Performance

Semester course; 3 lecture hours. 3 credits. Focuses on use of technology for improving operational efficiencies, quality of care and market competitiveness. Explores various application technologies within the framework of technology-strategy-performance including: telemedicine, cyber surgery, Web-enabled clinical information systems, clinical decision support systems, artificial intelligence and expert systems, and risk-adjusted outcome assessment systems.

HADM 624/ECON 624 Health Economics

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. Develops an understanding of (1) economics as a managerial tool in making choices or decisions that will provide for an optimum allocation of limited health care resources, and (2) economics as a way of thinking about and approaching issues of public policy in financing and organizing health and medical services. Individual research on crucial or controversial issues in the health care field.

HADM 626 International Health

Semester course; 3 lecture hours. 3 credits. Provides an overview of and/or introduction to international health. Focus is on the relationship between external factors and the health of populations.

HADM 631 Managed Care

Seminar course; 3 lecture hours. 3 credits. Prerequisites: two semesters of graduate work and permission of the instructor. Examines the relationships between purchasers and providers of health care services and the development of new systems of financing and delivery that seek to improve performance and accountability.

HADM 638 Administration of Long-term Care (LTC) Facilities and Programs

Semester course; 3 lecture hours. 3 credits. Focuses on unique knowledge and skills considered essential to effective long-term care administration. Emphasis is on the professional role of the long-term care administrator in providing for the health and social needs of the chronically ill and elderly. Applied skills in addressing the technical, human and conceptual problems unique to LTC are addressed through cases and field exercises.

HADM 645 Structure and Functions of Health Organizations

Semester course; 3 lecture hours. 3 credits. Surveys concepts from organizational and management theories applicable to health organizations. Considers issues in organizational structure, strategy and processes for health care organizations.

HADM 646 Organization Behavior and Design in Health Care Management

Semester course; 3 lecture hours. 3 credits. Surveys the key concepts of organization behavior and design as they apply to health care management. Focuses on both micro and macro issues including designing and coordinating structures and jobs, managing teams and workgroups, assessing organizational effectiveness, managing organizational politics and conflicts, understanding organizational culture, fostering innovation and creativity, addressing the organizational psychology of the health care workforce and emphasizing the role of leadership.

HADM 647 Operations Management in Health Care Organizations

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 646. Analysis of the current state of management study and practice with the objective of achieving a balanced development of both knowledge and skills in solving the operations problems of health institutions. The managerial process is critically examined with emphasis on leadership behavior and development, structure and purpose of health care organization subunits, interfunctional coordination and organizational processes.

HADM 648 Strategic Management in Health Care Organizations

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 614 and HADM 647. Integrative seminar on strategic decision making in health care organizations. Considers the concepts and alternative models of strategic management, the strategic management process and the evaluation of strategic decisions.

HADM 661 Physician Practice Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Completion of first year of M.H.A. Program or permission of instructor. Provides a practical overview of management skills and tools necessary to assist a physician group with an efficient service delivery organization. Discusses issues in the larger health care business environment that affect physician professional practice and the operational factors that define a successful organization now and in the future.

HADM 682 Executive Skills I

Semester course; 1 lecture hour. 1 credit. Prerequisite: HADM 646. Applied course in executive skills and behavior of the health care executive. Focus is on the health care executive leadership development and personal effectiveness.

HADM 683 Executive Skills II

Semester course; 1 lecture hour. 1 credit. Prerequisite: HADM 682. Advanced applied course in executive skill development. Focus is on the health care executive leader and development of skills relating to the external environment of health care organizations. Emphasizes relationships with physicians, governing boards, regulatory bodies, donors and other key stakeholders.

HADM 690 Departmental Research Seminar

Semester course; variable hours. Variable credit. Research seminar that focuses on research design and methods organized under a single topic or a series of related topics in health services research. Applied research training for master's-level students.

HADM 691 Special Topics in Health Services Organization and Research

3 lecture hours. 3 credits. Prerequisite: permission of instructor. Course is devoted to specialized content area for health administration. Examples include physician practice management and advanced managed care.

HADM 692 Independent Study in Health Administration

1-3 credits. Prerequisite: Permission of instructor. Special study conducted under the guidance of a faculty sponsor.

HADM 693, 694, 695 Practicum in Health Services Administration

I: 2 credits; II: 3-5 credits; III: 3 credits. Prerequisite: Admission to the administrative residency. Examination of contemporary problems and issues in the organization, administration and evaluation of health services. A principal focus is the application of alternative approaches to administrative problem solving. Special emphasis is placed on understanding and analysis of the internal and external factors that influence decision making in health care organizations. Graded as "S," "U" or "F."

HADM 697 Directed Research

Semester course; variable hours. Variable credit. Special course offered under the guidance of a faculty sponsor for one or more students to design and implement an applied research project in the field setting. Focuses on the application of research methods to policy or operational problems of health care institutions.

HADM 701 Health Organization Design and Assessment

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 704 and HADM 705, or permission of instructor. Analysis of medical care organizations at both micro and macro levels. Critical review of empirical research in organizational analysis and design. Identifies measurement issues related to quality of care and to formulation of evaluative research on health service programs.

HADM 702 Health Care Financing and Delivery Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 701, HADM 704 and HADM 705. Critical review and evaluation of major innovations in organization, delivery and financing of health care services. Selected topics may include risk assessment analysis of alternative health care delivery systems and consideration of alternative public financing of health care.

HADM 704 Foundations of Health Service Organization Theory

Semester course; 3 lecture hours. 3 credits. Examines the roots of foundational theories and concepts in organization theory and their application to research on health care organizations and systems. Emphasizes the environment and structure of health care organizations and systems.

HADM 705 Advanced Health Service Organization Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 704 or permission of instructor. Examines, in depth, selected organization theories, emphasizing their application in current health services research. Also investigates the process of theory growth on health-services organizations.

HADM 760 Quantitative Analysis of Health Care Data

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 624 and HADM 609, or permission of instructor. Research course emphasizing computer application and statistical analyses of health care data generated from secondary sources, including data envelopment analysis.

HADM 761 Health Services Research Methods I

Semester course; 3 lecture hours. 3 credits. Prerequisite: Upper-division course in statistics. Research as a systematic method for examining questions derived from related theory and/or health service practice. Major focus is on the logic of causal inference, including the formulation of testable hypotheses relating to health services organization and management, the design of methods and measures to facilitate study, and the concepts, principles and methods of epidemiology.

HADM 762 Health Services Research Methods II

Semester course; 3 lecture hours. 3 credits. Prerequisites: HADM 761 and MRBL 632, or equivalent. Application of multivariate statistical analysis and evaluation research methods to health services research. Emphasis is placed on the use of advanced statistical methods (e.g., LISREL, Event History Analysis) and designs to analyze panel data in the health field.

HADM 763 Health Program Evaluation

Semester course; 3 lecture hours. 3 credits. Prerequisite: HADM 760, 761, or permission of instructor. Analysis of current evaluation research on personal health services and programs in a variety of social and health contexts. Emphasis is placed on the measurement of health care outcomes and the design of experimental and quasi-experimental studies in the health field.

HADM 792 Independent Study in Health Services Organization and Research

Semester course; 1-3 credits. Special study or research leading to a publication. Conducted under the guidance of a faculty sponsor.

HADM 793 Research Practicum

Semester course; 1-3 credits. Available only to second year students. Supervised investigation of selected problems in health services research. Includes conducting and analyzing field research.

HADM 898, 899 Doctoral Dissertation in Health Services Organization and Research

Semester course; 1-9 credits. A minimum of 9 semester hours required for Ph.D. degree. Prerequisite: Completion of required course work and comprehensive examination. Dissertation research under direction of faculty adviser.

Health Care Management(HCMG)

HCMG 300 Health Care Organization and Services

Semester course; 3 lecture hours. 3 credits. Examines the structure and function of the U.S. health services delivery system. Examines the role and responsibilities of health care professions and occupations, technology and financing arrangements in the delivery system.

Nurse Anesthesia(NRSA)

NRSA 601 Principles and Practice of Nurse Anesthesia I

Semester course; 3 laboratory hours. 1 credit. First in a series of six principles and practice courses. Introduces the nurse anesthesia graduate student to concepts necessary to plan and execute safe individualized anesthetics. Covers pre- and postanesthetic assessment, formulation of the anesthesia care plan, anesthetic techniques, prevention of complications, fluid management, monitoring and utilization of anesthesia equipment. Graded as pass/fail.

NRSA 602 Principles and Practice of Nurse Anesthesia II

Semester course; 2 lecture hours. 3 credits. Second in a series of six principles and practice courses. Presents fundamental concepts and techniques essential to clinical anesthesia practice focusing on the theoretical and practical considerations involved in the administration and management of major nerve conduction anesthesia and acute pain management.

NRSA 603 Principles and Practice of Nurse Anesthesia III

Semester course; 3 lecture hours. 3 credits. Third in a series of six principles and practice courses. Delineates techniques of anesthesia management that are considered situation specific for specialized procedures, diagnostic or individualized procedures including advanced airway management and anesthesia care individualized for the patient with cardiovascular and respiratory conditions.

NRSA 604 Principles and Practice of Nurse Anesthesia IV

Semester course; 2 semester hours. 2 credits. Fourth in a series of six principles and practice courses. Intensively covers the advanced concepts and principles of anesthetic management with an emphasis on pediatric, obstetric, endocrine and hematological disorders.

NRSA 605 Principles and Practice of Nurse Anesthesia V

Semester course; 2 lecture hours. 2 credits. Fifth in a series of six principles and practice courses. Intensively covers the advanced concepts and principles of anesthetic management with an emphasis on neuro-anesthesia and anesthesia delivery in specialty settings.

NRSA 606 Principles and Practice of Nurse Anesthesia VI

Semester course; 2 lecture hours. 2 credits. Last in a series of six principles and practice courses. Intensively covers the advanced concepts and principles of anesthetic management with an emphasis on crisis management.

NRSA 622-623 Clinical Practicum I-II

Continuous courses; 112 clock hours. 1 credit. Introduces clinical care with supervised participation in actual administration of anesthesia. Demonstrates internalization of theoretical concepts and techniques and application in anesthetic management toward the achievement of the terminal objectives for competency in entry-level anesthesia practice.

NRSA 624-627 Clinical Practicum III-VI

675 clock hours. 6 credits. Provides intensive experience in all clinical anesthesia areas. All course work represents an integral phase of sequenced clinical progress toward the achievement of competency in entry-level anesthesia practice. Includes clinical rotations to various affiliate sites to gain experience in management of specialized anesthetic considerations. Emphasis on greater responsibility for a total anesthetic regime along the educational experiential continuum.

NRSA 633 Pathophysiology for Nurse Anesthetists

Semester course; 3 lecture hours. 3 credits. Covers various pathological conditions and diseases of specific concern to the anesthesia provider with an emphasis on cardiovascular, respiratory, excretory, endocrine, infectious diseases, nutritional, neuromuscular and neurological disorders.

NRSA 642 Professional Aspects of Anesthesia Practice I

Semester course; 1 lecture hour. 1 credit. Provides the graduate nurse anesthesia student an opportunity to focus on a variety of professional issues including but not restricted to the history of nurse anesthesia, roles of the nurse anesthetist and the American Association of Nurse Anesthetists, professional involvement, governmental and nongovernmental regulations of nurse anesthesia practice and standards of care.

NRSA 645 Professional Aspects of Anesthesia Practice II

Semester course; 1 lecture hour. 1 credit. Provides the graduate nurse anesthesia student an opportunity to focus on a variety of professional issues including but not restricted to health care delivery systems, assessing and selecting practice settings and employment options, medical ethics and chemical dependency.

NRSA 647 Professional Aspects of Anesthesia Practice III

Semester course; 1 lecture hour. 1 credit. Provides the graduate nurse anesthesia student an opportunity to focus on a variety of professional issues including but not restricted to reimbursement, influencing health care policy, competence, quality assessment, risk management, departmental management, nurse anesthesia and the legal system, documentation of anesthesia care and current issues and their potential effects on the profession of nurse anesthesia.

NRSA 676 Teaching Methodologies for the Nurse Anesthetist

Semester course; 2 lecture hours. 2 credits. Covers principles of teacher/learner communication, presentation strategies and methods of evaluation pertinent to nurse anesthesia education and includes instructional tools, their application and instructional design.

NRSA 683 Research Methods in Nurse Anesthesia Practice

Semester course; 3 lecture hours. 2 credits. Required of all nurse anesthesia students. Understands and applies the steps involved in the research process. Emphasizes concepts, procedures and processes appropriate for use in research. Develops a research proposal by exploring a topic in the area of anesthesiology. Applies inferential and advanced statistical tests to hypothetical data. Critically analyzes and evaluates anesthesia research studies.

NRSA 699 Directed Research in Nurse Anesthesia

1 credit. May be repeated up to four semesters. Prerequisite: Students are required to take NRSA 699 or NRSA 789. Provides the student an opportunity to gain experiences through guided library and practicum research in the area of anesthesiology. Executed under the supervision of an adviser and in conjunction with a research committee.

NRSA 798 Thesis

1 credit. May be repeated up to four semesters. Prerequisite: Students are required to take NRSA 699 or NRSA 798. The master's thesis provides the student an opportunity to select, organize and report the results of an investigation into a specific area of anesthesiology. This research is executed under the supervision of an adviser and in conjunction with a thesis committee.

Nurse Anesthesia Lab(NRSZ)

NRSZ 601L Laboratory in Principles and Practice of Nurse Anesthesia I

Semester course; 3 laboratory hours. 1 credit. Provides the nurse anesthesia graduate student guided practical experience associated with those concepts presented in NRSA 601. Includes practice in and evaluation of task specific skills in both simulated and actual operating room environments.

Occupational Therapy(OCCT)

OCCT 520 Occupational Therapy Applications: Kinesiology

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Addresses basic components of motion, biomechanics, joint structure, specific muscle groups and muscle function. Analyzes functional activities necessary to carry out the tasks and roles of productive living using these principles.

OCCT 521 Occupational Therapy Application to Neuroscience

Semester course; 2 lecture hours. 2 credits. Topics parallel those in ANAT 529. Links basic structure and organization of nervous system to function in typical individuals. Examines neuroscience correlates of diseases and disabilities. Relies on current review of neuroscience literature in matching function and dysfunction with structure and organization. Case examples across the life span used to understand these potential relationships, and link material to occupational therapy theories and frames of reference guiding practice.

OCCT 522 Interdisciplinary Medical Lectures

Semester course; 3 lecture hours. 3 credits. Presents information on medical conditions commonly seen by occupational therapists, providing diagnostic features, associated conditions, prevalence and course for each. Addresses value and limitations of this knowledge to occupational therapy process, and need for therapists to search out information about other conditions. Introduces medical terminology and therapeutic uses, side effects and precautions of medication. Describes occupational therapy interventions and clinical pathways for certain impairments.

OCCT 530 Nature of Occupational Therapy

Semester course; 2 lecture hours. 2 credits. Provides an overview of fundamentals of occupational therapy through use of official documents of the American Occupational Therapy Association and other authoritative sources. Introduces practice definitions, philosophical and ethical underpinnings, professional roles, and organizations in the field of occupational therapy.

OCCT 531 Interpersonal Communication and Group Dynamics

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Introduces oral and written communication skills and group process techniques. Addresses interpersonal relationships, principles of therapeutic involvement, observation, analysis of communication patterns, interview methods and OT terminology. Provides experiences in group leadership, assertiveness techniques. Laboratory exercises chart path of personal development, professional socialization.

OCCT 532 Life Span Occupational Development

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Explores principles and theories of normal growth and development and their influence on occupational performance across the life span. Presents all domains of development and life span roles. Focuses on work/productivity, leisure/play and activities for daily living. Explores importance of significant others and environment, maintaining balance between performance areas and fulfilling expected and desired social roles. Stresses influence of temporal and environmental contexts.

OCCT 533 Occupational Therapy Principles, Values and Theories

Semester course; 4 lecture hours. 4 credits. Examines theoretical constructs used in various models of occupational therapy practice along with legislation, advocacy and empowerment using an historical framework. Addresses influence of legislation relevant to clients and the profession, their dynamic impact on practice patterns and advocacy issues. Emphasizes concepts integral to understanding and using human occupation as a basis for practice as well as the dynamic relationship among occupational therapy principles, values and theories.

OCCT 534 Occupational Therapy Evaluation and Intervention Overview

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Provides an introduction to evaluation and the intervention process as it relates to performance components, areas and contexts. Focuses on general evaluation of assessments for various treatment settings and environments. Emphasis on use of assessment data to determine appropriate treatment intervention and discharge planning for individuals. Verbal communications and written documentation will be covered.

OCCT 620 Occupational Therapy Practice Activities I: Activity Analysis and Occupational Design

Semester course; 2 laboratory hours. 1 credit. Explores activities and occupation and related professional terminology, the occupational design process, activity analysis and therapy as a teaching/learning process. Emphasizes occupational genesis, analysis of occupational performance skills and context.

OCCT 621 Occupational Therapy Practice Activities II: Productive Dimensions of Occupations

Semester course; 2 laboratory hours. 1 credit. Focuses on the productive subjective dimension of occupations through personal performance, observation of occupational participation by others and activity analysis. Emphasizes altering, adapting and modifying activities and contexts to increase occupational performance.

OCCT 623 Occupational Therapy Practice Activities III: Pleasurable and Restorative Dimensions of Occupations

Semester course; 2 laboratory hours. 1 credit. Focuses on the pleasurable and restorative subjective dimension of occupations through personal performance, observation of occupational participation by others with disabilities and activity analysis. Includes experiential learning in the community and exposure to adapted leisure activities.

OCCT 630 Adult Evaluation and Intervention I: Foundations

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Examines adult evaluation and treatment fundamentals that support occupational performance interventions. Covers evaluations and treatment content underlying and applicable to all areas of occupational performance. Includes specific assessments, practical information on understanding clients with a variety of conditions and therapist skills.

OCCT 631 Adult Evaluation and Intervention II: Activities of Daily Living

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Examines evaluation and treatment of activities of daily living (ADL) for adults in natural and treatment environments. Focuses on occupational performance while considering underlying client factors and context. Students routinely apply knowledge of clinical reasoning, theoretical practice models, and contextual issues when evaluating and planning treatment for a variety of case studies covering a range of ADLs.

OCCT 632 Adult Evaluation and Intervention III: Work, Play/Leisure, Geriatrics

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Examines evaluation and treatment of work/productive pursuits, play/leisure for adults in all environments. Emphasizes geriatric treatment issues. Focuses on occupational performance, considering underlying components and contexts. Addresses clinical reasoning, practice models, contextual issues when evaluating and planning treatment.

OCCT 635 Psychosocial Evaluation and Intervention I: Foundations

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Examines fundamental knowledge of adolescent and adult psychosocial evaluation and intervention to support adaptation and participation in occupation. Includes core and specialty practice psychosocial knowledge, information on stigma and stereotyping, therapist skills, specific assessments and interventions, and leadership of a community-based group intervention.

OCCT 636 Psychosocial Evaluation and Intervention II: Experiences with Adolescents and Adults

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Focuses on occupational performance of adolescents and adults with psychosocial dysfunction. Students apply knowledge of clinical reasoning, theoretical practice models, and contextual issues when evaluation and planning evidence-based intervention of case studies in service learning experiences.

OCCT 640 Pediatric Evaluation and Intervention I: Infant and Preschool Children

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on occupational performance of infants, toddlers and preschoolers with disabilities. Explores a variety of frames of reference and evaluative and intervention approaches for children and their families in medical, home, community and educational settings. Uses a holistic approach to develop child's abilities to play/perform basic ADLs while meeting expectations of family and environment.

OCCT 641 Pediatric Evaluation and Intervention II: Ages 6 to 12

Semester course; 2 lecture and 4 laboratory hours. 4 credits. Focuses on occupational performance of children with disabilities ages six through adolescence. Explores a variety of frames of reference, evaluative and intervention approaches for children, their families in multiple practice arenas emphasizing the child's performance in educational settings. Uses a holistic approach to develop child's competence in school, activities of daily living, play, work and community while meeting expectations of family and environment. Includes field-based experiences.

OCCT 650 Occupational Therapy in Health Care

Semester course; 3 lecture hours. 3 credits. Introduces contemporary issues, trends in occupational therapy health-care settings. Covers principles of managed care and impact on occupational therapy practice. Focuses on changes in practice sites, service delivery models and patient demographics. Emphasizes how occupational therapists can influence health policy, advocate for change and address emerging professional ethical issues. Encourages consideration of integrating holistic/biopsychosocial nature of occupational therapy into biomedical health-care systems.

OCCT 651 Administration and Supervision of Occupational Therapy Services

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Covers management of human and non-human resources to provide efficient and effective occupational therapy services; nature of formal and informal organizations, administrative process and administrative tasks. Includes supervision, consultation and the planning of occupational therapy fieldwork education.

OCCT 654 Children and Young Adult Advanced Assistive Technology Applications in Occupational Therapy

Semester course; 3 credits. Provides an in-depth view of assistive technology and human-environment/technology interface for children and young adults. Focuses on the use of AT in occupational therapy evaluation and intervention. Exposes students to tools and strategies for integrating computer hardware and software, augmentative communication devices, ECUs, powered mobility, toys and low technology solutions into home, school, recreation, community and work environments. Requires student problem-solving relative to their area of pediatric or young adult research and clinical practice.

OCCT 655 Older Adult Advanced Assistive Technology Application in Occupational Therapy

Semester course; 3 credits. Provides an in-depth view of assistive technology and human-environment/technology interface for older adults with disabilities. Focuses on use of assistive technology in occupational therapy evaluation and intervention. Exposes occupational therapy students to tools and strategies for integrating environmental control units, powered mobility, computer hardware and software, augmentative communication devices, low vision, hearing impaired and low technology solutions into the lives of elderly assistive technology consumers. Requires students to problem solve within their area of gerontology research and clinical practice.

OCCT 656 Advanced Neuroscience Applications in Occupational Therapy

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Requires instructor's permission for non-occupational therapy majors. Links basic structure and organization of nervous system to function in typical individuals. Examines current neuroscience understanding of diseases and disabilities encountered in clinical practice, matching function and dysfunction with structure and organization. Explores professional topics of interest; present to other professionals. Addresses specific cases from participants' clinical experience; links cases to contemporary OT theories and frames of reference guiding practice.

OCCT 660 Level I Fieldwork in Occupational Therapy

Semester course; 45 clinical/seminar hours. 1 credit. Enriches classroom learning by providing directed observation and participation in clinical practice settings. Provides experiences supervised by professionals working in one of a variety of clinical settings (e.g., early intervention, schools, hospitals, nursing homes, home health agencies or mental health settings). Placements arranged to complement the treatment/intervention courses. A preliminary step to the more complex Level II Fieldwork clinical experience.

OCCT 661 Occupational Therapy in the Schools

Semester course; 3 lecture hours. 3 credits. Registration open to other professional students with permission of the instructor. Studies the roles and functions of occupational therapists in school settings as defined by the educational model, government regulations and service provision patterns. Emphasizes person-centered planning, parent and professional collaboration and educationally relevant approaches. Integrates the use o research and clinical reasoning to provide occupation-based practice for students with disabilities of all ages.

OCCT 662 Neuroscience Review and Sensory Integration

Semester course; 3 lecture hours. 3 credits. Reviews neuroscience basics related to function and dysfunction. Overviews brain structures and function on both gross and cellular levels. Examination of the sensory integration neuroscience theory base which provides foundation for additional study of brain structure as it relates to function and dysfunction. Links understanding of neuroscience with occupation and occupational performance.

OCCT 663 Beyond the Basics: Advanced Evaluation and Intervention in Pediatric Occupational Therapy

Semester course; 3 credits. Restricted to post-professional master's level students. Provides in-depth view of selected occupational therapy assessment and intervention techniques for children and youth with disabilities. Exposes students to practical tools and strategies for integrating treatment into home, school, recreation, community and work environments. Requires students to investigate their own clinical reasoning skills relative to their area of pediatric interest, clinical practice and research. Specifically focuses on use of sensory integration theory and practice for infants and children, issues related to feeding and play, and the transition of adolescents with disabilities into postsecondary, work and community environments.

OCCT 670 Case-based Clinical Reasoning in Occupational Therapy

Semester course; 4 laboratory hours. 2 credits. Utilizes case studies to develop clinical reasoning skills and examine evaluation and treatment alternatives for persons with occupational performance limitations. Focuses on life-span development issues. Uses cases designed to integrate and develop strategies based on previously presented material. Incorporates assistive technology as an intervention tool into the case-based learning process.

OCCT 671 Advanced Theory in Occupational Therapy

Semester course; 4 lecture hours. 4 credits. Integrates examination of historical and current theoretical constructs reflected in professional literature and published conceptual models of practice with clinical expertise of experienced occupational therapists. Examines clinical reasoning process; fosters high-level theoretical and clinical thinking. Builds upon entry-level study of theory to emphasize dynamic relationship between theory, clinical reasoning and client-based and occupation-based practice. Builds on understanding from entry-level course work on theory and application to practice.

Effective Fall 2006 OCCT 671 Advanced Theory in Occupational Therapy
Semester course; 4 lecture hours. 4 credits. Integrates examination of historical and current theoretical constructs reflected in professional literature and published conceptual models of practice with clinical expertise of experienced occupational therapists. Examines clinical reasoning process; fosters high-level theoretical and clinical thinking. Builds upon entry-level study of theory to emphasize dynamic relationship between theory, clinical reasoning and client-based and occupation-based practice. Builds on understanding from entry-level course work on theory and application to practice.

OCCT 672 Dimensions of Occupation

Semester course; 4 lecture hours. 4 credits. Examines a variety of topics and concepts related to the study of occupation. Relies on biological, sociological, anthropological, psychological and occupational therapy literature to ensure the investigation of various dimensions of the human as an occupational being. Involves critical, in-depth analysis of concepts related to occupation; interpretation and discussion of occupational concepts; application of new perspectives to personal and practice experience.

OCCT 673 Health-care Delivery and Occupational Therapy Practice Models

Semester course; 3 lecture hours. 3 credits. Restricted to post-professional master's level students. Introduces contemporary issues and trends in occupational therapy health-care settings. Covers principles of managed care and impact on occupational therapy practice. Focuses on changes in practice sites, service delivery models and patient demographics. Emphasizes on how occupational therapy influences health policy, advocates change and addresses emerging professional and ethical issues. Encourages consideration of integrating holistic/biopsychosocial nature of occupational therapy into biomedically oriented health-care system.

OCCT 680 Level II Fieldwork in Occupational Therapy: A

Semester course; students must complete 40 hours per week for 12 weeks. Variable credit. Maximum of 9 credits. May be taken over two semesters. Provides an in-depth experience in delivering occupational therapy services to a variety of individuals across life span, in a variety of settings. Promotes interpretation of previously learned skills and knowledge through clinical reasoning and reflective practice. Develops professionalism and competence as entry-level occupational therapists. Graded as pass/unsatisfactory.

OCCT 681 Level II Fieldwork in Occupational Therapy: B

Semester course; students must complete 40 hours per week for 12 weeks. Variable credit. Maximum of 9 credits. May be taken over two semesters. Clinical experience must be different from that offered in OCCT 680. Expands experience in delivering occupational therapy services to variety of individuals across life span, in variety of settings. Promotes interpretation of previously learned skills and knowledge through clinical reasoning and reflective practice. Extends skills of professionalism and competence as entry-level occupational therapists. Graded as pass/unsatisfactory.

OCCT 685 Advanced Clinical Reasoning: Asking the Right Questions

Semester course; 3 lecture hours. 3 credits. Provides foundation and understanding of the source of clinical reasoning as a basis of clinical practice in occupational therapy through case-based learning. Promotes clinical reasoning within the practice of occupational therapy, bridging practice theories, evidence-based practice and clinical skills. Requires examination of existing knowledge and data, and development of a clinical project proposal.

OCCT 690 Occupational Therapy Seminar

Variable hours. 1-3 credits. May be repeated for a maximum of 4 credits. Investigation, presentation and discussion of current problems and issues in the field of occupational therapy.

OCCT 691 Special Topics in Occupational Therapy

Semester course; 1-3 credits. Designed around the interests of students, faculty expertise, and availability and expertise of Richmond-area occupational therapists or visiting lecturers. Format may include intensive mini-courses or workshops, an advanced course with some opportunity for election and development of knowledge and skills in a specialized area of occupational therapy.

OCCT 695 Fieldwork: Specialty (Optional)

Twelve weeks full-time experience in programs providing occupational therapy services. 1-9 credits. Minimum total required for all fieldwork courses is 18 semester hours. Determination of the amount of credit and permission of the instructor and department chair must be secured prior to registration for the course. Supervised fieldwork experiences are arranged in various settings for the application of academically acquired knowledge. Placements include experiences in prevention, health maintenance, remediation, daily life tasks and vocational adjustment. Fieldwork settings may include hospitals, rehabilitation centers, school systems, community agencies, camping programs, penal systems and the like. Fieldwork experiences are arranged individually, but placement in a specified location cannot be guaranteed. In the event of failure, the course may be repeated only upon recommendation by the academic and clinical faculty. Fieldwork must be completed no later than 24 months following completion of the academic phase.

OCCT 697 Independent Study

1-3 credits. The student will submit a proposal for investigating some area or problem in occupational therapy not ordinarily included in the regular curriculum. The student's desired study must be described in a contract written by the student and approved by the faculty member. The results of the study will be presented in a written or oral report.

OCCT 698 Research in Occupational Therapy

Semester course; 1-3 credits. Completion of a proposal for a research project relevant to occupational therapy.

OCCT 709 Research Process and Statistical Analysis in Occupational Therapy

Semester course; 4 lecture hours. 4 credits. Restricted to entry-level master's students. Prepares students to write research proposal for completion of the requirements of the master's degree. Covers basic steps in research process, including problem definition, literature review, design, data collection and analysis, and dissemination of findings. Students will demonstrate understanding of statistical analysis after completing a review of introductory statistical concepts. Addresses quantitative and qualitative approaches. Students will review and critically analyze literature in preparation for subsequent research experiences.

OCCT 710 Research Process in Occupational Therapy

Semester course; 4 lecture hours. 4 credits. Prepares students as critical consumers of research. Provides overview to basic steps in research process, including problem definition, literature review, design, data collection and data dissemination. Students critically analyze each step and compare across different examples. Discussion of strengths and weaknesses in all areas of research. Focus on quantitative approaches with general introduction to basics of qualitative research for comparison.

Effective Fall 2006 OCCT 710 Research Process in Occupational Therapy
Semester course; 4 lecture hours. 4 credits. Prepares students as critical consumers of research. Provides overview to basic steps in research process, including problem definition, literature review, design, data collection and data dissemination. Students critically analyze each step and compare across different examples. Discussion of strengths and weaknesses in all areas of research. Focus on quantitative approaches with general introduction to basics of qualitative research for comparison.

OCCT 711 Research Process in Occupational Therapy: Qualitative Methods

Semester course; 3 lecture hours. 3 credits. Introduces qualitative methods of research with goals of understanding the theoretical underpinnings, gaining practical experience and developing an understanding of the "self" as an instrument. Focuses on qualitative methods in occupational therapy research and their application to practice.

OCCT 729 Research Practicum

Semester course; 3 seminar hours. 3 credits. Supervised investigation of selected problems in occupational therapy. Exposes students to varied tasks integral to research implementation. Addresses overall research design and implementation process and skills needed for publication and presentation of research. Students complete an individualized learning contract. Graded as "S," "U" or "F."

OCCT 735 Evidence Bases for Occupational Therapy Practice

Semester course; 3 lecture hours. 3 credits. Examines one of the roots of clinical practice: the existence of evidence. Provides an overview of evidence-based practice (EBP) in general and, more specifically, in occupational therapy. Provides in-depth information on levels of evidence; developing practice questions, understanding available resources and analyzing existing evidence is included. Ties in with clinical reasoning skills, extending them to understanding the literature. Clinical application and resources for further study will be addressed. Emphasis on practical application of EBP concepts to OT, laying groundwork for best practice.

OCCT 736 Developing Fundable Projects

Semester course; 3 lecture hours. 3 credits. Examines the environment and opportunities for seeking and obtaining external funding in the area o health-related sciences. Will address proposals for program development and evaluation, training and research. Studies components of typical proposals and supports proposal development by student. Analyzes and critiques student proposals using both peer and instructor review. Discusses relationships between proposal writing and leadership skills and knowledge.

OCCT 740 Concepts in Disability Leadership for Occupational Therapists

Semester course; 3 lecture hours. 3 credits. Provides basic descriptions of leadership and innovation, especially as they apply to the disability community, and presents theoretical concepts of organizational leadership. Presents concepts of change in organizational, community, political and social action/social movement contexts. This is the first of a series of three courses on leadership in disability for occupational therapists.

OCCT 741 Disability Leadership Applications for Occupational Therapists

Semester course; 3 lecture hours. 3 credits. Fosters development of skills needed to assume leadership roles in disability-related areas of practice by creating detailed proposals for the practicum in disability leadership for occupational therapists, to be implemented in the third course in the series. Students increase understanding of leadership concepts by conducting needs assessments and collecting other pilot data in community settings that provide services for people with disabilities. The second of a series of three courses on leadership in disability for occupational therapists, course focuses on application of theoretical concepts learned in the first leadership course.

OCCT 742 Practicum in Leadership for Occupational Therapists

Semester course; 1 lecture and 3 laboratory hours. 4 credits. Builds leadership skills in occupational therapists for work in health care, education and disability-focused organizations. Emphasizes relationships with other professionals, governing boards, regulatory bodies and other key stakeholders through an identified and pre-approved leadership project. Promotes exploration of personal styles of leadership. Serves as applied practicum course in leadership development.

OCCT 793 Clinical Specialty Practicum

Three to nine hours of concentrated clinical experience in the student's chosen area of specialization under the supervision of an experienced clinician (minimum three hours per week for each credit), and one credit hour for guided library research related to topic of practice with preparation of a paper examining the theoretical and empirical bases of practice in specialty area. A contract is prepared by the student and approved by a faculty adviser and clinical supervisor.

OCCT 798 Thesis

3-6 credits. Completion of a proposal for a master's degree thesis relevant to occupational therapy.

OCCT 799 Thesis

1-6 credits. Completion of a master's degree thesis relevant to occupational therapy.

Patient Counseling(PATC)

The Program in Patient Counseling has an integrated curriculum in which students typically experience certain core courses concurrently. Exceptions to this rule are by faculty approval only. Admission to any course by students outside the department requires permission of the instructor.

PATC 501 Introduction to Health Care Ministry

Semester course; 1 lecture and 1 practicum hours. 1 credit. Introduces the student to the hospital environment through observation, reading and reflection. Taught jointly with seminary faculty. Required course for dual degree program.

PATC 510 Introduction to Patient Counseling

Semester course; 3 lecture and optional clocked clinical hours. 3-5 credits. Introduces the student to the development and practice of spiritual care of patients and families. Includes case review and peer interaction. Assignment to the hospital is available to those seeking clinical pastoral education credit. Designed for the nonspecialist.

PATC 511 The Professional Caregiver

Semester course; 2 lecture hours. 2 credits. Focuses upon development of professional identity and growth within the helping professions. Emphasizes the context of the health-care environment and its impact upon caregivers, patients and families. Includes practical application of theory. Incorporates the use of clinical material. Designed for the nonspecialist.

PATC 515 Basic Patient Counseling

7 lecture and 300 clinical clocked hours. 9 credits. Provides an intensive course of study toward the development of pastoral skills in the hospital context. Assigns students to select clinical areas with faculty supervision. Utilizes group process and individual supervision for the review of clinical material.

PATC 551 Selected Issues in Health Care

Semester course; 1 lecture hour. 1 credit. May be repeated to a maximum of 2 credits. Exposes the student to a number of current trends and topics relevant to the contemporary U.S. health care delivery system. Content changes from semester to semester. Utilizes the expertise of hospital personnel.

PATC 556 Theory and Practice of Patient Counseling II

Semester course; 3 lecture and 300 clocked clinical hours. 5 credits. Prerequisite: PATC 515 or equivalent. Emphasizes psychological foundations of pastoral care and counseling. Provides an in-depth examination of clinical material in a seminar setting.

PATC 592 Independent Study in Patient Counseling

Semester course; variable hours. 1-4 credits. May be repeated for a maximum of 4 credits. Provides opportunity to increase clinical and interpersonal skills in specialty areas through patient care, parallel reading and individual faculty supervision.

PATC 610 Supervised Clinical Practice

Semester course; 3 lecture and 300 clocked clinical hours. 5 credits. May be repeated for a total of 10 credits. Prerequisites: PATC 555 and PATC 556. Provides the opportunity to apply and practice clinical skills in a pastoral care specialty under faculty supervision. Utilizes university and hospital personnel in specialty areas.

PATC 611 Theory and Practice of Patient Counseling I

Semester course; 3 lecture and 300 clocked clinical hours. 5 credits. Prerequisite: PATC 515 or equivalent. Emphasizes the theological foundations of pastoral care and counseling. Provides an in-depth examination of clinical material in a seminar setting. Formerly PATC 555.

PATC 613 Group Process I

Semester course; 2 lecture hours. 2 credits. Prerequisite: PATC 515 or equivalent. Explores, in a small group setting, the dynamics common to group behavior. Reflects upon the use of group process learning. Utilizes an experiential method of learning. Formerly PATC 561.

PATC 614 Group Process II

Semester course; 2 lecture hours. 2 credits. Prerequisite: PATC 515 or equivalent. Focuses upon the various theories of group process. Focuses upon application of theory to a variety of clinical and administrative settings. Utilizes an experiential method of learning. Formerly PATC 562.

PATC 615 Theory of Group Leadership

Semester course; 2 lecture hours. 2 credits. Prerequisite: PATC 613 or 614. Explores various theories of group leadership. Provides opportunity to test skill development within a peer context. Formerly PATC 601.

PATC 617 Supervised Clinical Practice I

Semester course; 3 lecture and 300 clocked clinical hours. 5 credits. Prerequisites: PATC 556 and 611. Provides the opportunity to apply and practice pastoral care skills with patients and their families under faculty supervision. Emphasizes professional competence toward an integration of theological, psychological and sociological aspects of spiritual care in varied clinical contexts. Formerly PATC 609.

PATC 619 Spiritual and Social Integration Seminar

Semester course; 1 lecture hour. 1 credit. This course is a summary course required for persons in the dual-degree program. Provides in-depth reflection on the theological and social implications of ministry within the health-care environment. Course is taught jointly with seminary faculty.

PATC 620 Religious and Social Factors in Patient Counseling

Semester course; 2 lecture hours. 2 credits. Provides an understanding of the theological and social factors related to hospitalization. Focuses on the use of ritual and tradition in caring for persons in crisis.

PATC 621 Care of the Dying

Semester course; 2 lecture hours. 2 credits. Explores the spiritual and psychological dynamics associated with loss for patients and families. Offers special attention to the emotional and spiritual impact on caregivers that work with dying patients. Includes the use of clinical material within a group experience.

PATC 627 Living Well

Semester course; 2 or 3 lecture hours. 2 or 3 credits. Focuses on the development, facilitation and leadership of support groups for bereaved families. Provides students the opportunity to increase interpersonal and clinical skills in supporting families who have experienced a significant death. Special attention is offered to the needs of children. Requires participation in "Living Well," a contracted component of VCU Health System's bereavement program that utilizes art and group discussion.

PATC 629/GRTY 629 Spirituality and Aging

Semester course; 2 or 3 lecture hours. 2 or 3 credits. Explores the spiritual, psychological and social dynamics associated with aging. Provides special attention to the spiritual and emotional impact on caregivers who work with aging patients.

PATC 635 Clinical Ethics

Semester course; 2 lecture hours. 2-3 credits. Applies the principles of biomedical and health-care ethics to a more informed understanding of ethical decision making in the clinical environment. Concerned with the identification, analysis and resolution of ethical problems that arise in planning for the care of patients. Emphasizes the ethical responsibilities of clinical and pastoral caregivers.

PATC 636 Professional Identity and Ethics

Semester course; 2 lecture hours. 2 credits. Focuses on guidelines for professional ethics in the development and maintenance of professional and personal integrity, leadership ability and the enhancement of a congruency between spiritual, psychological and physical maturity.

PATC 639 Pastoral Care Management

Semester course; 2 lecture hours. 2 credits. Surveys the theory and practice of pastoral-care management within the present health-care environment including personnel management, process improvement, benchmarking and qualitative research design. Taught cooperatively with hospital personnel.

PATC 653 Patient Counseling Evaluation I

Semester course; 2 lecture and 6 practicum hours. 4 credits. Focuses upon the theory and practice of case based education and clinical evaluation relevant for pastoral supervision. Observation of and reflection upon the work of ACPE supervisors are required.

PATC 654 Patient Counseling Evaluation II

Semester course; 2 lecture and 6 practicum hours. 4 credits. Continues the theoretical and practical focus of PATC 653. Students move from observation to participation in clinical evaluation of pastoral care interns.

PATC 661 History of Pastoral Supervision

Semester course; 3 lecture hours. 3 credits. Focuses on the history and development of clinical pastoral education as a movement. Exposes the student to theoretical basis of clinical pastoral education as established in professional and organizational standards.

PATC 663 Theory of Pastoral Supervision I

Semester course; 3 lecture hours. 3 credits. Focuses on the literature in pastoral supervision. Emphasizes the applicability of educational and personality theory relevant for clinical pastoral education.

PATC 664 Theory of Pastoral Supervision II

Semester course; 2 lecture hours. 2 credits. Focuses on the literature related to cultural and gender factors relevant for pastoral supervision.

PATC 665 Selected Topics in Pastoral Supervision

2 lecture hours. 2 credits. May be repeated for a total of 4 credits. Presents a variety of topics on supervisory theory and practice for persons seeking certification by the ACPE. Utilizes ACPE supervisors as well as university and local seminary faculty.

PATC 692 Independent Study in Pastoral Supervision

Semester course; 1-4 credits. May be repeated for a total of 4 credits. Provides individual focus and direction of student readings in theories of pastoral supervision. Readings are selected from bibliography of the ACPE Certification Commission.

PATC 694 Advanced Clinical Pastoral Supervision

Semester course; 2 lecture and 15 practicum hours. 7 credits. Prerequisite: PATC 654. Advanced attention to integration of education and personality theories with theology. Includes the actual practice of supervision under faculty guidance. Restricted to individuals admitted to candidacy status in ACPE, Inc. May be repeated.

PATC 696 Intensive Supervisory Practicum

Semester course; 3 lecture and 18 practicum hours. 9 credits. Prerequisite: PATC 694. Provides opportunity for independent supervision of pastoral care interns with mentoring and evaluation by faculty. Utilizes ACPE supervisory personnel. Restricted to individuals admitted to candidacy status in ACPE. May be repeated.

PATC 697 Clinical Research

Semester course; 1-5 credits. May be repeated for a total of 5 credits. Provides the opportunity to test the practical application of research and process improvement methods within the clinical context. Encourages the development of collaborative and interdisciplinary project development.

Physical Therapy(PHTY)

PHTY 501 Gross Anatomy (Physical Therapy)

Semester course; 4 lecture and 6 laboratory hours. 7 credits. Examines the structural and functional anatomy of the human musculoskeletal system through lecture and cadaver dissection. Develops understanding of fundamental facts and principles that apply to professional practice through lecture, dissection, radiographic examination and clinical correlation.

PHTY 502 Kinesiology

3 lecture and 1 laboratory hours. 4 credits. Introduces the student to the kinematics and kinetics of human movement. Emphasis is placed on osteokinematics, arthrokinematics and the structures that limit and/or guide movement.

PHTY 503 Applied Exercise Physiology

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Integrates principles and practices of applied physiology, exercise and health promotion in primary, secondary and tertiary prevention of impairments, functional limitations, disabilities or changes in physical function and health status. Emphasizes assessment and therapeutic exercise principles and associated underlying physiology.

PHTY 505 Applied Microscopic Anatomy for Physical Therapy

Semester course; 3 lecture hours. 4 credits. Examines the basic components of cells in terms of their structure and function. Cells and tissues of greatest importance to physical therapists are studied in detail, and their response to injury is explored. Reviews methods of studying cells.

PHTY 506 Functional Neuroanatomy

Semester course; 5 lecture hours. 5 credits. Examines the basic structure and function of the nervous system with special emphasis on topics of greatest concern to physical therapists. Uses neurobiological approach to integrate the basic health sciences of neuroanatomy, neurophysiology and clinical neuroscience.

PHTY 508 Measurement and Assessment

Semester course; 3 lecture and 3 laboratory hours. 6 credits. Teaches some of the basic evaluation methods and measurement procedures used by physical therapists in history taking and physical examination. Includes lecture, demonstration and practice in measurement of the length and girth body parts, manual and mechanical muscle testing, joint range of motion, accessory motion testing and palpation.

PHTY 510 Rehabilitation I

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduces basic clinical skills and procedures, including measurement of vital signs, patient lifting and moving techniques, progressive mobilization, medical asepsis and principles of bandaging. Introduces record keeping and professional communication.

PHTY 512 Professional Aspects of Physical Therapy

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Introduces communication methods and skills appropriate for interaction with patients, families and colleagues. Provides introduction to sociocultural, psychological, professional and ethical issues that impact patient management as well as professional communication. Emphasizes professional demeanor and presentation as identified by the generic abilities.

PHTY 516 Topics in Health Care Services and Delivery

Semester course; 2 lecture hours per week for eight weeks. 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Provides an overview of issues in health care related to access, utilization, organization and financing of services, as well as general overview of the interrelationship among health care consumers, providers, organizations, regulators and third party payers. Discusses implications for public policy and legislative action. Uses critical review of literature and case studies to illustrate key concepts and their relevance to the practice of physical therapy.

PHTY 520 Clinical Education I

Semester course; 160 clock hours. 4 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Four-week, full-time clinical experience. Introduces physical therapy practice and allows students to develop interpersonal skills with patients, peers and other health professionals. Develops beginning skills in patient handling, physical therapy evaluation and treatment procedures. Explores various aspects of physical therapy, including its role in comprehensive health care delivery. Applies and integrates course material from the first professional year of education.

PHTY 531 Scientific Inquiry

Semester course; 2 lecture hours. 2 credits. Introduces concepts and principles of the research process including question, theory and hypothesis development, research design and methodology, and statistical reasoning and analysis. Discusses the basis of critical review of professional literature and determination of the relevance and applicability of research findings to specific patients with the goal of promoting evidence-based practice.

PHTY 537 Rehabilitation II

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Presents evaluation and treatment methodology for the acute care patient. Focuses on the rehabilitation phase of patient care and emphasizes the spinal cord injured patient. Laboratories include wound care, mat mobility, wheelchair mobility, patient transfers and gait training. Clinic visits expose students to patient evaluations and patient care in the acute and rehabilitation settings.

PHTY 601 Advanced Measurement Concepts

Semester course; 3 lecture hours. 3 credits. Investigates the principles of measurement theory as applied to clinical practice. Reviews basic principles guiding electronic instrumentation and electromyography. Examines the theoretical bases for the examination and treatment approaches used in orthopedic physical therapy or neurologic physical therapy.

PHTY 603 Evidence-based Practice I

Semester course; 4 lecture hours. 4 credits. Introduces concepts and principles of the research process including question, theory and hypothesis development, research design and methodology, and statistical reasoning and analysis. Introduces critical review of professional literature and determination of the relevance and applicability of research findings to specific patients with the goal of promoting evidence-based physical therapy practice. Teaches how to access and implement electronic search engines to locate and retrieve professional literature. Twelve lecture hours will be provided on site at the beginning of the semester; the remainder of the course will be distance-based.

PHTY 604 Evidence-based Practice II

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTY 603. Continuation of PHTY 603. Provides an advanced review of the concepts and principles of the research process and evidence-based practice. Focuses on skills needed to develop relevant clinical questions for specific patient scenarios, perform a critical appraisal of professional literature and determine the applicability of the research findings for patient management. Includes preparation of a publication-ready paper on a topic relevant to the student's practice interests. Course is entirely distance-based.

PHTY 605 Foundations for Pathokinesiology

Semester course; 3-4 lecture hours. 3-4 credits. A study of the principles that form a foundation for understanding pathokinesiology and therapeutic kinesiology. Integration of principles of motor development, control and learning with emphasis on abnormal motor behavior and its remediation.

PHTY 606 Therapeutic Kinesiology

Semester course; 1-3 lecture and 3 clinical hours. 2-4 credits. A study of motor behavior in both normal and pathological conditions. Reading and discussion of the basic literature of current neurologic approaches to therapeutic exercises and an integration of these concepts into a comprehensive model of human movement.

PHTY 608/REMS 608 Advanced Musculoskeletal Sciences

Semester course; 3 lecture hours. 3 credits. Examines the structure and function of tissues of the musculoskeletal system. Investigates mechanisms of healing of these tissues and explores the affects of various modalities, altered use and disease on the structure and function of musculoskeletal tissues.

PHTY 609 Clinical Biomechanics

Semester course; 3 lecture hours. 3 credits. Provides an opportunity to develop knowledge in sufficient depth to understand how selected biomechanical factors influence normal and pathologic human form and movement. Stresses validity and reliability of methods of evaluating musculoskeletal form and function.

PHTY 610 Physical Therapy Evaluation in the Direct Access Setting

Semester course; 2 lecture hours. 2 credits. Covers critical physical therapy evaluation skills necessary for autonomous practice in the adult outpatient orthopaedic setting; recognition of the clinical manifestations of medical problems that may mimic mechanical neuromusculoskeletal seen by physical therapists and screening for medical referral. Through topic discussions, case presentations and self-paced tutorials, develops skills to screen for conditions that merit physician referral when practicing in the direct access setting. Eight lecture hours will be provided on site; the remainder of the course will be distance-based.

PHTY 611 Research Process

Semester course; 2 lecture hours. 2 credits. Readings, discussions and reports on the current status of professional literature and validation of clinical practice, clinical administration and professional education. A model for professional development, the role of research in the validation process and the basis of research design are presented non-mathematically. Required of all advanced master of science degree students unless excused by the faculty.

PHTY 612/REMS 612 Advanced Biomechanics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: REMS/HEMS 611 or permission of instructor. Designed for students in the interdisciplinary Ph.D. in Rehabilitation and Movement Science. Covers advanced biomechanics techniques for the evaluation and quantification of human performance. Encourages scientific thought with practical applications.

PHTY 613 Evidence for Orthopaedic Practice

Semester course; 2 lecture hours. 2 credits. Prerequisite: PHTY 603. Evidence-based medicine course for orthopedic physical therapy. Through presentations, topic discussions and case presentations students will acquired evidence on selected topics of the evaluation and treatment of musculoskeletal dysfunctions in physical therapy practice. Promotes development of skills needed for the acquisition, reading and interpretation of published studies in the area of orthopaedic physical therapy. The entire course is distance-based.

PHTY 614 Evidence for Neurologic Practice

Semester course; 2 lecture hours. 2 credits. Prerequisite: PHTY 603. Evidence-based medicine course for neurologic physical therapy. Through Web-based presentations, topic discussions and case presentations, students will acquire evidence for selected topics related to the evaluation and treatment of neurologic dysfunctions in physical therapy practice. Promotes the development of skills in the acquisition, reading and interpretation of published studies in the area of neurologic physical therapy. The entire course is distance-based.

PHTY 615 Pharmacology (Physical Therapy)

Semester course; 1 lecture hour. 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Series of lectures on the integrated approach to the study of human disease and pharmacotherapeutics. Covers the pharmacological management of common disease states affecting physical function. Emphasizes the utilization of subjective and objective patient data for the assessment, monitoring and optimization of pharmacotherapy.

PHTY 616 Evidence of Tissue Healing and Therapeutic Modalities

Semester course; 2 lecture hours. 2 credits. Prerequisite: PHTY 603. Distance-based course that focuses on current trends and topics of tissue healing including the effects of physical therapy interventions on healing tissues using an evidence-based approach. Reviews histology and cytology concepts relevant to clinical practice or necessary for interpreting scientific literature on the topic.

PHTY 617 t-DPT Gross Anatomy

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on musculoskeletal anatomy with high clinical relevance for physical therapists. Incorporates introductory material on diagnostic imaging of the spine and extremities. Self-directed distance learning modules will be augmented with a series of on-campus cadaver dissection laboratories over a four-day visit to campus.

PHTY 621 Therapeutic Agents

Semester course; 4 lecture and 2 laboratory hours. 5 credits. Examines the theoretical bases for and therapeutic application of thermal, mechanical and electrical agents. Emphasizes the physical and physiological effects, indications and contraindications for electrical current, diathermy, superficial heat and cold, massage, ultraviolet, traction, ultrasound, laser and compression therapy. Analyzes relative current scientific literature and uses laboratories for practice and clinical problem solving.

PHTY 623 Cardiopulmonary Physical Therapy

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Applies principles of pathophysiology of the cardiovascular and respiratory systems; includes physical therapy assessment and treatment of patients with cardiac and respiratory disorders.

PHTY 624 Physical Therapy Seminar I

Semester course; 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Provides an advanced review of the concepts and principles of the research process and evidence-based practice. Focuses on skills needed to perform a critical appraisal of professional literature and to determine the relevance and applicability of research findings to a specific patient or series of patients based on information collected during the first summer clinical experience. Provides opportunity to develop oral patient case presentation skills.

PHTY 626 Life Span Development and Motor Control I

Semester course; 4.5 lecture and 3 laboratory hours. 6 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Covers models of neurologic dysfunction, family-centered care, interdisciplinary teamwork and neurophysiological principles of physical therapy. Includes units on motor control and learning, motor development and pediatric assessment from birth to early adulthood.

PHTY 627 Life Span Development and Motor Control II

Semester course; 2 lecture hours. 2 credits. Discusses age related changes in physical structure, motor control and psychosocial/cognitive issues in humans from middle adulthood to the end of life. Emphasizes the geriatric population and the physical therapy management of problems with the integumentary system. Highlights the role of the physical therapist in making program modifications based on age related changes.

PHTY 629 Special Topics in Physical Therapy

Semester course; 1 lecture hour. 1 credit. Provides an opportunity to pursue and present a topic of interest that is related to physical therapy evaluation and treatment.

PHTY 640 Neurologic Physical Therapy

Semester course; 4 lecture and 4 laboratory hours. 6 credits. Prerequisites: PHTY 535 and PHTY 539. Applies principles of motor development, control and learning to the evaluation and remediation of motor disorders. Critically surveys current theory and practice of neuromotor therapeutics.

PHTY 644 Orthotics and Prosthetics

Semester course; 2 lecture hours. 2 credits. Prepares the student to participate as a member of the professional prosthetic or orthotic clinic team, integrates material from other courses, and teaches basic skills in orthotic and prosthetic assessment, prescription, and training and performing initial and final prosthetic and orthotic checkouts.

PHTY 646 Clinical Medicine

Semester course; 2 lecture hours. 2 credits. Comprehensive course in clinical medicine and sciences relevant to the practice of physical therapy. Medical practitioners from the MCV Campus and surrounding areas participate. Topics include psychiatry, pharmacology, hematology, oncology, dermatology, dentistry, rheumatology, neurology and burn therapy.

PHTY 648 Orthopaedic Physical Therapy

Semester course; 4 lecture and 2 laboratory hours. 5 credits. Examines principles and techniques used by physical therapists for the treatment of patients with orthopaedic disorders. Uses scientific evidence and theoretical rationale in a problem-solving approach to develop treatment plans for patients with orthopaedic musculoskeletal disorders.

PHTY 650 Clinical Education II

Semester course; 320 clock hours. 8 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Eight-week, full-time clinical experience designed to develop competency in physical therapy evaluation and treatment. Teaches the use of sound scientific rationale and problem solving skills in aspects of patient care. Promotes the development of an independent professional through synthesis and utilization of advanced academic theory in evaluation and treatment. Encourages the exploration of interest areas in a variety of practice settings.

PHTY 651 Professional Issues in Physical Therapy

Semester course; 2 lecture hours. 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Discusses professional issues facing the modern physical therapy practitioner, including ethical decision making, state and national current physical therapy issues, and legislative efforts. Provides opportunity for advancing skills in educational techniques, assertiveness skills, conflict resolution, as well as preparation for employment via resume and portfolio writing and interview skills.

PHTY 654 Physical Therapy Seminar II

Semester course; 18 clock hours. 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Provides the opportunity to review, integrate and develop strategies using previously presented material and research to present an oral case study of a patient or patients from the clinical experience in the previous summer.

PHTY 661 Administration and Management in Physical Therapy

Semester course; 2 lecture hours. 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Provides students with a basic understanding of operational issues related to physical therapy practice in a variety of settings. Topics include leadership, operational and business success measures, reimbursement, quality assurance, performance improvement, utilization review, risk management, documentation and marketing. Skill sets include, at an introductory level, supervision, delegation, hiring practices, budget development and analysis, peer review, outcomes measurement, and ethical decision making.

PHTY 670 Clinical Integration of Physical Therapy Concepts

Semester course; 2 credits. Restricted to students in the Professional Doctor of Physical Therapy program. Uses case studies in a problem-based learning approach, which will allow students to integrate knowledge about patient evaluation and assessment with treatment design, implementation, and progression. Utilizes current literature to support treatment interventions. Includes topic areas: pediatrics, orthopaedics, neurology, oncology, cardiac rehabilitation, integumentary systems and acute care/ICU.

PHTY 674 Physical Therapy Seminar III

Semester course; 1 credit. Restricted to students in the Professional Doctor of Physical Therapy program. Integrates material from DPT courses with clinical research. Provides experience in writing individual case reports dealing in depth with the history, current status and problems in a given area of clinical specialization.

PHTY 680 Clinical Education III

Semester course; 320 to 640 clock hours. 8-16 credits. May be repeated for a total of 24 credits. Eight- to 12-week, full-time clinical experience designed to develop entry-level competency in physical therapy evaluation and treatment in the clinical setting. Includes the use of sound scientific rationale and problem solving skills in all aspects of patient care. Promotes the development of an independent professional through synthesis and utilization of advanced academic theory in evaluation and treatment.

PHTY 690 Physical Therapy Graduate Seminar

Semester course; 1 credit. Provides opportunity to develop knowledge and skills in evaluating published scientific literature related to physical therapy, developing researchable questions and orally presenting the material in a professionally appropriate manner.

PHTY 691 Special Topics in Physical Therapy

1-4 credits. Guided independent study of specific topics not discussed in courses or discussed in less detail in courses. Student's desired topic of study must be identified and approved prior to enrollment.

PHTY 692 Clinical Specialty Seminar

Semester course; 0.5-3 credits. Individual reports dealing in depth with the history, current status and problems in a given area of clinical specialization.

PHTY 693 Clinical Specialty Practicum

60 clock hours per credit. 1-9 credits. Concentrated clinical experience under the guidance of an approved preceptor.

PHTY 798 Research in Physical Therapy

1-15 credits. Research in preparation for the advanced master of science degree thesis or doctoral dissertation.

Rehabilitation Counseling(RHAB)

Courses in rehabilitation services provide a basic understanding of people with mental, physical, cognitive and sensory disabilities and how to help them lead more productive lives. The courses are not only relevant to future graduate study in the profession of rehabilitation counseling, but to a number of other rehabilitation related professions such as clinical and counseling psychology, social work, special education, corrections, therapeutic recreation, occupational therapy, physical therapy and so forth.

As resources permit, courses are offered in substance abuse rehabilitation at the undergraduate level to prepare the student to meet eligibility requirements for state and national substance abuse counselor certification, but also are available as elective credit, which may be applied toward fulfilling degree requirements or meeting continuing education needs.

One honors course is included in the university honors program in RHAB 202 General Substance Abuse Studies. Interested students should contact the University Honors Program office for further information.

RHAB 201 Introduction to Rehabilitation Services

Semester course; 3 lecture hours. 3 credits. This course has been designed to expose the student to the history and development of the rehabilitation movement. Topics explored include basic concepts and philosophies of rehabilitation, psychological and vocational adjustments of the disabled, and an examination of selected rehabilitation methods.

RHAB 202 General Substance Abuse Studies

Semester course; 3 lecture hours. 3 credits. This course is designed to help the student develop an appreciation of society's attitude about the use of drugs and alcohol, and each individual's responsibility in decisions about the use of drugs. Discussion is offered on specific characteristics of drugs, how addiction occurs and role of rehabilitation after addiction.

RHAB 321 Introduction to Substance Abuse

Semester course; 3 lecture hours. 3 credits. Prerequisite: RHAB 202. Introduction to substance abuse as a progressive family disease with consideration of basic contributing factors (physiological, psychological and sociocultural builds on foundation established in RHAB 202); exposure to multidisciplinary rehabilitative approaches to arresting the disease, as well as some knowledge of intervention; brief mention of the highlights of the continuum of care available in the recovery process.

RHAB 452 Crisis Intervention with the Substance Abuser

Semester course; 3 lecture hours. 3 credits. Prerequisites: RHAB 321, RHAB 322 and RHAB 523, or permission of instructor. Focus on the application of concepts discussed in theory in the recovery process course; sharing of difficulties and successes with crisis intervention by individuals already in the field; provision of new and more refined techniques under the direction of experts demonstrating their applicability.

RHAB 495 Practicum in Rehabilitation

Semester course; 3 credits. Prerequisite: Permission of instructor. Designed to provide opportunities for observation and participation in rehabilitation and related settings. Experiences are systematically related to theoretical concepts.

RHAB 502 American Sign Language I

Semester course; 3 credits. Introduces the rules and grammatical structure of ASL with a focus on grammar and vocabulary to increase the learner's expressive and receptive understanding of the language. Provides an introduction to Deaf culture and crosscultural interactions, and to tactile and close-vision communication techniques used by individuals who are deaf-blind.

RHAB 503 American Sign Language II

Semester course; 3 credits. Provides continued study of the grammatical structure of ASL; introduction of additional vocabulary with emphasis on expressive and receptive competence; continued study of the tactile and close-vision communication techniques used by individuals who are deaf-blind; and continued study of the Deaf culture.

RHAB 521 Foundations of Substance Abuse Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an overview of substance abuse and dependence as multifactorial disorders (including biological, psychological, behavioral and sociocultural elements.) Exposes students to an overview of the various psychoactive substances, multiple theoretical models of substance abuse and dependence, and resulting medical, social and legal consequences. Focuses on substance abuse prevention, diagnosis, intervention, treatment and support systems.

RHAB 522 Clinical Evaluation, Assessment and Treatment Planning in Substance Abuse Rehabilitation

Semester course; 3 lecture hours. 3 credits. Prerequisite: RHAB 521. Stresses development of professional competencies. Focuses on systematic approach to screening and on-going assessment; diagnostic criteria for dependence and abuse; testing and interviewing; co-morbidity; collaborative approaches to individualized clinical treatment planning; awareness of treatment resources.

RHAB 523 Contemporary Issues in Substance Abuse Treatment and Recovery

Semester course; 3 lecture hours. 3 credits. Prerequisite: RHAB 521. Examines current issues and research in the field. Includes topics such as denial, social isolation, intervention; lifelong nature of recovery, support needs, relapse prevention; legal, political and ethical issues; special populations (e.g., physical disability); poly-drug abuse; perinatal addiction; program administration; professional readiness.

RHAB 525 Introduction to Rehabilitation Counseling

Semester course; 3 lecture hours. 3 credits. Provides an overview of history, philosophy, legislation, organizational structure and trends in the rehabilitation profession. Focuses on attitudinal, social and environmental barriers to the inclusion of people with disabilities; professional identity, roles and functions; CRC Code of Ethics; CRC Standards of Practice; and career options.

RHAB 533 Directed Readings in Rehabilitation

Semester course; 1-3 credits. May be repeated for a maximum of 6 credits. Provides intensive study in one or more topical areas of rehabilitation through directed readings under the supervision of a faculty member.

RHAB 611 Counseling Theories in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the major theoretical approaches to individual counseling with rehabilitation clients. Focuses on student development of an initial theoretical orientation that will guide their counseling practice.

RHAB 612 Group Counseling Theories and Techniques in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides theories or groups, group structure and group dynamics, and group counseling strategies. Focuses on process observation skills. Examines applications to groups of a variety of stakeholders in rehabilitation counseling and case management.

RHAB 613 Advanced Rehabilitation Counseling Seminar

3-9 lecture hours. 3-9 credits. Prerequisites: RHAB 611 and RHAB 612 or permission of instructor. This course is designed to provide an opportunity for students to undertake a more in-depth study of selected approaches to individual and/or group counseling of rehabilitation clients. Principles and techniques relevant to vocational, educational, and personal adjustment problems related to severe and multiple disabilities will be systematically explored and studied. Audio visual tape experience will be offered.

RHAB 614 Counseling, Death and Loss

3 lecture hours. 3 credits. Prerequisite: RHAB 611 or permission of instructor. Explores the psychosocial processes of adaptation to severe losses such as those occasioned by the onset of disability, death and developmental life changes. Emphasizes the knowledge and skills required by rehabilitation counselors in dealing with losses experienced by their clients.

RHAB 623 Career Counseling and Job Placement in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an overview of major theories of career development with emphasis on theories relevant to rehabilitation practice. Explores occupational information and job matching systems; career counseling techniques; and major job placement approaches and techniques with emphasis on demand-side job placement.

RHAB 624 Appraisal and Evaluation in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Examines principles of measurement, assessment and diagnosis in rehabilitation; test selection, administration and interpretation; accommodating individuals with disabilities in the testing process. Includes an overview of the major domains in assessment.

RHAB 625 Research in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Examines basic principles rehabilitation research and program evaluation, including an emphasis on the critical review of published research for use in rehabilitation practice. Focuses on students understanding of the application of research and program evaluation tools to enhance the quality of rehabilitation services delivered.

RHAB 633 Case Management in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Prerequisites: 18 completed credits in core courses. Explores benefit systems, ethics, goal development, rehabilitation planning, coordination and delivery of rehabilitation services, community resources and documentation. Focuses on critical analyses of representative disability-specific case studies; e.g., substance abuse.

RHAB 640 Medical and Psychosocial Aspects of Disabilities in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an overview of the major disabilities encountered by rehabilitation counselors. Focuses on functional limitations and the process of psychological adjustment.

RHAB 642 Psychiatric Information for Rehabilitation Counselors

Semester course; 3 lecture hours. 3 credits. Examines the major mental disorders, and their etiology, definition, diagnosis and classification. Reviews the prevailing multiaxial classification systems and diagnostic processes, procedures and nomenclatures currently used in clinical practice. Provides an overview of application of psychotropic medication and other treatment approaches. Includes diagnostic interviewing, tests of psychopathology and mental health treatment planning.

RHAB 644 Alcohol and Human Behavior

3 credits. Prerequisites: RHAB 521, RHAB 522, RHAB 523 and RHAB 695, or permission of instructor. Understanding the significance of behavior as a tool in diagnosing, treating and/or referring the addict; appreciation of particular cues to observe the predominant behavior associated with living problems and reflected by the alcohol or drug abuser.

RHAB 654 Multicultural Counseling in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Provides an overview of multicultural counseling theories and techniques. Provides an understanding of how human development, family, gender, race and ethnicity impact upon the process of adjustment to disability.

RHAB 681-689 Institutes and Workshops in Rehabilitation

Orientation institutes and other short-term training programs are offered for rehabilitation counselors newly recruited to the rehabilitation field and for the further professional development of those already employed. Content will vary according to the aims of the institutes or workshops. Length of time and number of credits are announced prior to each institute or workshop.

RHAB 691 Counseling Techniques in Rehabilitation

Semester course; requires 50 hours counseling practice and 50 hours exposure to rehabilitation agencies and practice. 3 credits. Prerequisite: RHAB 611. Provides experience and practice in the basic counseling skills related to the helping process. Examines the variety of clinical settings available for professional preparation. Provides the necessary level of skill development for students to participate in internship.

RHAB 693 Introduction to Field Experiences for Rehabilitation Counselors

3 credits. This course provides for concurrent field experience and is designed for students who have no training or experience in interviewing and counseling in rehabilitation settings.

RHAB 694 Job Placement in Rehabilitation

Semester course; 3 lecture hours. 3 credits. Explores occupational information, job matching systems and job placement approaches. Focuses on demand-side job development, job seeking skills training, supported employment, transitional work and placement techniques including job analyses, ADA implementation and labor market surveys.

RHAB 695 Supervised Clinical Practice in Substance Abuse Rehabilitation

Semester course; 1-6 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of 9 credits. Prerequisites: Completion of 24 graduate credits including RHAB 691. Requires completion of Certified Rehabilitation Counselor examination and a total of six credits for degree completion. Emphasizes mastery of substance abuse setting specific roles and functions of the professional rehabilitation counselor. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor.

RHAB 696 Supervised Clinical Practice in Rehabilitation Counseling

Semester course; 1-6 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of 9 credits. Prerequisites: Completion of 24 graduate credits including RHAB 691. Requires completion of Certified Rehabilitation Counselor examination and a total of six credits for degree completion. Emphasizes mastery of setting-specific roles and functions of the professional rehabilitation counselor. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor.

RHAB 697 Supervised Clinical Practice in Counseling

Semester course; 1-6 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of 9 credits. Prerequisite: Admission into advanced certificate in professional counseling program. Emphasizes advanced development of counseling skills pursuant to licensure or other post-master's training needs. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor.

School of the Arts

Applied Music(APPM)

Upper-division undergraduate students may enroll for selected 500-level graduate courses with permission of the department chair and instructor. See the Graduate and Professional Programs Bulletin for course descriptions.

APPM 161-162 Lyric Diction

Continuous courses; 3 lecture hours. 3-3 credits. A study of English, Italian, ecclesiastical Latin, French and German stage diction with practical experience in singing and phonetic transcription using the International Phonetic Alphabet.

APPM 173-174, 273-274 Keyboard Skills

Continuous courses; 2 laboratory hours. 1-1 credit. Open only to music majors. Proficiency exam through jury required. Acquisition of keyboard performance skills with emphasis on reading, keyboard harmony and improvisation.

APPM 181 Class Lessons in Strings

Semester course; 2 laboratory hours. 1 credit. Designed for music education majors. Achievement of performance competencies and teaching knowledge on violin, viola, cello or bass.

APPM 183-184 Class Lessons in Woodwinds

Continuous courses; 2 laboratory hours. 1-1 credit. Designed for music education majors. Achievement of performance competencies and teaching knowledge on flute, clarinet, oboe, bassoon and saxophone.

APPM 185 Class Lessons in Brass

Semester course; 2 laboratory hours. 1 credit. Designed for music education majors. Achievement of performance competencies and teaching knowledge on trumpet, baritone, tuba, trombone and French horn.

APPM 187 Class Lessons in Percussion

Semester course; 2 laboratory hours. 1 credit. Designed for music education majors. Achievement of performance competencies and teaching knowledge on snare drum. Introduction to basic techniques of other percussion instruments.

APPM 193 Class Lessons in Voice

Semester course; 2 laboratory hours. 1 credit. Designed for music education majors. Achievement of performance competencies in voice including vocal production, diction and solo and group performance.

APPM 195 Class Lessons in Guitar

Semester course; 2 laboratory hours. 1 credit. Designed for music education majors. Achievement of basic performance competencies and teaching knowledge on the guitar including chording, single-string technique, plectrum and finger styles.

APPM 199 Recital/Convocation Attendance

Semester course; no credit. Course may be repeated without limit. Music majors only. Attendance at weekly departmental convocations and a minimum of 10 additional concerts or recitals each semester.

APPM 251 Jazz Improvisation I

Semester course; 3 lecture hours. 3 credits. A study of basic compositional techniques that can be used in creating a musically effective improvised solo in the jazz medium.

APPM 252 Jazz Improvisation II

Semester course; 3 lecture hours. 3 credits. Prerequisite: APPM 251 or permission of instructor. Advanced melodic, harmonic and rhythmic improvisational techniques as applied to contemporary jazz compositions.

APPM 272 Jazz Piano for the Non-keyboard Player

Semester course; 2 laboratory hours. 1 credit. Prerequisite: APPM 174 or permission of instructor. May be limited to jazz studies majors. Proficiency exam through jury required. Acquisition of jazz keyboard performance skills with emphasis on reading, harmonization and improvisation.

APPM 282 Conducting Lab Ensembles

Semester course; 1 laboratory hour. 0.5 credits. May be repeated once for credit. Reading and conducting experience with a band, chorus or orchestra. Literature emphasized will be appropriate for elementary through secondary school groups.

APPM 299 Master Class

Semester course; no credit. Course may be repeated without limit. Participation in weekly master classes in student's applied major area.

APPM 300-level Private Instruction: Principal and Secondary Performing Mediums

Semester courses; one half-hour or 1 hour private lesson per week. 1-3 credits. One hour practice daily for each credit. Repeatable without limitations. Extra fee required. In order to register for any private lesson, non-music majors must obtain correct course number in Room 132, Performing Arts Center; music majors need to consult their advisers. Lessons are available in the following areas: bassoon, carillon (1 credit only), cello, clarinet, composition (by permission of instructor), double bass, drum set (undergraduate, 1 credit only), euphonium, flute, French horn, guitar, harp, harpsichord, oboe, organ, percussion, piano, saxophone, trombone, trumpet, tuba, viola, violin and voice.

APPM 365-366 Aural Skills V-VI

Continuous courses; 2 laboratory hours. 1-1 credit. Open to music majors only. Prerequisite: MHIS 246. Advanced development of skills in melodic and rhythmic dictation, harmonic identification and sight singing.

APPM 370 Large Ensembles

Semester course; 3 laboratory hours. 1 credit. Each section may be repeated up to eight times for credit. An audition is prerequisite for sections 1, 3 and 4. Sections: (1) orchestra, (2) University Band, (3) symphonic wind ensemble, 4) Commonwealth Singers, (5) Choral Arts Society.

APPM 373-374 Advanced Keyboard Skills

Continuous courses; 2 laboratory hours. 1-1 credit. Prerequisite: APPM 274 or permission of instructor. Emphasis is on harmonization with correct style and voice-leading, reading figured bass and lead sheets, improvisation and reducing scores at the keyboard.

APPM 375-376 Score Reading

Continuous courses; 2 laboratory hours. 1-1 credit. Prerequisite: APPM 274 or equivalent. Acquisition of skill in reducing scores at the keyboard, beginning with simple three-part works and progressing to full instrumentation.

APPM 380 Jazz Laboratory

Semester course; 2 laboratory hours. 1 credit. Prerequisite: MHIS 236. Development of the basic improvisational skills and examination of performance practice in the jazz idiom.

APPM 381 Conducting

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Prerequisites: APPM 266 and MHIS 246. Open to music major. Development of fundamental gestural skills for conducting instrumental and choral ensembles including simple and compound meters, multimetric music and aleatoric music. Introduces basic score reading, aural analysis skills and terminology.

APPM 385 Opera Theater

Semester course; 1 lecture and 4 studio hours. 2 credits. May be repeated up to four times for credit. Prerequisite: Permission of instructor required. Explores aspects of opera through study, written research and fully-staged public performances of operatic scenes and/or one-act operas.

APPM 390 Small Ensembles

Semester course; 2 or 3 laboratory hours. 0.5 or 1 credit. Each section may be repeated up to eight times for credit. Auditions required for all sections. Sections: (1) ensemble for new music, (2) the madrigalists, (3) collegium musicum, (4) women's chorus, (5) vocal ensembles, (6) piano ensembles, (7) accompanying, (8) percussion ensemble, (9) percussion lab ensemble, (10) woodwind ensembles, (11) brass ensembles, (12) chamber orchestra, (13) string ensembles, (14) guitar ensembles, (15) small jazz ensembles, (16) jazz orchestra I, (17) jazz orchestra II, (18) jazz orchestra III, (19) basketball pep band.

APPM 393 Junior Project

No credit. Individual research project in the student's major field under the supervision of faculty.

APPM 394 Junior Recital

No credit. Public presentation of a half-length recital.

APPM 463 Pedagogy

Semester course; 2 lecture hours. 2 credits. A study of the musical, physiological and psychological aspects of teaching instruments or voice.

APPM 494 Senior Recital

No credit. Public presentation of a full-length recital.

APPM 571 Choral Pedagogy

Semester course; 3 lecture hours. 3 credits. Teaching competencies relative to the choral training and use of the unchanged, changing and matured voice will be stressed. Included are consideration of vocal production, pronunciation, aural skills, reading skills and stylistic interpretation.

APPM 575-576 Score Reading

Continuous courses; 2 laboratory hours. 1-1 credit. Prerequisite: APPM 274 or the equivalent. No degree credit for graduate composition majors. A progressive course in reducing scores at the keyboard, beginning with simple choral scores and progressing to full orchestra and band.

APPM 585 Opera Theatre

Semester course; 1 lecture and 4 studio hours. 2 credits. May be repeated up to four times for credit. Prerequisite: Permission of instructor. Explores aspects of opera through study, written research and fully staged public performances of operatic scenes and/or one-act operas.

APPM 600-level Private Instruction: Principal and Secondary Performing Mediums

Semester courses; one half-hour or 1 hour private lessons per week. 1-3 credits. Repeatable without limitations. One hour practice daily for each credit. To register for any private lesson, students must obtain a specific course number in Room 132, Performing Arts Center, or at the music table during in-person registration; music majors must consult their advisers. Extra fee required. Lessons are available in the following areas: bassoon, carillon (one credit only), cello, clarinet, conducting, composition, double bass, drum set, euphonium, flute, French horn, guitar, harp, harpsichord, oboe, organ, percussion, piano, saxophone, synthesizer, trombone, trumpet, tuba, viola, violin, vocal coaching and voice.

APPM 663 Advanced Pedagogy

Semester course; 3 lecture hours. 3 credits. Further study in pedagogical systems and techniques with emphasis on materials for intermediate and advanced-level students. Studio observation will be included. Sections: (1) piano, (2) voice, (3) organ, (4) percussion, (5) brass, (6) woodwinds and (7) strings.

APPM 670 Large Ensembles

Semester course; 3 or 4.5 laboratory hours. 0.5 or 1 credit. Each section may be repeated up to six times for credit. Auditions required for sections 1, 3, and 4. Sections: (1) orchestra, (2) University band, (3) symphonic band, (4) chorus and (5) Choral Arts Society.

APPM 671 Piano Technique Seminar

Semester course; 1 lecture hour. 1 credit. Physiology of piano playing. Alternative approaches to building and reconstructing technique.

APPM 673, 674 Piano Literature and Performance Practice

Semester course; 2 lecture hours. 2, 2 credits. To familiarize the student with a broad repertoire of performing and teaching material. Discussion of approaches to styles and idioms of various periods, solution of technical and musical problems encountered in specific pieces, evaluation of various editions of piano literature.

APPM 675 Teaching Practicum

Semester course; 2 lecture hours. 2 credits. A semester of supervised studio teaching consisting of intermediate and advanced piano literature.

APPM 681 Group Piano Methods and Management

Semester course; 2 lecture hours. 2 credits. Management, methods and materials for group teaching. Includes beginning students of all ages, intermediate level students and college keyboard skills classes.

APPM 690 Small Ensembles

Semester course; 2 or 3 laboratory hours. 0.5 or 1 credit. Each section may be repeated up to six times for credit. Auditions required for all sections. Sections: (1) ensemble for new music, (2) the madrigalists, (3) collegium musicum, (4) women's chorus, (5) vocal ensembles, (6) piano ensembles, (7) accompanying, (8) percussion ensemble, (9) percussion lab ensemble, (10) woodwind ensembles, (11) brass ensembles, (12) chamber orchestra, (13) string ensemble, (14) guitar ensembles, (15) small jazz ensembles, (16) jazz orchestra I, (17) jazz orchestra II, (18) jazz orchestra III, (19) basketball pep band.

APPM 799 Recital

Semester course; 1, 3 and 6 credits. Public presentation of a full recital or lecture recital. Content to be approved by graduate committee. Graded as "S," "U" or "F."

Art Education(ARTE)

ARTE 250 Computer Technology in Art Education

Semester course; 2 lecture and 3 studio hours. 3 credits. For art education majors only. The use of computer as a tool for creating electronic imagery, as a filtering mechanism for traditional media and to develop teaching materials for the pre-K through 12th-grade classroom. The course includes an introduction to presentation technology, digital imaging and Web page design. Ethical and copyright issues related to new technologies will be addressed.

ARTE 301-302 Art for Elementary Teachers

Continuous courses; 1 lecture, 1 seminar and 2 studio hours. 3-3 credits. The nature of art and its function in the lives of individuals and society is considered in addition to materials and methods for guiding the visual expression of children.

ARTE 310 Foundations of Art Education

Semester course; 3 lecture hours. 3 credits. For art education majors only or by approval of the department chair. An examination of art education within the curricular structure of educational programs and the developmental growth of children. Students will explore the historical, philosophical and sociological foundations of art in education, including art education's development and current roles.

ARTE 311 Art Education Curriculum and Instructional Procedures

Semester course; 2 lecture and 3 studio hours. 3 credits. For art education majors only or by approval of the department chair. Prerequisite: ARTE 310. A study of the principles of learning, instruction and curriculum in art education programs. Students will develop teaching competencies through micro-teaching experiences, analysis of instructional methods and teaching styles.

ARTE 401 Art Education Elementary Materials and Practicum

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisites: Admission to the Art Teacher Preparation Program. Completion of ARTE 311. For art education majors only or by the approval of the department chair. A preparatory experience with observation and participation in art programs in elementary grades prior to student teaching. This course explores art materials, techniques and teaching methods suitable for this level; and analyzes evaluation strategies appropriate for art.

ARTE 402 Art Education Secondary Materials and Practicum

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisites: Admission to the Art Teacher Preparation Program and completion of ARTE 311. For art education majors only or by approval of department chair. A preparatory experience with observation and participation in art programs in middle school, secondary school and nontraditional settings prior to student teaching. This course explores art materials and techniques suitable for these levels, examines developmental performance levels and analyzes evaluation methods appropriate for art. Writing intensive.

ARTE 404 Student Teaching Seminar

Semester course; 1 seminar hour. 1 credit. For art education majors only. Corequisites: TEDU 485 and 486. A seminar concurrent with student teaching that gives students an opportunity to discuss and evaluate their progress in teaching assignments and other related activities.

ARTE 408 Two-dimensional Art Experiences

Semester course; 1 seminar and 4 studio hours. 3 credits. Not offered for credit to art majors. The course explores the media, techniques and concepts of drawing, painting and printmaking.

ARTE 409 Three-dimensional Art Experiences

Semester course; 1 seminar and 4 studio hours. 3 credits. Not offered for credit to art majors. Exploration of sculptural concepts with three-dimensional materials such as wood, metal, clay, fiber, plaster, plastic and glass.

ARTE 450 Art for the Exceptional Student

Semester course; 2 lecture and 3 studio hours. 3 credits. Open to all majors. A study of the unique characteristics of exceptional students as related to involvement in the arts. The course examines disabled, aged, gifted, talented and other exceptional learners, and may include practicum and field experiences.

ARTE 491 Special Topics

Semester course; variable hours. Variable credit. May be repeated for a maximum of 9 credits with different content. A seminar and/or workshop offered on a variety of art education issues not included in the regular curriculum. See the Schedule of Classes for specific topics to be offered each semester.

ARTE 492 Independent Study

Semester course; variable hours. 1-6 credits per semester. May be repeated for a maximum total of 6 credits. Prerequisites: Consent of department chair and instructor. Offered to art education majors only. This course will be limited to those few students who have demonstrated an exceptional level of ability and intense commitment to a particular area.

ARTE 501-502 Concepts in Art Education

Continuous courses; 1 seminar and 4 studio hours. 3-3 credits. A sequence of studies organized around six major components: communications, expressive media, conceptual expression, teaching strategies, teacher-affective attributes and self-managing abilities.

ARTE 508 Two-dimensional Art Experiences

Semester course; 2 seminar and 3 studio hours. 3 credits. Not offered for credit for studio art majors. The course explores the media, techniques and concepts of drawing, painting and printmaking.

ARTE 509 Three-dimensional Art Experiences

Semester course; 2 seminar and 3 studio hours. 3 credits. Not offered for credit for studio art majors. Exploration of sculptural concepts with three-dimensional materials such as wood, metal, clay, fiber, plaster, plastic and glass.

ARTE 520 Teaching Concepts Through the Arts

Semester course; 1 lecture, 1 seminar and 3 studio hours. 3 credits. Open to all graduate students. Students will investigate and compare traditional and contemporary patterns of expression, develop experiential techniques for teaching concepts and participate in a series of activities that reveal relationships among the arts and other subject areas. Seminars will include guests from the visual, performing and literary arts.

ARTE 550 Art for the Exceptional Learner

Semester course; 2 lecture and 3 laboratory hours. 3 credits. A study of exceptional learners including handicapped, gifted, talented, aged and others, and their participation in and appreciation for the visual arts. Courses may include practicum and field experiences.

ARTE 553 Art and Perceptual Communication

Semester course; 3 lecture hours. 3 credits. Explores art and perception as a means of effectively communicating through the senses. Emphasizes the analysis of the principles of art and design that affect the perception of art, advertising and other media. Investigates light, color, perception, illusions and other related topics.

ARTE 591 Topics in Art Education

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 9 credits with different topics. The course will explore selected topics of current interests or needs relative to art education. See the Schedule of Classes for specific topics to be offered each semester.

ARTE 592, 692 Independent Study in Art Education

Semester course; 1-6 credits. Art Education majors only. Prerequisite: Approval from department chair. An in-depth study of a selected art education topic.

ARTE 600 Seminar: Issues in Art Education

Semester course; 3-6 lecture hours. 3-6 credits. The course investigates contemporary issues and identifies problems in art education. Students prepare oral and written reports that explore new directions and discuss the implications for teachers and art programs.

ARTE 601 Art for Elementary Classroom Teachers

Semester course; 2 lecture and 2 studio hours. 3 credits. An inquiry into the nature of art and its importance in the elementary curriculum. Through personal experiences with art concepts and media, students learn about themes, form and expression and develop a broader understanding of the value of art for children.

ARTE 611, 612 Literature in Art Education

Semester courses; 3 lecture hours. 3, 3 credits. Review, analysis and assessment of significant historical and contemporary writings in art education and related fields.

ARTE 652 Art Supervision and Administration

Semester course; 3 lecture hours. 3 credits. Exploration of the duties and responsibilities of the public school art supervisor and administrative positions in art education within various organizations or institutions.

ARTE 665 Curriculum Development and Evaluation

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. A review of curriculum development including: needs assessment, determination of goals and objectives, curriculum writing, evaluation, and feedback processes. Theoretical approaches in the visual arts will be studied and curriculum models designed, developed and analyzed.

ARTE 670 Technology in Art Education

Semester course; 2 lecture and 3 studio hours. 3 credits. The students examine diverse aspects of new technologies in relation to art programs. These aspects include media and computer-assisted learning, and applications of computer graphics and other technology to artistic expression.

ARTE 680 Teaching Laboratory

Semester course; 3 lecture hours. 3 credits. Observations and experimental teaching experiences with children in art. Group discussions and evaluation of ideas, objectives and methods.

ARTE 690 Issues and Methods of Inquiry in Art Education

Semester course; 3 lecture hours. 3 credits. Readings and discussions of studies in art education and related research emphasizing possibilities for implementation by art teachers. Methods of research in the field will be reviewed and sample research proposals will be developed by the students.

ARTE 691 Topics in Art Education

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 9 credits with different content. The course will explore selected topics of current interests or needs relative to art education. See Schedule of Classes for specific topic to be offered each semester.

ARTE 799 Thesis

Semester course; 1-6 credits. May be repeated. Prerequisite: Completion of all formal course work, candidacy and approval of the department chair. Preparation of a thesis is based upon independent research.

Art Foundation(ARTF)

ARTF 101-102 Conceptualization and Presentation

Continuous courses; 1 lecture and 3 or 6 studio hours. Alternate credits: 2-2 or 3-3 credits. Offered at VCU Qatar. A foundation course with the emphasis on conceptualization, sensing and knowing. This course includes studies in preconceptions, value systems, visual semantics, attitudes, criticism and analysis of visual phenomena. This course also is an introduction to the concepts of the third and fourth dimensions and the nature of materials.

ARTF 103-104 Design Fundamentals

Continuous courses; 1 lecture and 3 or 6 studio hours. Alternate credits: 2-2 or 3-3 credits. Offered at VCU Qatar. A foundation course with emphasis on systems and nonsystems of spatial order as well as color applications and theory.

ARTF 105-106 Survey of World Art

Continuous courses; 4 lecture hours. 4-4 credits. Offered at VCU Qatar. A survey of the history and development of painting, sculpture, architecture and related visual arts of major world cultures, including European, American, Oriental, African, Islamic and pre-Columbian.

ARTF 107 Introduction to the Arts

Semester course; 1 lecture hour. 1 credit. For beginning students in the School of the Arts. Offered to art majors only. An orientation course designed to provide a comprehensive understanding of the role of the visual arts within the university and as a significant contributing factor in the creation of a meaningful human environment.

ARTF 109-110 Drawing Fundamentals

Continuous courses; 1 lecture and 3 or 6 studio hours. Alternate credits: 2-2 or 3-3 credits. Offered at VCU Qatar. A foundation course with the emphasis on traditional drawing, including perspective, anatomy and artistic judgment.

ARTF 111-112 Drawing Studio

Continuous courses; 1 lecture and 3 studio hours. 2-2 credits. Offered at VCU Qatar. A foundation course with the emphasis on the formal and conceptual nature of drawing. This course is designed to challenge and develop the student's invention and imagination.

ARTF 121-122 Introduction to Drawing

Continuous courses; 1 lecture and 3 studio hours. 2-2 credits. Not for art majors. An introduction to the fundamentals of freehand drawing with an emphasis on representational drawing skills, perception and traditional drawing materials. Does not fulfill Art Foundation Program requirements.

ARTF 150 Pre-Art Foundation Studio

Semester course; 6 studio and 2 lecture hours. 4 credits. For students in the Pre-Art Foundation Program in the School of the Arts. Offered to Pre-Art Foundation designees only. A beginning studio course emphasizing the fundamental issues of art and design, such as meaning, context, content and parameters, structure, materials, means of construction, form, space, and light. As the primary studio offering in the Pre-Art Foundation year, this course stresses the development of values that will become a basis for students' actions as professional artists and designers. Introduces students to the values, habits, traditions and expectations of studio culture. Addresses the processes and methods involved in the identification, development and realization of ideas and concepts. Does not fulfill Art Foundation Program requirements.

ARTF 151-152 Foundation Studio

Continuous courses; 6 studio and 2 lecture hours. 4-4 credits. For first-year students in the School of the Arts. Offered to art majors only. A foundation course with emphasis on fundamental issues of art and design such as meaning, context, content and parameters, structure, materials, means of construction, form, space, and light. As the primary studio offering in the first year, these courses stress the development of values that will become the basis for student's actions as professional artists and designers. Introduces students to the values, habits, traditions and expectations of studio culture.

ARTF 160 Pre-Art Foundation Drawing

Semester course; 6 studio and 2 lecture hours. 4 credits. For students in the Pre-Art Foundation Program in the School of the Arts. Offered to Pre-Art Foundation designees only. A beginning drawing course offering intense exposure to the basic skills of figure and perspective drawing. Traditional drawing media, the fundamentals of anatomy and the fundamentals of linear perspective are covered. Does not fulfill Art Foundation Program requirements.

ARTF 161 Figure Drawing I

Short course; 5 studio hours. 5 weeks. 1 credit. For beginning students in the School of the Arts. Offered to art majors only. A foundation course with emphasis on anatomical and figure drawings. Students work in black and white media. Students develop drawing skills as a means of observation and documentation.

ARTF 162 Perspective and Three-dimensional Line Drawing

Short course; 5 studio hours. 5 weeks. 1 credit. For beginning students in the School of the Arts. Offered to art majors only. A foundation course with emphasis on creating the illusion of three dimensions on a two-dimensional plane using black and white media and primarily line work. Introduces perspective and paraline drawing methods as a means of observation and documentation. Students become familiar with techniques and traditions that enable them to understand, articulate and communicate the characteristics of three-dimensional space.

ARTF 163 Two-dimensional Design Methods

Short course; 5 studio hours. 5 weeks. 1 credit. For beginning students in the School of the Arts. Offered to art majors only. A foundation course with emphasis on two-dimensional content. Emphasizes critical and analytical skills, the creation and manipulation of visual systems, and the development of a fundamental design vocabulary that supports conceptual generation and development.

ARTF 164 Color Research Laboratory

Short course; 5 studio hours. 5 weeks. 1 credit. For beginning students in the School of the Arts. Offered to art majors only. A foundation course with emphasis on color theory, phenomena, characteristics, classification and the physics of color.

ARTF 171 Digital Laboratory

Short course; 5 studio hours. 5 weeks. 1 credit. For beginning students in the School of the Arts. Offered to art majors only. A foundation course with emphasis on the generation and manipulation of digital media that support conceptual development.

ARTF 172 Digital Photography

Short course; 5 studio hours. 5 weeks. 1 credit. Prerequisite: ARTF 171 Digital Lab. For beginning students in the School of the Arts. Offered to art majors only. A foundation course with emphasis on the generation, manipulation and printing of digital media.

ARTF 173 Three-dimensional Design Methods

Short course; 5 studio hours. 5 weeks. 1 credit. For beginning students in the School of the Arts. Offered to art majors only. A foundation course with emphasis on fundamental means of construction, materials exploration and structural investigations that support conceptual development.

ARTF 181 Figure Drawing II

Short course; 5 studio hours. 5 weeks. 1 credit. Prerequisite: ARTF 161 Figure Drawing I. For beginning students in the School of the Arts. Offered to art majors only. An advanced foundation course with emphasis on figure drawing. Students work in black and white, and in color media. Students develop drawing skills as a vehicle to document objects and experiences and as a tool for invention.

ARTF 182 Perspective and Three-dimensional Rendering

Short course; 5 studio hours. 5 weeks. 1 credit. Prerequisite: ARTF 162 Perspective and Three-dimensional Drawing. Offered to art majors only. A foundation course that emphasizes the introduction of light, shadow, shading and color into three-dimensional drawings. Introduces these drawing skills as a means of observation, documentation, analysis and invention.

ARTF 191 Topics in Foundation Studies

Short course; variable hours. 5 weeks. 1-4 credits. May not be repeated. Prerequisites: permission of the program director and instructor. A seminar or studio on a selected issue, topic or skill in the field of foundation studies.

Art History(ARTH)

ARTH 102 Contemporary Issues in Art and Design

Semester course; 3 lecture hours. 3 credits. An introduction to contemporary interpretive issues and ideas that define the modern art and design worlds. Topics include analysis of formal properties of art such as space, structure and materials, concepts of meaning, such as subject matter, symbolism and iconography, and issues of context, such as the impact of tradition, religion, politics, aesthetics, and cultural values. Examples include works drawn from all major Western and non-Western styles worldwide and throughout history.
Effective Fall 2006 < p > < b > ARTH 102 Contemporary Issues in Art and Design < /b > < br >
Semester course; 3 lecture hours. 3 credits. An introduction to contemporary interpretive issues and ideas that define the modern art and design worlds. Topics include analysis of formal properties of art such as space, structure and materials; concepts of meaning, such as subject matter, symbolism and iconography; and issues of context, such as the impact of tradition, religion, politics, aesthetics and cultural values. Examples include works drawn from all major Western and non-Western styles worldwide and throughout history. Open only to students enrolled in Art Foundation program. < /p >

ARTH 103, 104 Survey of Western Art

Semester courses; 3 lecture hours. 3, 3 credits. First semester: Prehistoric through Gothic. Second semester: Italian Renaissance through Modern. Illustrated lectures and analytical practices will be supported by the student visiting local museums and galleries to examine selected works of art.

ARTH 207 Introduction to Non-Western Art

Semester course; 3 lecture hours. 3 credits. Art will be presented as an integral aspect of each culture from the areas of China, Japan, Africa, Oceania, Native America, and pre-Columbian Central and South America. Aesthetic appreciation will be enhanced through a presentation of various philosophies, customs and values. Illustrated lectures and analytical practices will be supported by the student visiting local museums and galleries to examine selected works of art.

ARTH 245 Survey of Asian Art

Semester course; 3 lecture hours. 3 credits. Introductory survey of the art of India, the Middle East, Southeast Asia, China, Korea and Japan. Illustrated lectures and analytical practices will be supported by the student visiting local museums and galleries to examine selected works of art.

ARTH 270, 271 History of the Motion Picture

Semester courses; 3 lecture hours. 3, 3 credits. The history of development of the motion picture from its early beginnings to the present, with both technical and aesthetic consideration. Students engage in analysis and discussion after viewing selected films.

ARTH 300 Prehistoric and Ancient Art and Architecture

Semester course; 3 lecture hours. 3 credits. A survey of the artistic expressions of the major prehistoric and ancient cultures of Europe, the Near East, Egypt and the Aegean.

ARTH 301 Art and Architecture of Ancient North America

Semester course; 3 lecture hours. 3 credits. A survey of the major artistic traditions of ancient America, north of Mexico, including Woodlands, Mississippian, Plains, Eskimo, Northwest Coast and the Southwest.

ARTH 302 Museums in the 21st Century

Semester course; 3 lecture hours. 3 credits. A survey of contemporary theories, issues and practices in the museum environment. Topics include museum identity and function, administration, museum ethics, collections maintenance and management, curatorial and exhibition issues, and education and public interaction.

ARTH 305 Classical Art and Architecture

Semester course; 3 lecture hours. 3 credits. A survey of the development of Greek, Etruscan and Roman architecture, sculpture, painting and the minor arts from their beginnings to the early fourth century A.D.

ARTH 310 Medieval Art and Architecture

Semester course; 3 lecture hours. 3 credits. Survey of Western art and architecture between A.D. 300 and 1400.

ARTH 315 Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits. An examination of the Renaissance in Italy and Northern Europe. Painting, sculpture and architecture of the 14th, 15th and 16th centuries.

ARTH 316 Northern Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits. Painting, architecture and sculpture during the North European Renaissance.

ARTH 317, 318 History of Architecture

Semester courses; 3 lecture hours. 3, 3 credits. First semester: major architectural forms from ancient Egypt through Medieval period. Second semester: architecture in Europe and America from the Renaissance to the present.

ARTH 320 Baroque and Rococo Art and Architecture

Semester course; 3 lecture hours. 3 credits. The art and architecture of Italy and northern Europe between 1600 and 1750.

ARTH 325 19th-century Art and Architecture in Europe

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTH 103, 104. Study of European art and architecture between 1770 and 1900.

ARTH 330 20th-century Art and Architecture

Semester course; 3 lecture hours. 3 credits. A survey of 20th-century art with emphasis on architecture, painting and sculpture.

ARTH 335 Pre-Columbian Art and Architecture

Semester course; 3 lecture hours. 3 credits. A study of the major artistic traditions of ancient America (i.e., Maya, Aztec and Inca). The course concentrates on Meso-America and the Andean Region.

ARTH 338 Colonial Art and Architecture of Latin America

Semester course; 3 lecture hours. 3 credits. A study of the major artistic traditions in Latin America from the 16th to the end of the 18th century.

ARTH 339 Modern and Contemporary Art and Architecture of Latin America

Semester course; 3 lecture hours. 3 credits. A study of 19th- and 20th-century art in Latin America focusing on the major movements and artists of Mexico, the Caribbean, Central and South America.

ARTH 340 Art and Architecture of the United States

Semester course; 3 lecture hours. 3 credits. A survey of painting, sculpture and architecture from the Colonial period to the present.

ARTH 342/AFAM 342 African-American Art

Semester course; 3 lecture hours. 3 credits. A study of the art forms produced by Americans of African origin from the 17th century to the present with an emphasis on contemporary trends in black art.

ARTH 350/AFAM 413 African and Oceanic Art

Semester course; 3 lecture hours. 3 credits. A study of the architecture, painting, sculpture and civilizations of the major art-producing tribes of West Africa and Oceania from the 13th century to the present.

ARTH 358/AFAM 358 African Art and Architecture

Semester course; 3 lecture hours. 3 credits. A study of African art and architecture from prehistoric times to the present. Special emphasis is placed on form, content, function and meaning, as well as the impact of African art on modern and African-American art.

ARTH 360 Introduction to Conservation

Semester course; 3 lecture hours. 3 credits. An introduction to the art and science of art conservation. The course is designed to acquaint artists and art historians with the basic methods of deterioration, examination and treatment of works of art.

ARTH 370 History of Animated Film

Semester course; 3 lecture hours. 3 credits. The history of animation as an art form, from early experimental to popular culture to independent animation. Design, structure and technique are considered.

ARTH 404 Studies in Prehistoric and Ancient Art

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 405 Studies in Greek, Etruscan and Roman Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 413 Gothic Art

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. Origins and developments of the Gothic style with emphasis on the architecture and sculpture of France.

ARTH 415 Early Italian Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An investigation of painting, sculpture and architecture of the Duecento, Trecento and Quattrocento in Italy.

ARTH 417 The High Renaissance

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. Intensive consideration of the great masters of Italian art in the early 16th century.

ARTH 419 Studies in Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 420, 421 The Baroque In Northern Europe; The Baroque In Southern Europe

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisite: 3 credits of art history or permission of instructor. First semester: an investigation of the painting, sculpture and architecture of France and the Low Countries. Particular emphasis will be given to the diverse characteristics of the Aristocratic and Bourgeois stylistic trends of the period. Second semester: an investigation of the painting, sculpture and architecture of Italy, Spain, Germany and Austria. The relationship of church and state will be a primary theme of the course.

ARTH 424 Studies in Baroque and Rococo Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 425, 426 Neoclassicism, Romanticism, Realism and Impressionism through Fin-de-Siecle

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisites: 3 credits of art history or permission of instructor. First semester: a detailed analysis of European art during the first half of the 19th century with special emphasis on French and English painting. Consideration also will be given to artistic and cultural interrelationships marking the transition from the 18th to the 19th century. Second semester: a detailed analysis of European art during the latter 19th century. Consideration also will be given to artistic and cultural interrelationships heralding the transition to the 20th century.

ARTH 427 Renaissance Art and Architecture of Colonial Latin America, 1500-1650

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An in-depth study of the most important contributions of Renaissance Ibero-American art throughout the Western Hemisphere in architecture, sculpture and painting.

ARTH 429 Studies in 19th-century Art

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 430 Modern Painting

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An analysis of the major movements in 20th-century painting.

ARTH 431 Modern Sculpture

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. The evolution of 20th-century sculpture considering major movements and artists.

ARTH 433 Modern Architecture

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An investigation of major architectural periods and achievements in commercial and residential designs from 1850 to the present; tracing the development of the International Style, traditional architecture, the evolution of the skyscraper, Art Nouveau and the works of Henry Hobson Richardson, Louis Sullivan and Frank Lloyd Wright.

ARTH 435, 436 Contemporary Art I, II

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisite: 3 credits of art history or permission of instructor. First semester: an in-depth examination of art from 1940-1960. Will include discussion of background and context. Second semester: a continuation of detailed analysis of art from 1960 to the present.

ARTH 439 Studies in 20th-century Art

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 440/AFAM 440 Contemporary Art and Architecture of Africa

Semester course; 3 lecture hours. 3 credits. A study of the impact on African art and architecture of Colonialism, urbanization and modernization. Special emphasis is placed on the search for a new identity by contemporary African artists.

ARTH 441 Architecture of the United States

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An in-depth investigation of major architectural developments from the Colonial period to the present, including an analysis of European prototypes.

ARTH 442 Architecture in Richmond

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. History and origins of Richmond area architecture.

ARTH 443 Folk Art of the United States

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An examination of the development and history of three centuries of tradition in folk art applicable to the five major areas: painting, sculpture, furniture, decorated household objects and architectural decoration.

ARTH 444 Studies in the Art of the United States

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 445 The Art of India

Semester course; 3 lecture hours. 3 credits. Prerequisite: General background in art, history or religion of the area. The Indus Valley civilization through Maurya, Sunga, Kushana, Andhra, Gupta and Pallava periods.

ARTH 447 The Art of Southeast Asia

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTH 145, 146 or general background in the art, history or religion of the area. The art of Burma, Malaya, Thailand, Cambodia, Indochina and Indonesia.

ARTH 449 Studies in Asian Art

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 450 Art and Architecture of Mesoamerica

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An in-depth study of the artistic traditions of Mesoamerica (i.e., Maya, Aztec and Olmec).

ARTH 451 Art and Architecture of Andean America

Semester course; 3 lecture hours. 3 credits. Prerequisite: 3 credits of art history or permission of instructor. An in-depth study of the pre-Columbian art production of the Andean region (i.e., Chavin, Moche and Inca art).

ARTH 452 Studies in Pre-Columbian Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. An in-depth examination of selected art and issues of the period (Ancient America). See the Schedule of Classes for specific topics to be offered each semester.

ARTH 454 Studies in African and Oceanic Art

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. An in-depth examination of selected art and issues of the period. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 455 Aesthetics and Modern Theories of Art

Semester course; 3 lecture hours. 3 credits. An investigation of modern aesthetic theories and concepts in art with a foundation in premodern aesthetics. Writing intensive.

ARTH 456 Ideas and Criticism in Art

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An in-depth examination of modern concepts in the literature of art criticism with particular emphasis on the principal writings of leading American critics.

ARTH 457/WMNS 457 Women, Art and Society

Semester course; 3 lecture hours. 3 credits. A re-examination of a variety of issues concerning women, art and society: the position assigned women within the history of art as it relates to historical place and the aesthetic values of the canon, the gendering of style, patronage, audience and gaze. Through a survey of images of and by women, as well as through an analysis of art historical and critical texts, this course addresses the question: "How are the processes of sexual differentiation played out across the representations of art and art history?"

ARTH 459 Studies in Aesthetics, Theory and Criticism of Art

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth examination of selected topics. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 461 Art and Architecture in Latin America, 1915 to the Present

Semester course; 3 lecture hours. 3 credits. This course studies the finest expressions of modern Latin American art within the context of the arrival of Modernism in art, improved communications and travel, the growth of the middle class, population explosion, industrialization, urbanization, movements for reform and revolution, and the struggle against economic and cultural dependence and homogenization. The course is hemispheric in scope but devotes special attention to Mexico, Brazil and Argentina.

ARTH 469 Studies in Museum Methods

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An in-depth examination of selected topics. See the Schedule of Classes for specific topics to be offered each semester. Topics include museum administration, museum ethics, collections maintenance and management, curatorial and exhibition issues, and education.

ARTH 470 History of Animated Feature Film

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An analysis of selected animated feature films, including animation combined with live action. Both American and foreign films will be considered.

ARTH 471 Film Theory

Semester course; 3 lecture hours. 3 credits. Theories and criticism dealing with the medium, form, function and psychology of film. Students will examine the medium through reading and discussion of such film theorists and aestheticians as Munsterberg, Eisenstein, Arnheim, Bazin, Kracauer, Burch and Langer as well as through a comparison of film and the other arts.

ARTH 472 History of Photography

Semester course; 3 lecture hours. 3 credits. Prerequisites: 3 credits of art history or permission of instructor. An investigation of the basic trends in the history of photography. This course will deal with the chronological development of the art, the role of the photographer, the properties of photography that make it unique and those that ally it to the other visual arts.

ARTH 474 Studies in Film

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth examination of selected topics. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 489 Topics in Advanced Art History

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth study of a selected topic in art history not included in the curriculum. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 493 Museum Internship

Semester course; 9 to 18 studio hours. 3 to 6 credits. May be repeated with different topics for a maximum of 12 credits. Prerequisites: ARTH 469 and permission of the chair of the department of art history. Fieldwork in a local or regional museum. Topics include museum administration, museum ethics, collections maintenance and management, curatorial and exhibition issues, and education.
Effective Fall 2006 < p > < b > ARTH 493 Museum Internship < /b > < br >
Semester course; 9 to 18 studio hours. 3 to 6 credits. May be repeated with different topics for a maximum of 12 credits. Art history majors only. Prerequisites: ARTH 302 and permission of the chair of the Department of Art History. Fieldwork in a local or regional museum. Topics inlcude museum administration, museum ethics, collections maintenance and management, curatorial and exhibition issues, and education. < /p >

ARTH 497 Directed Research Project

Semester course; 3 credits. Prerequisites: permission of instructor and department chair. Advanced individual work on a subject to be formulated in writing by the student and the instructor. Writing intensive.

ARTH 502 Historical Preservation and Architectural History

Semester course; 3 lecture hours. 3 credits. An introduction to the methods or research, record keeping and reporting used in architectural history, and to the evolution of the discipline, especially in relation to historic preservation.

ARTH 504 Advanced Studies in Prehistoric and Ancient Art

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of artistic development in one or more ancient and prehistoric cultures, such as in Africa, Asia, Europe or the Americas. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 505 Advanced Studies in Greek, Etruscan and Roman Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the art and ideas of the classical Greek and Roman cultures, including the Etruscans. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 519 Advanced Studies in Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the Proto-Renaissance, Early Renaissance or High Renaissance in Europe or Latin America. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 524 Advanced Studies in Baroque and 18th-century Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of England, France, the low countries, Italy, Spain, Latin America, Germany and Austria during the Baroque period and/or 18th century. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 529 Advanced Studies in 19th-century Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the 19th-century including Neoclassicism, Romanticism, Realism Impressionism in Europe and/or America. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 530 Guided Study Abroad

Semester course; 1-6 credits.

ARTH 539 Advanced Studies in 20th-century Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the 20th century in Europe and/or America. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 542 Advanced Studies in the Architecture of Richmond

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. An advanced, detailed study of a selected aspect of the development of the architecture of the city of Richmond. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 544 Advanced Studies in Art and Architecture of the United States

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the United States. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 549 Advanced Studies in the Art and Architecture of Asia

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of India, China, Korea, Japan, Southeast Asia or the Middle East. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 552 Art and Architecture of Central, Eastern and Southern Africa

Semester course; 3 lecture hours. 3 credits. A study of the major art-producing cultures of Central Africa, including the Cameroon, Gabon and Zaire; East Africa including Kenya, Tanzania and Mozambique; and Southern Africa, Bushman art, prehistoric cave paintings and rock engravings.

ARTH 554 Advanced Studies in African or Oceanic Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of African or Oceanic cultures. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 555 Advanced Studies in Aesthetics and Art Theory

Semester course; 3 lecture hours. 3 credits. An advanced, detailed investigation of aesthetic theories and concepts in art.

ARTH 556 Advanced Studies in Ideas and Criticism in Art

Semester course; 3 lecture hours. 3 credits. An advanced, detailed examination of specific concepts in the literature of art criticism with particular emphasis on the principle writings of leading American critics.

ARTH 569 Advanced Studies in Museum Methods

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 9 credits. Advanced instruction in the major aspects of museum administration. Lectures by museum personnel and workshops in a variety of museums. A major research project is required.

ARTH 571 Advanced Studies in Film Theory

Semester course; 3 lecture hours. 3 credits. Advanced, detailed study of the theories and criticism of film, dealing with medium, form, function and psychology.

ARTH 574 Advanced Studies in Film

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed examination of selected topics in the history of film. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 575 Advanced Studies in the History of Photography

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. An advanced, detailed examination of selected topics in the history of photography. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 581 Museums and Communities

Semester course; 3 lecture hours. 3 credits. An examination of relationships between museums and communities, focusing on critical/theoretical analyses of how museums have constructed community identities, histories of place and cross-cultural relations. Also provides understanding of the roles and responsibilities of exhibit developers and designers as well as team approaches to exhibit development. Students write an exhibition critique that incorporates independent research and demonstrates their understanding of the relationship between museums and communities in terms of critical museum theory.

ARTH 582 The Museum as Educational Institution

Semester course; 3 lecture hours. 3 credits. An overview of the history, theory and practice of museums as educational institutions, focusing on education philosophies and teaching methods as well as criteria for evaluating the educational merit of exhibits and programs. Also provides an understanding of the roles and responsibilities of museum educators and the structural organization of museum education staff. Students complete a research project resulting in a small-scale educational program.

ARTH 583 Issues in Museum Collections Planning

Semester course; 3 lecture hours. 3 credits. An examination of motivations for collecting, focusing on various approaches to collections planning (e.g., temporal, taxonomic, disciplinary, thematic, individual) as well as semiotic relationships among objects, collectors, collections and museums. Also provides understanding of the roles and responsibilities of curators, collections managers, registrars and conservators as well as an understanding of the structural organization of curatorial/collections staff. Students complete a research paper that demonstrates understanding of the theoretical relationship among objects, collectors, collections and museums.

ARTH 584 Development and Analysis of Museum Exhibitions

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTH 569, ARTH 581, ARTH 582 or ARTH 583 An overview of historically significant exhibitions, including those that established major shifts in audience expectations as well as those that have generated debate over the institutional/social roles of museums. Also provides understanding of the roles and responsibilities of exhibit developers as well as team approaches to exhibit development. Students complete a research project resulting in an exhibit script that reflects a contemporary museological issue through the display of artworks or artifacts.

ARTH 590 Art Historiography and Methodology

Semester course; 3 lecture hours. 3 credits. Basic methodology for beginning art history graduate students. An examination of the traditional research methods of the art historical discipline, geared to familiarize students with standards in research and scholarship.

ARTH 591 Topics in Advanced Art and Architectural History

Semester course; variable hours. 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of instructor. An in-depth study of a particular aspect of the art and architecture of both Old and New World cultures. Course consists exclusively of extended off-campus trips to sites and collections throughout the United States and abroad. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 593 Advanced Museum Internship

Semester course; 9 to 18 studio hours. 3 to 6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of instructor, chair of the graduate committee and/or chair of the Department of Art History. Advanced fieldwork in a local, regional or national museum.

ARTH 602 Native American Art and Architecture of the Southwest United States

Semester course; 3 lecture hours. 3 credits. A study of the major prehistoric and historic native cultures of the Southwest, considered in terms of the characteristics that distinguish them from each other and that show continuity to modern forms. Emphasis is placed on use of modern Pueblo and non-Pueblo art forms as models for interpreting prehistoric forms of the Anasazi, Hohokam, Mogollon, Navajo and related cultures.

ARTH 691 Topics Concerning the Yoruba Presence in the Americas

Semester course; 3 lecture hours. 3 credits. May be repeated. An examination of Yoruba-inspired cultural and artistic traditions in North and South America and the Caribbean. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 699 Museum Project

Semester course; 3-6 credits. Prerequisite: Permission of departmental graduate committee and museum studies program. The practical application of museological issues, concepts or theories in exhibit curation, education program development, exhibit or program evaluation, collections planning, or policy analysis. A written account of the museological significance of the project is required.

ARTH 714 Seminar in Pre-Columbian Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of pre-Columbian art in the Mesoamerican and Andean regions.

ARTH 752 Art and Architecture of Nigeria

Semester course; 3 lecture hours. 3 credits. A study of the culture and traditional art forms of Nigeria, from around 500 B.C. to present, including architecture, sculptural works in wood, stone, ivory and metal, royal attire, jewelry and weaponry. Special emphasis will be placed upon the art of the Yoruba and Benin bronzes.

ARTH 759 Seminar in Aesthetics, Theory and Criticism of Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. An advanced, detailed study of selected topics of aesthetics, art theory and criticism in a seminar situation. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 761 Seminar in Latin American Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of Renaissance art in the Caribbean, Mexico, Central and South America.

ARTH 762 Seminar in Latin American 17th- and 18th-century Art and Architecture

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of Baroque and Rococo art and architecture in the Caribbean, Mexico, Central and South America.

ARTH 780 Aspects in Christian Iconography

Semester course; 3 lecture hours. 3 credits. Seminar: the study of meaning in the visual arts of Europe from the Middle Ages to the Neoclassical period. Students will analyze special themes of a Christian or Classical derivation and study major cultural shifts within a broader historical perspective.

ARTH 781 Aspects of Buddhist Iconography

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Seminar: research into the origins and expansion of Buddhist art in Asia.

ARTH 782 Aspects of Hindu Iconography

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Seminar focusing on research into the origins and expansion of Brahmanical Hindu art in Asia.

ARTH 789 Problems in Advanced Art and Architectural History

Semester course; 3 lecture hours. 3 credits. May be repeated. Seminar for scholarly research and discussion of specific issues.

ARTH 791 Topics in Early Modern Art

Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth investigation of American and/or European art and architecture of the early 20th century. See the Schedule of Classes for specific topics to be offered each semester.

ARTH 797 Directed Research Project

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. Prerequisite: Permission of instructor, coordinator of graduate studies and chair of the department of art history. Advanced individual work on subject to be formulated by student and instructor.

ARTH 799 Thesis

Semester course; 1-6 credits. May be repeated. Prerequisite: Completion of all formal course work, comprehensive examinations, foreign language examination, and approval of the departmental chair of graduate studies and department chair. Preparation of a thesis based on independent research.

ARTH 899 Dissertation Research

Semester course; variable hours. Variable credit. May be repeated. A minimum of 6 semester hours. Prerequisite: Completion of all course work and foreign language requirements; students must have been granted Ph.D. candidacy. Preparation of a dissertation based on independent research.

Arts(ARTS)

Unless otherwise indicated, courses must be taken in numerical sequence.

ARTS 001 Open Studio Workshop

Semester course; hours to be arranged. No credit.

ARTS 190 Advanced Workshop, Drawing

Semester course; 1 lecture and 6 studio hours. 3 credits. Must be taken concurrently with ARTS 191 and 192. Special summer workshop in drawing for the freshman applicant whose work shows potential worthy of consideration for advanced placement in September. Students are admitted only by invitation of the dean of the School of the Arts.

ARTS 191 Advanced Workshop, Design

Semester course; 1 lecture and 9 studio hours. 4 credits. Must be taken concurrently with ARTS 190 and 192. Special summer workshop in design for the freshman applicant whose work shows potential worthy of consideration for advanced placement in September. Students are admitted only by invitation of the dean of the School of the Arts.

ARTS 192 Advanced Workshop, Art History

Semester course; 2 lecture hours. 2 credits. Must be taken concurrently with ARTS 190 and 191. Special summer workshop in art history for the freshman applicant whose work shows potential worthy of consideration for advanced placement in September. Students are admitted only by invitation of the dean of the School of the Arts.

ARTS 370, 371 Topics in Art

Semester courses; 3 lecture or 9 studio hours (or combinations thereof). 3, 3 credits. An in-depth study of a selected topic in art. See the Schedule of Classes for specific topics to be offered each semester.

ARTS 392 and 492 Independent Study

Semester courses; 3-18 studio hours. 1-6 credits. Prerequisites: Consent of department head and instructor. The student must be enrolled in a regularly scheduled 300-level studio course. Offered to School of the Arts majors only. This course will be limited to those few students who have demonstrated an unusual level of ability and intense commitment to a particular area.

ARTS 430 Guided Study Afield

1-9 credits. Prerequisite: Permission of instructor required. Designed to enhance the student's knowledge by providing first-hand experience with the most significant contribution of aesthetic import within the geographic areas traveled.

ARTS 592, 692 Individual Projects/Fieldwork

Semester courses; 1-6 credits. By appointment with director of graduate studies after approval by department chair. (Obtain individual research project form from the dean's office prior to enrollment.) Individual work for graduate students.

ARTS 601-602 Seminar in Art

Continuous courses; 3-3 credits. Discussion and research in the visual arts providing experience and involvement in the various studio areas for students not concentrating in these areas.

ARTS 690 Methods of Art Research

Semester course; 2 credits. Review of selected research methods relevant to the composition of a thesis in the student's master's degree area. Preparation of a proto-thesis concludes course work.

ARTS 705, 706 Research in the Arts

Semester courses; 3, 6 credits. By appointment with director of graduate studies after approval by department chair. (Obtain individual research project form from the dean's office prior to enrollment.) Individual research for graduate students.

Communication Arts and Design(CARD)

CARD 191 Studio Topics in Communication Arts and Design

Semester course; 3-9 studio hours. 1-3 credits. May be repeated with different topics for a maximum of 9 credits. Open to nonmajors. Topical studio focusing on visual exploration and the creation of expressive imagery in conjunction with functional communications. See the Schedule of Classes for specific topics to be offered.
Effective Fall 2006 See GDES 191 Studio Topics in Design

CARD 192 Managing Your Machine

Semester course; 5 lecture/laboratory hours. 1 credit. Prerequisite: Successful completion of the Art Foundation Program. A design foundation workshop that emphasizes microprocessor hardware operations, software procedures and workflow methods necessary for contemporary communication design practice.
Effective Fall 2006 See GDES 192 Managing Your Machine

CARD 193 Visual Thinking

Semester course; 5 lecture/laboratory hours. 1 credit. Prerequisite: successful completion of the Art Foundation Program. A design foundation workshop that emphasizes the observing, documenting and inventing 3-dimensional structure, form, space, and function through the use of hand drawing techniques.
Effective Fall 2006 See GDES 193 Visual Thinking

CARD 194 Image Capturing and Editing

Semester course; 5 lecture/laboratory hours. 1 credit. Prerequisite: successful completion of the Art Foundation Program. A design foundation workshop that emphasizes the capturing, editing and printing of digital images.
Effective Fall 2006 See GDES 194 Image Capturing and Editing

CARD 195 Graphic Representation

Semester course; 5 lecture/laboratory hours. 1 credit. A design foundation workshop that emphasizes the generating, translation and rendering of digital images.
Effective Fall 2006 See GDES 195 Graphic Representation

CARD 196 Type Technology and Application

Semester course; 5 lecture/laboratory hours. 1 credit. A design foundation workshop that emphasizes the management and applications of type and fonts.
Effective Fall 2006 See GDES 196 Type Technology and Application

CARD 197 Output Technology and Production

Semester course; 5 lecture/laboratory hours. 1 credit. A design foundation workshop that emphasizes the use of tools, processes and techniques for print reproduction.
Effective Fall 2006 See GDES 197 Output Technology and Application

CARD 200 Visual Studies: Drawing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of the Art Foundation Program. A course in drawing from direct observation of specific references: visual analysis, surface light and color, structure and context. Various painting and drawing media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments.
Effective Fall 2006 See COAR 200 Visual Studies: Drawing

CARD 203 Visual Studies: Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of the Art Foundation Program. A course in which an understanding of the relationship between form and communication is developed. The student will develop an awareness and appreciation for visual imagery as a tool for the transmission of information and ideas.
Effective Fall 2006 See COAR 210 Visual Studies: Design

CARD 205 Design: Methods and Processes

Semester course; 2 lecture and 3 studio hours. 3 credits. An in-depth investigation of the theoretical aspects of the design process within the context of designing effective visual communications.
Effective Fall 2006 See GDES 205 Design Methods and Processes

CARD 206 Drawing Studies: The Figure Observed

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of the Art Foundation Program. Students will study and explore how to draw from direct observation using the figure as the primary means to understand proportion, volume and spatial relationships. This class will include skeletal structure, basic anatomy and physical aspects of the figure. Various drawing and painting media will be explored. Specific assignments will be informed by the reference and use of the figure in the history of art and contemporary developments.
Effective Fall 2006 See COAR 201 Drawing Studies: The Figure Observed

CARD 207 Introduction to Computer Techniques

Semester course; 2 lecture and 3 studio hours. 3 credits. Required course for illustration emphasis only. An introductory workshop in microprocessor hardware operations, software procedures and Internet communication necessary for contemporary communication arts and design practice.
Effective Fall 2006 See COAR 230 Introduction to Computer Techniques

CARD 208 Basic Communication Arts Software

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of Art Foundation Program. A course in basic hardware operation and software necessary for contemporary communication arts practice. This course explores the differences between vector (mathematical)- and raster (grid/pixel)-based programs and how different programs are interrelated. Students will learn the basics of file size, color modes and file sharing.
Effective Fall 2006 See KINE 208 Introduction to Computer Techniques

CARD 210 Communication Design Visual Fundamentals

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: Successful completion of Art Foundation Program. Required for communication design emphasis. A course in which basic visual and cognitive organizational processes for the practice of communication arts and design are presented through lectures and demonstrated through studio exercises. The course includes visual perception and organization, visual problem-solving techniques and visual ideation.
Effective Fall 2006 See GDES 210 Communication Design Visual Fundamentals

CARD 211 Typography I

Semester course; 2 lecture and 3 studio hours. 3 credits. An introduction to communication problem solving through the visual medium of language The fundamentals of typography and typographic design are explored in experimental and practical projects.
Effective Fall 2006 See GDES 211 Typography I

CARD 212 Design Form and Communication

Semester course; 2 lecture and 3 studio hours or 4 lecture and 6 studio hours. 3 credits for Richmond; 6 credits for VCUQ. The relationship of form and communication in graphic design is explored through theoretical and applied projects. The impact of typography and imagery and their syntactic relations upon audience and content is stressed.
Effective Fall 2006 See GDES 212 Design Form and Communication

CARD 213 Intermediate Typography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 211. An intermediate exploration of typography as an expressive and functional communication vehicle. Emphasis is placed on defining effective design criteria to meet the reader's needs, the communicator's intent and the designer's formal sensibilities.
Effective Fall 2006 See GDES 213 Intermediate Typography

CARD 214 Imaging I: Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of the Art Foundation Program. For sophomore students in the Communication Design Program. CARD 214 is a studio course focusing on the use of digital imaging techniques for communication purposes. The processes and techniques for making and working with digital images are explored. Cannot be taken for credit with CARD 331.
Effective Fall 2006 See GDES 214 Imaging I

CARD 215 Fundamentals of Typography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of the Art Foundation Program. An introduction to the study of typography as used in communication arts. Course will include the study of hand-drawn and digital letterforms and their context.
Effective Fall 2006 See COAR 211 Fundamentals of Typography

CARD 216 Imaging II: Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 214. For sophomore students in the Communication Design Program. CARD 216 is a studio course focusing on the creation of visual images for communication purposes. The processes and media for making visual images and the limits of visual literacy are explored.
Effective Fall 2006 See GDES 216 Imaging II

CARD 224 Drawing Studies: The Figure in Context

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 206. A course in drawing from direct observation using the figure as the primary means to understand proportion, volume and spatial relationships. Specific problems will include the figure as a dynamic element in different lighting, spatial and conceptual contexts. Various drawing and painting media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments.
Effective Fall 2006 See COAR 202 Drawing Studies: The Figure in Context

CARD 233 Media Arts Survey

Semester course; 3 lecture hours. 3 credits. A historical overview of contemporary media art to include video art, sound art, the Internet and other technology-based art movements.
Effective Fall 2006 See KINE 233 Media Arts Survey

CARD 234 Introduction to Animation

Semester course; 2 lecture and 3 studio hours. 3 credits. Corequisite: CARD 239 Media Presentation. An introduction to the techniques and principles of animation as frame-by-frame sequential media, covering pre-production methods particular to animation, and a survey of historical techniques with an emphasis in viewing and responding to animated work.
Effective Fall 2006 See KINE 234 Introduction to Animation

CARD 235 Electronic Animation I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 208, CARD 234 and CARD 239. An introduction to various video and electronic animation techniques.
Effective Fall 2006 See KINE 235 Electronic Animation I

CARD 236 Introduction to Video

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 208 and CARD 239. A study of the processes and equipment necessary for producing and editing work on videotape.
Effective Fall 2006 < p > See KINE 236 Introduction to Video. < /p >

CARD 237 Sound Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 208 and CARD 239. The basic theory and production of media-based sound.
Effective Fall 2006 See KINE 237 Sound Communication

CARD 240 Basic Communication Arts Software

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of the Art Foundation Program. A course in basic hardware operation and software necessary for contemporary communication arts practice. This course explores the differences between vector (grid/pixel) and raster (mathematical) -based programs and how different programs are interrelated. Students will learn the basics of file size, color modes and file sharing.
Effective Fall 2006 See COAR 231 Basic Communication Arts Software

CARD 252 History of Visual Communications I

Semester course; 3 lecture hours. 3 credits. Required course. An investigation of contemporary visual communication concepts, media and images, and their role in contemporary society.
Effective Fall 2006 See GDES 252 History of Visual Communication

CARD 253 History of Visual Communications II

Semester course; 3 lecture hours. 3 credits. Required course. An historical overview of the development of visual communications as specifically defined by technological advancements and media concerns.
Effective Fall 2006 < p > See COAR 253. < /p >

CARD 291 Studio Topics in Communication Arts and Design

Semester course; 3-9 studio hours. 1-3 credits. May be repeated with different topics for a maximum of 9 credits. Open only to majors in the School of the Arts. Topical studio focusing on visual exploration and the creation of expressive imagery in conjunction with functional communications. See Schedule of Classes for specific topics to be offered.
Effective Fall 2006 See GDES 291 Studio Topics in Design

CARD 300 Creative Strategies

Semester course; 2 lecture and 3 studio hours. 3 credits. A course in which alternative creative communication problem solving strategies are investigated.
Effective Fall 2006 See GDES 300 Creative Strategies

CARD 306 Anatomy for Medical Illustration

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 206. An advanced investigation of the human organ systems. In addition to assigned readings, students will execute a series of anatomical drawings.
Effective Fall 2006 See COAR 340 Anatomy for Medical Illustration

CARD 308 Web Page Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 208 or CARD 209 or permission of instructor. A course developing the design of Web sites. Emphasis is placed on the visual design, navigation, development, communication and authoring of Web sites.
Effective Fall 2006 See GDES 308 Web Page Design or COAR 333 Web Page Design or KINE 308 Web Page Design

CARD 310 Communication Design: Publications

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: CARD 212. Pre- or corequisite: CARD 312. Required for communication design emphasis. An introduction to the design process and applied realization of print based publications. It considers the form and communication of the printed page from the tradition of print to the organizational principles outside that tradition through lectures, demonstrations and problem solving.
Effective Fall 2006 See GDES 310 Graphic Design: Publications

CARD 311 Communication Design: Interactive Design

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: CARD 310. Prerequisite: CARD 313 for students attending VCU School of the Arts in Qatar only. Pre- or corequisite: CARD 412. Required for communication design majors. An examination of the conceptual and technical issues involved in the design and production of interactive documents. The course addresses the possibilities and limitations of computer generated images, sound and digital video as they relate to visual communication problem solving.
Effective Fall 2006 See GDES 311 Graphic Design: Interactive Design

CARD 312 Typography II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 211. Corequisite: CARD 310. An intermediate exploration of typography as an expressive and functional communication vehicle. Emphasis is placed on defining effective design criteria to meet the reader's needs, and the communicator's intent, and the designer's formal sensibilities.
Effective Fall 2006 See GDES 312 Typography II

CARD 315 Time-based Media

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Completion of the CARD sophomore program. Required of the Communication Arts and Design students at the VCU School of the Arts in Qatar. A fundamentals course that introduces the element of time as a design component and surveys the potential applications for motion in visual communication. The intent is to establish a working knowledge of software relevant to both CARD 415 Communication Design: Motion Graphics and CARD 311 Communication Design: Interactive Design. This course establishes the foundation principles for both vector and raster time-based software.
Effective Fall 2006 See GDES 315 Time-based Media

CARD 321 Illustration: Drawing and Painting

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 224. Explores and addresses formal, conceptual and technical considerations and issues involved in the use of drawing and painting. Various drawing and painting media will be explored.
Effective Fall 2006 See COAR 300 Illustration: Drawing and Painting

CARD 322 Illustration Media and Techniques II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 321. This course is an elective for communication arts emphasis. A course exploring various mixed media techniques, including both two- and three-dimensional approaches to illustrative problems.
Effective Fall 2006 See COAR 304 Illustration Media and Techniques

CARD 323 Figure in Illustration I

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisite: CARD 206 and CARD 224. Required for illustration emphasis. An introduction to the visual representation of the human form as it applies to illustration.
Effective Fall 2006 See COAR 305 Figure in Illustration I

CARD 324 Figure in Illustration II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 323. Required: Communication Arts Program illustration emphasis. An advanced course investigating visually expressive modification of the human form as it applies to illustration.
Effective Fall 2006 See COAR 306 Figure in Illustration II

CARD 325 Color Theory and Practice

Semester course; 2 lecture and 3 studio hours. 3 credits. Required for illustration emphasis. Prerequisite: completion of Art Foundation Program. An intermediate course in the application of color theory to specific illustrative problems. A number of color theories, both historical and contemporary, will be studied and applied. This course is an elective for communication arts emphasis.
Effective Fall 2006 See COAR 303 Color Theory and Practice

CARD 326 Concept Drawing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 224. Explores the use of drawing as a tool to communicate concepts. Various painting and drawing media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments.
Effective Fall 2006 See COAR 320 Concept Drawing

CARD 327 Digital Drawing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 208. An intermediate course exploring the use of computer and peripheral devices in the creation of raster (grid/pixel)- and vector (mathematical)-based drawing.
Effective Fall 2006 See COAR 332 Digital Drawing

CARD 328 Scientific Illustration I

Semester course; 2 lecture and 3 studio hours. 3 credits. Corequisite: CARD 321. An introductory course in the development of accurate representational imagery for recording scientific observations and ideas.
Effective Fall 2006 < p > See COAR 328. < /p >

CARD 329 Scientific Illustration II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 328. An advanced course in the development and creation of accurate documentation and representation of scientific information and imagery including plant taxonomy, insect morphology, and physiological and pathological processes.
Effective Fall 2006 See COAR 441 Scientific Illustration II

CARD 330/IDES 330/FASH 330 The Business of Design

Semester course; 3 lecture hours. 3 credits. This course introduces basic global economics and general design business concepts such as the free enterprise system, legal forms of business and financial considerations. It also surveys business and management practices such as planning, decision making, communication, global ethics, marketing, human resources, finance and entrepreneurial skills needed to open a design business.
Effective Fall 2006 See GDES 330/IDES 330/FASH 330 The Business of Design

CARD 331 Photographic Principles in Visual Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 208. A studio course that explores the use of the camera, from pinhole photography to digital imaging, as a tool in visual communications.
Effective Fall 2006 See COAR 331 Photographic Principles in Visual Communications

CARD 336 Video I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 201. Required for communication arts, kinetic imaging emphasis. A comprehensive course in video communication nonnarrative strategies and documentary formats.
Effective Fall 2006 See KINE 336 Video I

CARD 338 Computer Graphics II: 3-D Modeling

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 208 or permission of instructor. An introduction into the use of the computer as a tool for modeling and rendering 3-D objects.
Effective Fall 2006 See KINE 338 Computer Graphics II: 3-D Modeling

CARD 341 Art Direction I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 211 and 228. An introduction to the integrated activities of strategy, conceptual development and design. This course is an elective for communication design emphasis.
Effective Fall 2006 See GDES 341 Art Direction I or COAR 312 Art Direction

CARD 342 Art Direction II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 341. Concept, layout and design of a corporate advertising campaign based on the evaluation of research, market analysis and planning. This course is an elective for communication design emphasis.
Effective Fall 2006 See COAR 313 Art Direction II

CARD 343 Advertising Concepts I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 212. A course focusing on creative thinking and the development of concepts and ideas in problems of art direction. This course is an elective for communication design emphasis.
Effective Fall 2006 See COAR 314 Advertising Concepts I

CARD 345 Print I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of sophomore CD program. An introduction to the design process and applied realizations of print-based materials and outcomes. Addresses the form and communication of the printed page from the tradition of print to the organizational principles outside that tradition. Objectives accomplished through lectures, demonstrations and problem solving.
Effective Fall 2006 See GDES 345 Print I

CARD 346 Sequential I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of sophomore CD program. Studio course that introduces the conceptual and technical issues involved in the design and production of sequential documents and time-based compositions. Addresses the possibilities and limitations of the integration of word, image, video and sound as they relate to problem-solving in visual communication.
Effective Fall 2006 See GDES 346.

CARD 347 Interaction I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of sophomore CD program. An introduction to the conceptual and technical issues involved in the design and production of interactive documents and environments. Addresses the possibilities and limitations of computer-generated images, sound and digital video as they relate to problem solving in visual communication.
Effective Fall 2006 See GDES 347.

CARD 348 Type and Image

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 211 or CARD 215. An advanced course that explores graphic design as a means to express and communicate ideas. Assignments will incorporate applicable references to the history of art and contemporary developments.
Effective Fall 2006 See COAR 311 Type and Image

CARD 349 Drawing Studies: The Figure (Intermediate)

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 206 or junior standing in VCU Arts. May be repeated for up to 12 credits. A course in drawing from direct observation at the intermediate level using the figure as the primary means to understand proportion, volume and spatial relationships. Various drawing and painting media will be explored.
Effective Fall 2006 See COAR 301 Drawing Studies: The Figure (Intermediate)

CARD 351 Origins of Visual Communications

Semester course; 3 lecture hours. 3 credits. A history of visual communications and design from prehistoric times to the 20th century.
Effective Fall 2006 See COAR 351 Origins of Visual Communications

CARD 352 Print Media

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Junior standing in VCU Arts or permission of the instructor. An intermediate course in the use of printing processes and techniques to develop communicative imagery. Assignments will incorporate applicable references to the history of art and contemporary developments.
Effective Fall 2006 See COAR 302 Print Media

CARD 354 Theoretical and Philosophical Aspects of Contemporary Communication Arts and Design

Semester course; 3 lecture hours. 3 credits. A study of current theoretical and philosophical issues having an impact on the understanding of communication arts and design.
Effective Fall 2006 See COAR 354 Theoretical and Philosophical Aspects of Contemporary Communication Arts and Design

CARD 356 Studio Management

Semester course; 3 lecture hours. 3 credits. A study of business and management factors that relate to creative design. Topics include marketing, structure and organization; financial factors; ethical and legal aspects; and management of design, illustration and photography studios.
Effective Fall 2006 See GDES 356 Studio Management

CARD 357 Critical Issues in Media

Semester course; 3 lecture hours. 3 credits. Topics, theory and genre affecting media and time-based mediums are explored through critical discourse, readings, screenings and lectures.
Effective Fall 2006 See KINE 357 Critical Issues in the Media

CARD 358 Business of Communication Arts

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing in Communication Arts. The study of business management with an emphasis on ethics and the standards of fair practice including financial and contractual guidelines.
Effective Fall 2006 See COAR 450 Business of Communication Arts

CARD 365 Print II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 345 or permission of instructor. An advanced studio course devoted to the study of systematic and methodological approaches to the design process and applied realization of print-based materials and outcomes. Emphasizes rigorous objective and experimental research methods in approaches to various professional situations. Objectives accomplished through lectures, demonstrations and team-based approaches to problem solving.
Effective Fall 2006 See GDES 365 Print II

CARD 366 Sequential II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 346 or permission of instructor. A studio course devoted to the design and production of advanced projects in sequential design, with focus on research, problem definition and team-based approaches to problem solving.
Effective Fall 2006 See GDES 366 Sequential II

CARD 367 Interaction II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 347 or permission of instructor. A studio course devoted to the design and production of advanced projects in interaction design and experience design with focus on research, problem definition and team-based approaches to problem solving.
Effective Fall 2006 See GDES 367 Interaction II

CARD 370/FASH 370/IDES 370 Design History: 20th and 21st Centuries

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTF 105-106. Study of the major theories and styles on communication arts, fashion and interior environments of the 20th and 21st centuries. Contemporary analysis of cultural conditions and the manner in which designers respond to those conditions.
Effective Fall 2006 See GDES 370/FASH 370/IDES 370.

CARD 391 Topics in Design

Semester course; variable hours. 1-3 credits per semester. May be repeated for a maximum of 9 credits. Topical lectures in design issues and visual communications.
Effective Fall 2006 See GDES 391 Lecture Topics in Design or COAR 391 Communication Arts Topics

CARD 392 Research/Individual Study

Semester course; 1-2 lecture and 3-6 studio hours. 2-4 credits. May be repeated for credit. The structuring, research, execution and presentation of an independent project in visual communications under the direction of a faculty adviser. The student will be encouraged to become a self-generating problem seeker and solver with the ability to carry out self-stated goals.
Effective Fall 2006 See GDES 392/KINE 392/COAR 392.

CARD 403 Senior Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Senior status in Communication Arts. To be taken in the last semester of the senior year. Critical analysis and development of the student's exit portfolio with emphasis on strengthening focus and concept inherent in the body of work.
Effective Fall 2006 See KINE 403 Senior Studio or COAR 460 Senior Studio

CARD 407 Senior Project

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 321 and CARD 326; senior status in Communication Arts. An advanced course in the conceptualization, execution, realization and documentation of a portfolio project. Students will be required to create and structure a major project that will develop and test their conceptual, contextual and technical abilities. Project work will be exhibited, documented or printed. Various drawing, painting and mixed media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments.
Effective Fall 2006 See GDES 407 Senior Project or COAR 461 Senior Project

CARD 410 Communication Design: Systems in Design

Semester course; 4 lecture and 6 studio hours. 6 credits. Pre- or corequisite: CARD 312. The study of systematic and methodological approaches to communication design through the solving of complex problems in visual communication. Emphasis is placed on objective process and research in approaches to various professional situations.
Effective Fall 2006 See GDES 410 Communication Design: Systems in Design

CARD 411 Communication Design: Design Studio

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: CARD 410. A course in which project situations of professional visual communication offices are approached in an educational context. Problems, which represent current visual communication problems, are presented.
Effective Fall 2006 See GDES 411 Communication Design: Design Studio

CARD 412 Typographics III

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 310 and 312. Required: Communication Design Program. Advanced problems in typographic design with emphasis upon the development of a personal creative approach to form and communication. Writing intensive.
Effective Fall 2006 See GDES 412 Typographics III

CARD 413 Package Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 311 and 312. Theoretical and studio investigation of three-dimensional structural principals as they relate to the area of packaging, exhibition and environmental design.
Effective Fall 2006 See GDES 413 Package Design

CARD 414 Exhibition and Environmental Graphic Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 310 and 312. Seniors have preference. Study of the presentation of information in large-scale, three-dimensional formats. Exploration of exhibition and environmental design, including developing imagery and typography, understanding the use of "wayfinding" (identification, interpretation and orientation) and human factors, communicating of programmed content.
Effective Fall 2006 See GDES 414 Exhibition and Environmental Graphic Design

CARD 415 Communication Design: Motion Graphics

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisites: CARD 310 and CARD 315. Required for Communication Arts and Design students at the VCU School of the Arts in Qatar. An exploration of time and motion as it applies to visual communication in non-interactive linear narratives. Examines the basic principles of broadcast and film and covers the integration of motion graphics within these formats.
Effective Fall 2006 See GDES 415 Communication Design: Motion Graphics

CARD 416 Motivational Graphics

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 310 and 312. Study in the development of visual communication performance criteria and practical strategies that influence audience attitudes and behavior.
Effective Fall 2006 See GDES 416 Motivational Graphics

CARD 417 Interdisciplinary Team Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 310 and 312. Advanced projects in visual communication in which student design teams solve complex problems requiring collaboration.
Effective Fall 2006 See GDES 417 Interdisciplinary Team Design

CARD 418 Design Center: Print Media

Semester course; 2 lecture and 3 studio hours. 3 credits. Course may be repeated for credit. Prerequisites: CARD 310 and 312, and portfolio review by faculty. A professional studio to give students practical experience working with faculty on design projects for the university and nonprofit community organizations.
Effective Fall 2006 See GDES 418 Design Center: Print Media

CARD 419 Electronic Imaging

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 311, CARD 321 or CARD 338. An advanced exploration into the use of the computer and other electronic peripheral devices in the creation of expressive imagery and functional communications.
Effective Fall 2006 See GDES 419 Electronic Imaging

CARD 420 Sequential Imaging

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Junior standing in Communication Arts. Sequential imagery as applied to books, graphic novel and film storyboarding. Various painting and drawing media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments.
Effective Fall 2006 See COAR 321 Sequential Imaging

CARD 421 Illustration for Business Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 322 and 323. Required for illustration emphasis. An advanced course developing illustrations appropriate for business communications.
Effective Fall 2006 See COAR 423 Illustration for Business Communications

CARD 422 Design Center: Internet Media

Semester course; 2 lecture and 3 studio hours. 3 credits. Course may be repeated for a total of 6 credits. Prerequisites: CARD 308, 311 and 412, and portfolio review by faculty. A professional studio to give students practical experience working under faculty guidance on design projects for university clients and nonprofit community organizations.
Effective Fall 2006 See GDES 422 Design Center: Internet Media

CARD 423 Editorial Illustration II

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisites: CARD 321 and 311. An advanced course developing the student's skill at interpreting an author's manuscript. The major emphasis is given to illustrations appearing in books and magazines.
Effective Fall 2006 See COAR 422 Editorial Illustration II

CARD 424 Graphic Essay

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: English 200, CARD 321 and CARD 326. An advanced course that explores the relationship between text and image, and their potential as tools to enable us to create and communicate effectively. Assignments will incorporate applicable references to the history of art and literature.
Effective Fall 2006 See COAR 420 Graphic Essay

CARD 425 Experimental Illustration

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisite: CARD 321. An advanced course encouraging the student to discover unusual techniques and to develop innovative solutions. The course stresses experimentation with novel media and surfaces.
Effective Fall 2006 See COAR 424 Experimental Illustration

CARD 427 Imagery for Children

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: CARD 322 and CARD 324. An advanced course developing both fiction and nonfiction illustrations intended for the preschool and elementary school children's publishing market. Elective for communication arts emphasis.
Effective Fall 2006 See COAR 421 Imagery for Children

CARD 429 Image and Movement

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 327 or 6 credits in computer drawing, or permission of instructor. To learn and understand the use of 3-dimensional software as a tool to explore the relationships among image, object and movement. Assignments will incorporate applicable references to contemporary developments.
Effective Fall 2006 See COAR 432 Image and Movement

CARD 430 Drawing Studies: The Figure (Advanced)

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 347 or permission of instructor. May be repeated for up to 12 credits. Drawing from direct observation at an advanced level using the figure as the primary means to understand proportion, volume and spatial relationships. Various drawing and painting media will be explored.
Effective Fall 2006 See COAR 401 Drawing Studies: The Figure (Advanced)

CARD 434 Electronic Animation II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 334. Students will work with advanced techniques and have the opportunity to design and produce their own projects. Studio elective for communication arts emphasis.
Effective Fall 2006 See KINE 434 Electronic Animation II

CARD 436 Video II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 336. Required for communication arts, program kinetic imaging emphasis. A comprehensive course in video communication exploring narrative strategies and form-content relationships.
Effective Fall 2006 See KINE 436 Video II

CARD 438 Computer Graphics III: 3-D Animation

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Prerequisite: CARD 338. Advance study of computer modeling and the introduction of 3-D animation.
Effective Fall 2006 See KINE 438 Computer Graphics III: 3-D Animation

CARD 439 Video III

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Prerequisite: CARD 436. An advanced course focusing on short subject pieces in video.
Effective Fall 2006 See KINE 439 Video III

CARD 440 Projects in Illustration

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Junior standing in VCU Arts and permission of the instructor. An advanced-level course in conceptualization, execution, realization and documentation as realized through a series of projects in illustration. Students will be required to create, acquire and structure projects that will test their conceptual and technical abilities. Project work will be exhibited, documented or printed. Various drawing, painting and mixed media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments.
Effective Fall 2006 See COAR 462 Projects in Illustration

CARD 441 Art Direction III

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 342. An advanced exploration of art direction based on positioning of the corporation that carries over several different channels of communication.
Effective Fall 2006 See COAR 412 Art Direction III

CARD 442 Art Direction IV

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 342. An advanced course in art direction including the development of integrated business advertising plans.
Effective Fall 2006 See COAR 413 Art Direction IV

CARD 443 Advertising Concepts II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 343. An advanced course in art direction focusing on the successful integration of strategy and creativity.
Effective Fall 2006 See COAR 414 Advertising Concepts II

CARD 444 Art Direction for Nonprofit Organizations

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 342. Advanced concept, layout, and design under the delimitations of precise environmental or social agendas and limited budgets.
Effective Fall 2006 See COAR 415 Art Direction for Nonprofit Organizations

CARD 445 Problem Seeking

Semester course; 3 lecture hours. 3 credits. A seminar exploring the nature, scope and implications of defining design objectives in terms of limitations, requirements and potentials of a product's implementation, performance and life cycle.
Effective Fall 2006 See GDES 445 Problem Seeking

CARD 447 Communication Arts Honors Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for up to 12 credits. Prerequisites: Junior standing in Communication Arts, 3.0 GPA and permission of the CA faculty. An advanced course for selected students. Expectations include to work on individual and group projects at a professional level.
Effective Fall 2006 See COAR 463 Communication Arts Honors Studio

CARD 451 Management Aspects of Art Direction

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing in the department. An in-depth analysis of agency management, operations and the function of art direction.
Effective Fall 2006 See COAR 352 Management Aspects of Art Direction

CARD 464 Electronic Animation III

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Prerequisites: CARD 434. An advanced course in animation studies.
Effective Fall 2006 See KINE 464 Electronic Animation III

CARD 470 Senior Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisite: Successful completion of junior CD program. An examination of selected theoretical, historical, aesthetic and social areas of concern to the graphic designer. Scholarly research, critical analysis and discussion are expected.
Effective Fall 2006 See GDES 470 Senior Seminar

CARD 472 Senior Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of junior CD program. Project situations of professional visual communication offices are approached in an educational context. Problems presented are representative of current visual communication needs. Self-initiated problems based on determined need or student interest are emphasized.
Effective Fall 2006 See GDES 472 Senior Studio

CARD 491 Studio Topics in Communication Arts and Design

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for credit. Topical studio focusing on research and experimentation in specialized visual communication media.
Effective Fall 2006 See GDES 491 Studio Topics in Design or KINE 491 Studio Topics or COAR 491 Studio Topics in Communication Arts

CARD 492 Communication Arts and Design Internship

Semester course; 1-3 credits. May be repeated for a maximum of 3 credits. Prerequisites: Completion of junior year and 3.0 GPA in major. Permission of internship coordinator required. Communication arts and design majors only. Supervised pragmatic work experiences. Training is provided under the direction and supervision of qualified professional practitioners.
Effective Fall 2006 See GDES 492 Design Internship or COAR 492 Communication Arts Intership

CARD 567 Visual Interface Design

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisite: Permission of instructor. A course concentrating on the visual design and development of human-computer interface systems. Emphasis is placed on visual design processes and methods in the diverse arena of user interface design.
Effective Fall 2006 See GDES 567 Visual Interface Design

CARD 591 Advanced Studio Topics in Visual Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 6 credits. Prerequisite: permission of instructor. Topical studio focusing on research and experimentation in specialized visual communication media.
Effective Fall 2006 See GDES 591 Advanced Studio Topics in Design

CARD 593 Visual Communications Internship

Semester course; 3 or 6 credits. May be repeated to a maximum of 6 credits. Prerequisite: Permission of chair required. Supervised study in cross-disciplinary visual communications research projects to integrate theory with practice. Training is provided under the direction and supervision of qualified professional practitioners and a faculty adviser.
Effective Fall 2006 See GDES 593

CARD 611 Visual Communications Workshop

Semester course; 18 studio hours. 9 credits. May be repeated. A team-taught studio course focusing on the philosophical, communicative, and aesthetic relationships of visual communications problem solving and the effective articulation of concepts.
Effective Fall 2006 See GDES 611

CARD 621 Visual Communications Seminar

Semester course; 3 lecture hours. 3 credits. May be repeated. A detailed examination of selected theoretical, historical, aesthetic, and social areas of concern to the designer. Scholarly research, critical analysis, and discussion are expected.
Effective Fall 2006 See GDES 621

CARD 631 Visual Communications Teaching Practicum

Semester course; 1 lecture and 6 practicum hours. 3 credits. Prerequisite: Permission of department chair. Observation, instruction, and practice to develop skills in the design, organization, and conduct of courses in visual communications. Explores multiple teaching strategies, student development, learning styles, and evaluation techniques.
Effective Fall 2006 See GDES 631

CARD 692 Visual Communications Research/Individual Study

Semester course; 6 studio hours. 3 credits. May be repeated. The structuring, research, execution, and presentation of an independent project in visual communications under the guidance of a faculty adviser.
Effective Fall 2006 See GDES 692

CARD 697 Directed Research in Visual Communications

Semester course; 12 studio hours. 6 credits. Prerequisites: successful completion of 30 credit hours of graduate study and permission of department chair. Supervised investigation and presentation of selected problems in visual communications.
Effective Fall 2006 See GDES 697

CARD 699 Creative Project

Semester course; 1-6 credits. May be repeated. Prerequisites: successful completion of 30 credit hours of graduate study and permission of department chair. A course based on exploration and testing of original and expressive ideas in visual communications. Executed under the supervision of a graduate adviser and review committee.
Effective Fall 2006 See GDES 699

CARD 799 Thesis

Semester course; 1-6 credits. May be repeated. Prerequisites: successful completion of 30 credit hours of graduate study and permission of department chair. Preparation of a thesis based on carefully planned and executed independent research or study under the supervision of a graduate adviser and thesis committee. Research emphasis must be placed on problems/processes that represent significant study in design.

Communication Arts(COAR)

COAR 200 Visual Studies: Drawing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the Art Foundation Program. A course in drawing from direct observation of specific references: visual analysis, surface light and color, structure, and context. Various painting and drawing media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 200.

COAR 201 Drawing Studies: The Figure Observed

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the Art Foundation Program. Students will study and explore how to draw from direct observation using the figure as the primary means to understand proportion, volume and spatial relationships. Class will include skeletal structure, basic anatomy and physical aspects of the figure. Various drawing and painting media will be explored. Specific assignments will be informed by the reference and use of the figure in the history of art and contemporary developments. Formerly CARD 206.

COAR 202 Drawing Studies: The Figure in Context

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 201. Drawing from direct observation using the figure as the primary means to understand proportion, volume and spatial relationships. Specific problems will include the figure as a dynamic element in different lighting, spatial and conceptual contexts. Various drawing and painting media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 224.

COAR 210 Visual Studies: Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the Art Foundation Program. A course in which an understanding of the relationship between form and communication is developed. The student will develop an awareness and appreciation for visual imagery as a tool for the transmission of information and ideas. Formerly CARD 203.

COAR 211 Fundamentals of Typography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the Art Foundation Program. An introduction to the study of typography as used in communication arts. Course will include the study of hand-drawn and digital letterforms and their context. Formerly CARD 215.

COAR 230 Introduction to Computer Techniques

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the Art of Foundation Program. An introductory workshop in microprocessor hardware operations, software procedures and Internet communication necessary for contemporary communication arts and design practice. Formerly CARD 207.

COAR 231 Basic Communication Arts Software

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the Art Foundation Program. A course in basic hardware operation and software necessary for contemporary communication arts practice. Explores the differences between vector (grid/pixel) and raster (mathematical) -based programs and how different programs are interrelated. Students will learn the basics of file size, color modes and file sharing. Formerly CARD 240.

COAR 253 History of Visual Communications II

Semester course; 3 lecture hours. 3 credits. Prerequisite: Successful completion of the Art Foundation Program. A historical overview of the development of visual communications as specifically defined by technological advancements and media concerns. Formerly CARD 253.

COAR 300 Illustration: Drawing and Painting

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 202. Explores and addresses formal, conceptual and technical considerations and issues involved in the use of drawing and painting. Various drawing and painting media will be explored. Formerly CARD 321.

COAR 301 Drawing Studies: The Figure (Intermediate)

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for up to 12 credits. Prerequisite: COAR 201 or junior standing in VCU Arts. Drawing from direct observation at the intermediate level using the figure as the primary means to understand proportion, volume and spatial relationships. Various drawing and painting media will be explored. Formery CARD 349.

COAR 302 Print Media

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 202. An intermediate course in the use of printing processes and techniques to develop communicative imagery. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 352.

COAR 303 Color Theory and Practice

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 200. An intermediate course in the application of color theory to specific illustrative problems. A number of color theories, both historical and contemporary, will be studied and applied. Formerly CARD 325.

COAR 304 Illustration Media and Techniques

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 200 and 202. Explores various mixed-media techniques, including both two- and three-dimensional approaches to illustrative problems. Formerly CARD 322.

COAR 305 Figure in Illustration I

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisite: COAR 206. An introduction to the visual representation of the human form as it applies to illustration. Formerly CARD 323.

COAR 311 Type and Image

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 211. An advanced course that explores graphic design as a means to express and communicate ideas. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 348.

COAR 312 Art Direction

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 210, 211 and 231. An introduction to the integrated activities of strategy, conceptual development and design. Formerly CARD 341.

COAR 313 Art Direction II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 312. Concept, layout and design of a corporate advertising campaign based on the evaluation of research, market analysis and planning. Formerly CARD 342.

COAR 314 Advertising Concepts I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 312. Focuses on creative thinking and the development of concepts and ideas in problems of art direction. Formerly CARD 343.

COAR 320 Concept Drawing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 202. Explores the use of drawing as a tool to communicate concepts. Various painting and drawing media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 326.

COAR 321 Sequential Imaging

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: junior standing in communication arts. Sequential imagery as applied to books, graphic novel and film storyboarding. Various painting and drawing media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 420.

COAR 331 Photographic Principles in Visual Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 231. A studio course that explores the use of the camera, from pinhole photography to digital imaging, as a tool in visual communications. Formerly CARD 331.

COAR 332 Digital Drawing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 231. An intermediate course exploring the use of computer and peripheral devices in the creation of raster (grid/pixel) and vector (mathematical) -based drawing. Formerly CARD 327.

COAR 333 Web Page Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequistes: Permission of instructor and COAR 231. A course developing the design of Web sites. Emphasis is placed on the visual design, navigation, development, communication and authoring of Web sites. Formerly CARD 308.

COAR 340 Anatomy for Medical Illustration

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 201. An advanced investigation of the human organ systems. In addition to assigned readings, students will execute a series of anatomical drawings. Formerly CARD 306.

COAR 341 Scientific Illustration

Semester course; 2 lecture and 3 studio hours. 3 credits. Corequisite: COAR 202. An introductory course in the development of accurate representational imagery for recording scientific observations and ideas. Formerly CARD 328.

COAR 351 Origins of Visual Communications

Semester course; 3 lecture hours. 3 credits. Prerequisite: successful completion of the Art Foundation program. A history of visual communications and design from prehistoric times to the 20th century. Formerly CARD 351.

COAR 352 Management Aspects of Art Direction

Semester course; 3 lecture hours. 3 credits. Prerequisite: junior standing in communications arts. An in-depth analysis of agency management, operations and the function of art direction. Formerly CARD 451.

COAR 354 Theoretical and Philosophical Aspects of Contemporary Communication Arts and Design

Semester course; 3 lecture hours. 3 credits. A study of current theoretical and philosophical issues having an impact on the understanding of communication arts and design. Formerly CARD 354.

COAR 391 Communication Arts Topics

Semester course; variable hours. 1-3 credits per semester. May be repeated for a maximum of 9 credits. Topical lectures in design issues and visual communications. Formerly CARD 391.

COAR 392 Research/Individual Study

Semester course; 1-2 lecture and 3-6 studio hours. 2-4 credits. May be repeated for credit. Prerequisites: Permission of instructor, approval of faculty adviser and chair. The structuring, research, execution and presentation of an independent project in visual communications under the direction of a faculty adviser. The student will be encouraged to become a self-generating problem seeker and solver with the ability to carry out self-stated goals. Formerly CARD 392.

COAR 401 Drawing Studies: The Figure (Advanced)

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for up to 12 credits. Prerequisite: COAR 301 or permission of instructor. Drawing from direct observation at an advanced level using the figure as the primary means to understand proportion, volume and spatial relationships. Various drawing and painting media will be explored. Formerly CARD 430.

COAR 407 Senior Project

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 300 and 320 and senior status in communication arts. An advanced course in the conceptualization, execution, realization and documentation of a portfolio project. Students will be required to create and structure a major project that will develop and test their conceptual, contextual and technical abilities. Project work will be exhibited, documented or printed. Various drawing, painting and mixed media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 407.

COAR 412 Art Direction III

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 313. An advanced exploration of art direction based on positioning of the corporation that carries over several different channels of communication. Formerly CARD 441.

COAR 413 Art Direction IV

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 313. An advanced course in art direction including the development of integrated business advertising plans. Formerly CARD 442.

COAR 414 Advertising Concepts II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 314. An advanced course in art direction focusing on the successful integration of strategy and creativity. Formerly CARD 443.

COAR 415 Art Direction for Nonprofit Organizations

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 313. Advanced concept, layout and design under the delimitations of precise environmental or social agendas and limited budgets. Formerly CARD 444.

COAR 420 Graphic Essay

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: ENGL 200 and COAR 320. An advanced course that explores the relationship between text and image, and their potential as tools to enable us to create and communicate effectively. Assignments will incorporate applicable references to the history of art and literature. Formerly CARD 424.

COAR 421 Imagery for Children

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 300 and 320. An advanced course developing both fiction and nonfiction illustrations intended for the preschool and elementary school children's publishing market. Formerly CARD 427.

COAR 422 Editorial Illustration II

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisites: COAR 300 and 320. An advanced course developing the student's skill at interpreting an author's manuscript. The major emphasis is given to illustrations appearing in books and magazines. Formerly CARD 423.

COAR 423 Illustration for Business Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 300 and 320. An advanced course developing illustrations appropriate for business communications. Formerly CARD 421.

COAR 424 Experimental Illustration

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisites: COAR 300 and 320. An advanced course encouraging the student to discover unusual techniques and to develop innovative solutions. Stresses experimentation with novel media and surfaces. Formerly CARD 425.

COAR 432 Image and Movement

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 321 or permission of instructor. Learn and understand the use of 3-dimensional software as a tool to explore the relationships among image, object and movement. Assignments will incorporate applicable references to contemporary developments. Formerly CARD 429.

COAR 441 Scientific Illustration II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 341. An advanced course in the development and creation of accurate documentation and representation of scientific information and imagery including plant taxonomy, insect morphology, and physiological and pathological processes. Formerly CARD 329.

COAR 450 Business of Communication Arts

Semester course; 3 lecture hours. 3 credits. Prerequisite: senior standing in communication arts. The study of business management with an emphasis on ethics and the standards of fair practice including financial and contractual guidelines. Formerly CARD 358.

COAR 460 Senior Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Senior status in communications arts. To be taken in the last semester of the senior year. Critical analysis and development of the student's exit portfolio with emphasis on strengthening focus and concept inherent in the body of work. Formerly CARD 403.

COAR 461 Senior Project

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 300 and 320: senior status in communication arts. An advanced course in the conceptualization, execution, realization and documentation of a portfolio project. Students will be required to create and structure a major project that will develop and test their conceptual, contextual and technical abilities. Project work will be exhibited, documented or printed. Various drawing, painting and mixed media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 407.

COAR 462 Projects in Illustration

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: senior standing in communications arts and permission of the instructor. An advanced-level course in conceptualization, execution, realization and documentation as realized through a series of projects in illustration. Students will be required to create, acquire and structure projects that will test their conceptual and technical abilities. Project work will be exhibited, documented or printed. Various drawing, painting and mixed media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 440.

COAR 463 Communication Arts Honors Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for up to 12 credits. Prerequisites: junior standing in communication arts, 3.0 GPA and permission of the CA faculty. An advanced course for selected students. Expectations include to work on individual and group projects at a professional level. Formerly CARD 447.

COAR 491 Studio Topics in Communication Arts

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for credit. Topical studio focusing on research and experimentation in specialized visual communication media. Formerly CARD 491.

COAR 492 Communication Arts Internship

Semester course; 1-3 credits. May be repeated for a maximum of 3 credits. Prerequisites: senior standing, 3.0 GPA or permission of the chair. Supervised pragmatic work experiences. Training is provided under the direction and supervision of qualified professional practitioners. Formerly CARD 492.

Crafts(CRAF)

CRAF 201-202 Metalsmithing

Continuous courses; 2 lecture and 6 studio hours. 4-4 credits. Investigation of metal forming processes such as forging, raising and construction. Research in contemporary and historical metal forms.
Effective Fall 2006 CRAF 201-202 Metalsmithing
Continuous courses; 2 lecture and 6 studio hours. 4-4 credits. Prerequisite: successful completion of the Art Foundation program or permission of instructor. Investigation of metal forming processes such as forging, raising and construction. Research in contemporary and historical metal forms.

CRAF 211-212 Jewelry

Continuous courses; 2 lecture and 6 studio hours. 4-4 credits. Investigation of jewelry making processes such as construction, repousse/chasing, surface embellishment, stone setting and casting. Research in contemporary and historical jewelry forms.
Effective Fall 2006 CRAF 211-212 Jewelry
Continuous courses; 2 lecture and 6 studio hours. 4-4 credits. Prerequisite: successful completion of the Art Foundation program or permission of instructor. Investigation of jewelry making processes such as construction, repousse/chasing, surface embellishment, stone setting and casting. Research in contemporary and historical jewelry forms.

CRAF 221 Woodworking Techniques

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits with permission of department chair. Introduction to techniques of woodworking. Includes the use of hand tools; hand and machine joinery; shaping and carving; finishing; and techniques involving jigs and fixtures. Students participate in studio work.
Effective Fall 2006 CRAF 221 Woodworking Techniques
Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits with permission of department chair. Prerequisite: successful completion of the Art Foundation program or permission of the instructor. Introduction to techniques of woodworking. Includes the use of hand tools; hand and machine joinery; shaping and carving; finishing; and techniques involving jigs and fixtures. Students participate in studio work.

CRAF 241 Ceramics: Handbuilding

Semester course; 2 lecture and 6 studio hours. 4 credits. Basic construction techniques for fabricating ceramic objects. Includes mold-making, slip casting and press-molding as well as the use and application of low-fire slips, underglazes, glazes and the firing of these objects in kilns.
Effective Fall 2006 CRAF 241 Ceramics: Handbuilding
Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: successful completion of Art Foundation program or permission of the instructor. Basic construction techniques for fabricating ceramic objects. Includes mold-making, slip casting and press-molding as well as the use and application of low-fire slips, underglazes, glazes and the firing of these objects in kilns.

CRAF 242 Ceramics: Wheelthrowing

Semester course; 2 lecture and 6 studio hours. 4 credits. Introduction to the use of the potter's wheel. The objective is to develop the skill, dexterity and coordination required to use the wheel as one tool of the ceramic forming process. Includes the properties and uses of high-fire clays and glazes. Students participate in kiln firings.
Effective Fall 2006 CRAF 242 Ceramics: Wheelthrowing
Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: successful completion of the Art Foundation program or permission of the instructor. Introduction to the use of the potter's wheel. The objective is to develop the skill, dexterity and coordination required to use the wheel as one tool of the ceramic forming process. Includes the properties and uses of high-fire clays and glazes. Students participate in kiln firings.

CRAF 251, 252 Introduction to Glassworking

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. An investigation of techniques, tools, equipment, materials involved in hot and cold glassworking processes. First semester covers basic molten-glass furnace techniques such as blowing and casting, mold-making and Pate de Verre (fusing crushed glass in a mold). Second semester explores colored glass fusing, use of enamels and glazes, mold-making for slumped forms and stained glass.
Effective Fall 2006 CRAF 251, 252 Introduction to Glassworking
Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. Prerequisite: successful completion of the Art Foundation program or permission of instructor. An investigation of techniques, tools, equipment, materials involved in hot and cold glassworking processes. First semester covers basic molten-glass furnace techniques such as blowing and casting, mold-making and Pate de Verre (fusing crushed glass in a mold). Second semester explores colored glass fusing, use of enamels and glazes, mold-making for slumped forms and stained glass.

CRAF 261, 262 Beginning Textiles

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. An introduction to basic textile techniques, tools and materials. CRAF 261 introduces tapestry, feltmaking, basketry and related techniques. CRAF 262 focuses on embroidery, silk painting, piecing and quilting, and related techniques. The history and modern application of each technique will be examined through lectures, demonstrations and studio work.
Effective Fall 2006 CRAF 261, 262 Beginning Textiles
Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. Prerequisite: successful completion of the Art Foundation program or permission of instructor. An introduction to basic textile techniques, tools and materials. CRAF 261 introduces tapestry, feltmaking, basketry and related techniques. CRAF 262 focuses on embroidery, silk painting, piecing and quilting, and related techniques. The history and modern application of each technique will be examined through lectures, demonstrations and studio work.

CRAF 282 Orientation to Crafts

Semester course; 1 lecture hour. 1 credit. Discussion of a variety of approaches to study within the craft media, stressing elements of creative activity, which are basic to any involvement in making visually-oriented objects.
Effective Fall 2006 CRAF 282 Orientation to Craft/Material Studies
Semester course; 1 lecture hour. 1 credit. Discussion of a variety of approaches to study within the craft media, stressing elements of creative activity, which are basic to making visually oriented objects.

CRAF 301, 302/401, 402 Advanced Metalsmithing or Jewelry

Semester courses; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. 401 and 402 may be repeated up to a maximum of 12 credits. Prerequisites: CRAF 201-202 or 211-212. This course offers opportunity for specialization and development of techniques.

CRAF 320 Furniture Design

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits. Prerequisite: CRAF 221. The course explores the development of ideas through drawings, mock-ups and the planning and execution of a small furniture object utilizing basic and specialized woodworking techniques.

CRAF 321, 322/421, 422 Advanced Woodworking and Furniture Design

Semester courses; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. 421 and 422 may be repeated for up to a maximum of 12 credits. Prerequisites: CRAF 221 and 320. Advanced design and construction investigation of varied materials and machine processes.

CRAF 341, 342/441, 442 Advanced Ceramics

Semester courses; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. 441 and 442 may be repeated for up to a maximum of 12 credits. Prerequisites: CRAF 241 and 242 are the prerequisites for CRAF 341 and 342. CRAF 341 and 342 are the prerequisites for 441 and 442. Advanced problems in the design and production of functional and nonfunctional ceramic products.

CRAF 351, 352/451, 452 Glassworking

Semester courses; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. CRAF 351, 352, 451 and 452 may be repeated for up to a maximum of 12 credits. Prerequisites: CRAF 251 and 252. Opportunity for further investigation and specialization in glassworking design and technical mastery.

CRAF 361 Intermediate Textiles: Tapestry/Weaving

Semester courses; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. Prerequisites: CRAF 261 and 262, or permission of instructor. An introduction to the floor loom with an emphasis on tapestry weaving. Concentrated studio work in contemporary and traditional loom techniques along with continuing individual investigation of other textile techniques.
Effective Fall 2006 CRAF 261, 262
Semester courses; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. Prerequiste: successful completion of Art Foundation Program or permission of instructor. An introduction to basic textile techniques, tools and materials. CRAF 261 introduces tapestry, feltmaking, basketry and related techniques. CRAF 262 focuses on embroidery, silk painting, piecing and quilting, and related techniques. The history and modern application of each technique will be examined through lectures, demonstrations and studio work.

CRAF 362 Intermediate Textiles: Pattern Weaving

Semester course; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. Prerequisites: CRAF 261 and 262, or permission of instructor. An introduction to the floor loom with an emphasis on pattern weaving. Concentrated studio work in contemporary and traditional loom techniques along with continuing individual investigation of other textile techniques.

CRAF 363, 364 Fabric Design I and II

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. Exploration of pattern as a design concept and the development of technical skills for dye application on fabric. CRAF 363 emphasizes silk painting.

CRAF 367, 368 Tapestry

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. Origins of tapestry forms and execution of techniques.

CRAF 369 Ancient Peruvian Textile Techniques

Semester course; 2 lecture and 6 or 12 studio hours. 4 credits. An examination of textile techniques perfected in ancient Peru and their application to contemporary fiber work. Pre-Columbian cultures will be studied to understand textile development. Course includes student duplication of techniques to better understand "structure" and the production of a personal object(s) utilizing these techniques and information.

CRAF 382 Intermediate Crafts Seminar

Semester course; 1 lecture hour. 1 credit. This course will explore contemporary developments in the field of crafts. The course will utilize essays, periodical articles and exhibition catalogues as a catalyst for discussions involving issues such as tradition and innovation, process and materiality, functionality, decoration, containment, metaphor, figuration and installation.
Effective Fall 2006 CRAF 382 Intermediate Craft/Material Studies Seminar
Semester course; 1 lecture hour. 1 credit. Explores contemporary developments in the field of crafts, utilizing essays, periodical articles and exhibition catalogues as catalysts for discussions involving issues such as tradition and innovation, process and materiality, functionality, decoration, containment, metaphor, figuration, and installation.

CRAF 409 Summer Metal and Jewelry Workshop

Semester course; 3, 6 or 9 studio hours. 1, 2 or 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Exploration of specific metal processes and techniques such as fabrication, forging, forming, casting, enameling and electroforming. See the Schedule of Classes for specific topics to be offered each semester.

CRAF 429 Summer Woodworking Workshop

Semester course; 3, 6 or 9 studio hours. 1, 2 or 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Exploration of specific woodworking processes and techniques such as joinery methods, laminate bending, steambending, etc. See the Schedule of Classes for specific topics to be offered each semester.

CRAF 446 Glaze Technology

Semester course; 3 lecture hours. 3 credits. Development, formulation and application of ceramic glazes. The technology includes high, medium and low firing ranges as well as color and analysis of glaze materials.

CRAF 447 Ceramic Technology: Clay, Claybodies and Slips

Semester course; 3 lecture hours. 3 credits. Study of clay from geological origins to practical application. Course includes development and application of clay bodies in different firing ranges, englobes and slips.

CRAF 448, 449/548, 549 Ceramic Workshop

Semester courses; 9 studio hours. 3, 3 credits. Exploration in specific ceramic techniques such as raku, salt glaze, primitive firing and low temperature glazing.

CRAF 455, 456 Survey of Glass

Semester courses; 3 lecture hours. 3, 3 credits. An examination of significant technological developments in glass from the past to present. First semester: ancient to 16th century. Second semester: 17th century to contemporary. Illustrated lectures.

CRAF 459 Summer Glassworking Workshop

Semester course; 3, 6 or 9 studio hours. 1, 2 or 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Exploration of specific glassworking processes, such as forming molten glass, casting and coldworking techniques. See the Schedule of Classes for specific topics to be offered each semester.

CRAF 461, 462 Advanced Textile Studio

Semester courses; 2 lecture and 6 or 12 studio hours. 4 or 6 credits for each course. Each course may be repeated for a maximum of 12 credits. Prerequisites: CRAF 361 and 362, or permission of instructor. Emphasis on investigation of advanced technical skills along with development of a personal style.

CRAF 463, 464 Advanced Fabric Design

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. Prerequisites: CRAF 363 and 364, or permission of instructor. Development of a personal direction with advance examination of dye applications.

CRAF 482 Senior Seminar

Semester course; 2 lecture hours. 2 credits. Resume and portfolio preparation, promotion of creative work and selling, exhibition opportunities and process, career options, setting up a studio and other subjects appropriate to the artist/craftsperson. Writing intensive.

CRAF 491 Topics in Crafts

Semester course; 1-3 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of instructor. A seminar or workshop on a selected issue or topic in the field of crafts. See the Schedule of Classes for specific topics to be offered each semester.
Effective Fall 2006 CRAF 491 Topics in Craft/Material Studies
Semester course; 1-3 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of instructor. A seminar or workshop on a selected issue or topic in the field of crafts. See the Schedule of Classes for specific topics to be offered each semester.

CRAF 492 Independent Study

Semester course; 1-3 credits. May be repeated for a maximum of 6 credits. Prerequisites: senior standing in the major and permission of the instructor. The student will pursue advanced, individually directed study on a subject to be formulated in writing by the student and instructor.

CRAF 493, 494 Fieldwork

Semester courses; 270 clock hours. 6, 6 credits. Prerequisites: senior standing in the major and permission of department chair. Opportunity for practical work experiences. Senior students are placed in professional organizations that offer supervised work or research experience appropriate to their major interests. Participation requires the approval of both the department chair and field supervisor. Students must work 270 clock hours and maintain a daily log of their experiences. Field supervisor will plan student's work and evaluate performance.

CRAF 547 Ceramic Technology

Semester course; 3 lecture hours. May be repeated. See the Schedule of Classes for specific topics to be offered each semester.

CRAF 591 Special Topics and Practicum

Semester course; 1-3 credits. May be repeated. Prerequisite: Permission of instructor. A topical seminar/workshop offered in a variety of craft subjects or issues not included in the regular curriculum. See the Schedule of Classes for specific topics to be offered each semester.

CRAF 601 Metal or Jewelry

Semester course; 9, 18 or 27 studio hours. 3, 6 or 9 credits. May be repeated. Personal investigation of materials, processes, and attitudes relating to the creative production of metal and/or jewelry forms.

CRAF 621 Furniture Design

Semester course; 9, 18 or 27 studio hours. 3, 6 or 9 credits. May be repeated. Design, research, and experimentation in wood and varied materials, relating to a body of work demonstrating the student's mastery of material.

CRAF 641 Ceramics

Semester course; 9, 18 or 27 studio hours. 3, 6 or 9 credits. May be repeated. Problems in the design and production of functional and nonfunctional ceramic objects as well as study of experimentation in ceramic technology and kiln design.

CRAF 651 Glassworking

Semester course; 9, 18 or 27 studio hours. 3, 6 or 9 credits. May be repeated. Prerequisite: Permission of instructor. Investigation of and experimentation with the ideas, material, and processes relative to the production of glass forms.

CRAF 661 Textiles

Semester course; 9, 18 or 27 studio hours. 3, 6 or 9 credits. May be repeated. Work in contemporary and traditional textile techniques.

CRAF 690 Graduate Seminar

Seminar course; 1 or 3 lecture hours. 1 or 3 credits. May be repeated. Degree requirement for graduate students in the Department of Crafts. A weekly seminar for the purpose of discussing contemporary issues in the arts as they affect the artist-craftsperson.

Dance and Choreography(DANC)

DANC 101-102 Modern Dance Technique I

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. Prerequisite: Dance major or permission of chair. Corequisite: DANZ 101L-102L. Beginning study and training in principles of modern dance technique. Emphasis is on body alignment, spatial patterning, flexibility, strength and kinesthetic awareness.
Effective Fall 2006 DANC 101-102 Modern Dance Technique I
Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. These courses may be repeated for a maximum total of 8 credits on the recommendation of the chair. Prerequisite: Dance major or permission of chair. Corequisite: DANZ 101L-102L. Fundamental study and training in principles of modern dance technique. Emphasis is on body alignment, spatial patterning, flexibility, strength and kinesthetic awareness.

DANC 103-104 Survey of Dance History

Continuous courses; 3 lecture hours. 3-3 credits. First semester: Dance from ritual to the contemporary ballet and the foundations of the Western aesthetic as it relates to dance, and the development of the ballet. Second semester: Western concert dance from the aesthetic dance of the late 1800s to contemporary modern dance. These courses are the first two of a three-course sequence that fulfills one of the general education writing intensive requirements for dance majors.

DANC 105-106 Improvisation

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. An exploration of spontaneous body movement with the purpose of increasing body awareness, movement invention and movement creativity.

DANC 107 Music and Dance Forms

Semester course; 1 lecture and 2 studio hours. 2 credits. Prerequisites: DANC 101 and 105, or permission of instructor. An exploration of the various traditional and nontraditional concepts of music that are used in collaboration with dance. Course includes lecture, reading, listening and movement assignments. Focus will be on the dancer's understanding and use of music through movement analysis and improvisation.

DANC 109, 110/209, 210/309, 310/409, 410 Dance Workshop

Semester courses; 2 studio hours. 1 credit. Prerequisite: Dance major or permission of instructor. Group exploration of techniques related to all areas of dance.

DANC 111-112 Ballet Technique I

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. Beginning study of the principles of ballet technique. Emphasis upon vocabulary terms, body alignment, spatial patterning, flexibility, strength and kinesthetic awareness to move the body in the ballet style.
Effective Fall 2006 DANC 111-112 Ballet Technique I
Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. Prerequisite: Dance major or permission of the instructor. Corequisites: DANZ 111L-112L. These courses may be repeated for a maximum total of 8 credits on the recommendation of the chair. Fundamental study of the principles of ballet technique.

DANC 114, 214, 314, 414 Summer Dance Workshop

Semester courses; variable hours. 1 or 3 credits per semester. May be repeated for credit. Flexible course offerings in dance technique, improvisation, composition, rhythmic training and repertory. See the Schedule of Classes for specific topics to be offered each semester.

DANC 121, 122/AFAM 121, 122 Tap Technique I

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Beginning study and training in the principles of tap technique with emphasis upon style, body alignment, spatial patterning, flexibility, strength and kinesthetic awareness to move the body in the style required for tap dancing.

DANC 126, 127/AFAM 126, 127 African-Caribbean Dance I

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Dance based on the movements and rhythms of Africa and the Caribbean.

DANC 133 Introduction to Ballet Technique I

Semester course; 1 lecture and 2 studio hours. 2 credits. This course may be repeated for a maximum total of 4 credits on the recommendation of the chair. For nonmajors. Introductory study of the principles of ballet technique.

DANC 134 Introduction to Ballet Technique II

Semester course; 1 lecture and 2 studio hours. 2 credits. Prerequisite: DANC 133 or permission of instructor. For nonmajors. This course may be repeated for a maximum total of 4 credits on the recommendation of the chair. Further introductory study of the principles of ballet technique.

DANC 141, 142 Ballroom Dancing

Semester courses; 2 studio hours. 1, 1 credit. A study of basic ballroom dance steps and practice in their performance.

DANC 151, 152/AFAM 151, 152 Jazz Dance Technique I

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Prerequisite: DANC 102 or permission of instructor. Study and training in the principles and concepts of jazz technique. Emphasis on body alignment, flexibility, balance, rhythmic awareness and mastery of isolated movements of body parts. The course includes the exploration of the relationship between jazz music and jazz dance.

DANC 161, 162/261, 262/361, 362/461, 462 Rehearsal and Performance

Semester courses; hours to be arranged. 1-3 credits. Prerequisite: Permission of instructor. Open to nonmajors. Each student is expected to devote a minimum of 50 hours per credit per semester to receive credit. Dance rehearsals and production of work for a major dance concert. Selected sections offered for pass/fail.

DANC 171, 172 T'ai Chi

Semester courses; 1 lecture and 2 studio hours. 2 credits. Study and practice of T'ai Chi, a Chinese exercise form, which is designed to bring one to full potential through balancing, aligning and breathing exercises. The short Yang form, based on Taoist principles, strengthens the body while allowing for deep relaxation to take place. Application of T'ai Chi to creative dance techniques is explored as a springboard for improvisation.

DANC 183, 184 Introduction to Modern Dance Technique

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. For non-dance majors. Experiential introduction to basic movement principles, body alignment and the elements of modern dance.

DANC 201-202 Modern Dance Technique II

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. This course may be repeated for a maximum of 8 credits on the recommendation of the chair. Prerequisite: DANC 102 or permission of instructor. Corequisites: DANZ 201L, 202L. Further study and training in the principles of modern dance technique on a low intermediate-level with the expectation of better coordination of all elements into a sense of dance.

DANC 205-206 Composition

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Prerequisites: DANC 105-106 Improvisation and MHIS 243 Music Appreciation, or permission of instructor. An introduction to the basic elements of choreography.
Effective Fall 2006 DANC 205-206 Composition
Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Prerequisites: DANC 105 and 107, or permission of instructor. An introduction to the basic elements of choreography.

DANC 211-212 Ballet Technique II

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. This course may be repeated for a maximum of 8 credits on the recommendation of the chair. Prerequisite: DANC 112 or permission of instructor. Further training and practice in ballet technique. Emphasis upon a stronger, more exact performance of the ballet steps, focusing still on correct alignment, development of the body and kinesthetic awareness.
Effective Fall 2006 DANC 211-212 Ballet Technique II
Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. Prerequisites: dance major and placement audition or permission of the chair. Corequisite: DANZ 211L-212L. This course may be repeated for a maximum total of 8 credits on the recommendation of the chair. Intermediate-level study, training and practice of ballet technique.

DANC 221, 222 Tap Technique II

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Prerequisite: Audition or permission of instructor. Further study and training in the principles of tap technique.

DANC 243 Dynamic Alignment

Semester course; 1 lecture and 2 studio hours. 2 credits. Study of the basic principles of mechanical balance and postural alignment. Practice in the application of the major theories of alignment and techniques of realignment. Corrective exercises, breathing techniques, relaxation, guided imagery, self-awareness exercises and body image work will be learned and practiced.

DANC 251, 252 Jazz Technique II

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Prerequisites: DANC 151, 152, or permission of instructor. An in-depth study of movement styles and qualities in jazz dance. Advanced work on integrating music and movement with focus upon chronology of jazz music and corresponding dance forms.

DANC 255, 256 Hip Hop Dance

Semester courses; 1 lecture and 2 studio hours. 2, 2 credits. Prerequisite: dance major or permission of instructor. Intermediate-level dance technique class that draws on the hip hop aesthetic to create a movement experience that emphasizes individual style, rhythmic awareness and physical prowess.

DANC 260 Dance Production Workshop

Semester course; 2 lecture hours. 2 credits. Prerequisite: Dance major or permission of instructor. An introduction to the basic principles of dance lighting and technical theatre through lecture, practical demonstration and discussion.

DANC 291 Topics in Dance

Semester course; 1-4 credits. May be repeated for a maximum of 8 credits. Prerequisite: Permission of instructor. A seminar or workshop on a selected issue or topic in the field of dance. See the Schedule of Classes for specific topics to be offered each semester.

DANC 293-294 Professional Performance: Trainee Level First Year

Continuous course; 7 credits per semester. Prerequisite: official trainee status with an approved professional dance company and permission of the chair. Training, rehearsal and performance as a trainee with a professional dance company approved by VCU Dance.

DANC 301-302 Modern Dance Technique III

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. This course may be repeated for a maximum of 8 credits on the recommendation of the chair. Prerequisite: DANC 202 or permission of instructor. Corequisites: DANZ 301L-302L. High intermediate study and training in principles of modern dance technique. Movement studies demanding greater strength and flexibility. Spatial patterns demanding increased coordination, kinesthetic awareness and aesthetic sensitivity.

DANC 303-304 Choreography/Performance

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Prerequisites: DANC 205-206 Composition and DANC 232 Music for Dancers or permission of instructor. Dance majors must pass the sophomore re-admittance audition prior to enrolling in this class. The craft of choreography and performing techniques are explored extensively as students develop solo and group pieces while rotating in the roles of choreographer/director and performer.
Effective Fall 2006 DANC 303-304 Choreography/Performance
Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Prerequisites: DANC 205-206 and MHIS 243 or substitute music course approved by the chair, or permission of instructor. Dance majors must pass the sophomore readmittance audition prior to enrolling in this class. The craft of choreography and performing techniques are explored extensively as students develop solo and group pieces while rotating in the roles of choreographer/director and performer.

DANC 311-312 Ballet Technique III

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. This course may be repeated for a maximum of 12 credits on the recommendation of the chair. Prerequisite: DANC 212 or permission of instructor. Continued development in the skills and aesthetics of ballet.
Effective Fall 2006 DANC 311-312 Ballet Technique III
Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. These courses may be repeated for a maximum total of 12 credits on the recommendation of the chair. Prerequisite: DANC 212 or permission of instructor. Advanced training, study and practice of ballet technique focusing on the refinement and performance skills.

DANC 313 Dance in World Cultures

Semester course; 2 lecture and 2 studio hours. 3 credits. Prerequisites: ENGL 200; dance majors also must take DANC 103-104 or permission of instructor. This course is the third in a sequence that fulfills one of the general education writing intensive requirements for dance majors. Students learn and participate in dance styles of various world cultures as they study cultural traditions and how they are expressed in movement. No dance experience necessary. This course will include lectures, readings, research and discussion. Students will engage in the viewing and discussion of films, videos and dance concerts.

DANC 315, 316 Contact Improvisation

Semester courses; 1 lecture and 2 studio hours. 2 credits. Prerequisites: DANC 101, 102, or permission of instructor. Exploration of the technique of partnering and the exchange of weight in an improvisational format. Emphasis is on a shared process that explores gravity, lifting, and the give and take of body weight.

DANC 317 Anatomy for the Dancer

Semester course; 2 laboratory hours. 1 credit. A web based, self-study course designed for dance students. Integrates the study of anatomy with dance terminology, skills and concepts. Covers basic knowledge of skeletal, muscular and nervous systems of the body and applies this information to principles important to dance.

DANC 318 Dance Science

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: DANC 317. A team-taught lecture and laboratory course that applies anatomical and basic kinesiological concepts to dance technique. Students will analyze and assess dance movement using scientific principles as well as study the interplay between the aesthetic qualities and biomechanics of dance technique, and the role of this study in injury prevention.

DANC 319, 320 Video/Choreography Workshop

Semester courses; 2 lecture and 2 studio hours. 3, 3 credits. Prerequisites: Experience in movement, performance and/or video/film, or permission of instructor. Students gain practical skills as well as basic theoretical foundation in the principles of working with video and choreography.

DANC 343 Body Imagery

Semester course; 2 lecture and 2 studio hours. 3 credits. Prerequisite: Permission of instructor. The study of body/mind imagery as a source of exploration that includes movement qualities, dynamics and vocabularies. Students gain insight into their inner resources as a base for outer expression.
Effective Fall 2006 DANC 343 Body Imagery
Semester course; 2-6 studio hours. 1-3 credits. Prerequisite: Permission of instructor. May be repeated for a maximum total of 6 credits. The study of body/mind imagery as a source of exploration that includes movement qualities, dynamics and vocabularies. Students gain insight into their inner resources as a base for outer expression.

DANC 360 Lighting Design for Dance

Semester course; 3 lecture hours. 3 credits. Prerequisite: DANC 260 or permission of instructor. Open to qualified School of the Arts majors only. A study in the art of lighting design as it evolves from the choreographer/designer collaboration. The basic techniques of drafting, use of color and composition of space related to light and movement.

DANC 371, 372 Repertory

Semester courses; 2 lecture and 2 studio hours. 3, 3 credits. Prerequisites: DANC 101-102, and permission of instructor. Study and rehearsal of roles in choreography produced by the faculty and/or guest artists, with the objective of achieving a performance level.

DANC 393-394 Professional Performance: Trainee Level Second Year

Continuous course; 8 credits per semester. Prerequisite: official apprentice status with an approved professional dance company and permission of the chair. Training, rehearsal and performance as an apprentice with a professional dance company approved by VCU Dance.

DANC 401-402 Modern Dance Technique IV

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. Prerequisite: DANC 302 or permission of instructor. Corequisites: DANZ 401L-402L. Advanced study and training in modern dance technique. This course may be repeated for a maximum of 12 credits on the recommendation of the department chair.

DANC 407 The Dancer as Teacher

Semester course; 2 lecture and 2 studio hours. 3 credits. Prerequisite: Permission of instructor. The student learns to analyze and communicate movement in a variety of teaching situations. The student will have an opportunity to observe different teaching techniques and to practically apply learned teaching concepts and theories.
Effective Fall 2006 DANC 407 Teaching Methods for Dance
Semester course; 2 lecture and 2 studio hours. 3 credits. Prerequisite: Permission of instructor. The student learns to analyze and communicate movement in a variety of teaching situations. The student will have an opportunity to observe different teaching techniques and to practically apply learned teaching concepts and theories.

DANC 413 African American Presence in American Dance, Performance and Social Contexts

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 200 and permission of instructor, for dance majors DANC 103-104. This course is an option for the third course in a sequence that fulfills a writing intensive requirement for dance majors only. Examines African American history, culture and aesthetics as they relate to dance in American social and performance contexts. Includes lectures, readings, research and video screenings.

DANC 450 Professional Project

Semester course; 3-9 credits. May be repeated for a maximum of 12 credits. An individualized program in research and/or practicum within a professionally-oriented organization, subject to approval of the department faculty.

DANC 451 Careers in Dance

Semester course; 3 lecture hours. 3 credits. Realistic aspects of the dance profession, as performer, teacher and researcher. The student's learning experience culminates in a final project that enhances and challenges the student in both areas of performance and choreography. The project must attain public performance status.

DANC 490 Senior Project

Semester course; 3 lecture hours. 3 credits. Prerequisites: DANC 303-304 and approval of the chair. The culmination of the student's learning experience in a final project that enhances and challenges the student in both areas of performance and choreography. The project must attain public performance status.

DANC 491 Topics in Dance

Semester course; 1-4 credits. May be repeated for a maximum of 8 credits. Prerequisite: Permission of instructor. A seminar or workshop on a selected issue or topic in the field of dance. See the Schedule of Classes for specific topics to be offered each semester.

DANC 492 Independent Study in Dance

Semester course; variable hours. 1-3 credits. May be repeated for a maximum total of six credits. Prerequisites: Dance major status and approval of department chair and instructor. Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

Dance and Choreography Lab(DANZ)

DANZ 101L-102L Modern Dance Technique I Laboratory

Continuous courses; 3 studio hours. 1-1 credit. Required of dance majors. To be taken concurrent with DANC 101-102. An extension of DANC 101-102.
Effective Fall 2006 DANZ 101L-102L Modern Dance Technique I Laboratory
Continuous courses; 3 studio hours. 1-1 credit. These courses may be repeated for a maximum total of 4 credits on the recommendation of the chair. Required of dance majors. An extension of DANC 101-102 to be taken concurrently.

DANZ 111L-112L Ballet Technique I Laboratory

Continuous courses; 2 studio hours. 1-1 credit. These courses may be repeated for a maximum of 4 credits on the recommendation of the chair. Prerequisite: dance major or permission of instructor. Corequisites: DANC 111-112. Reinforcement in the study of ballet technique at the fundamental level. Emphasis focusing on alignment and in-depth practice of ballet steps. An extension of DANC 111-112 to be taken concurrently.

DANZ 201L-202L Modern Dance Technique II Laboratory

Continuous courses; 3 studio hours. 1-1 credit. This course may be repeated for a maximum of 4 credits on the recommendation of the department chair. Prerequisites: DANC 102 and DANZ 102L, or permission of instructor. Corequisites: DANC 201-202. An extension of DANC 201-202.

DANZ 211L-212L Ballet Technique II Laboratory

Continuous courses; 2 studio hours. 1-1 credit. These courses may be repeated for a maximum total of 4 credits on the recommendation of the chair. Prerequisite: dance major and placement audition or permission of the chair. Corequisite: DANC 211-212. A reinforcement in the study of ballet techique at the intermediate level. An extension of DANC 211-212 to be taken concurrently.

DANZ 301L-302L Modern Dance Technique III Laboratory

Continuous courses; 3 studio hours. 1-1 credit. This course may be repeated for a maximum of 4 credits on the recommendation of the department chair. Prerequisites: DANC 202 and DANZ 202L or permission of the instructor. Corequisites: DANC 301-302. An extension of DANC 301-302.

DANZ 401L-402L Modern Dance Technique IV Laboratory

Continuous courses; 3 studio hours. 1-1 credit. This course may be repeated for a maximum of 4 credits on the recommendation of the department chair. Prerequisites: DANC 302 and DANZ 302L, or permission of the instructor. Corequisites: DANC 401-402. An extension of DANC 401-402.

Design(DESI)

DESI 601 Interdisciplinary Design Seminar

Semester course; 3 lecture hours. 3 credits. An introductory seminar for beginning graduate students across the three subspecialty areas that examines the mission of the contemporary designer and the technological, psychological, and aesthetic resources. Professional designers, educators from other fields on campus, and resource people from business and industry will participate.

DESI 602 Advanced Design Seminar

Semester course; 3 lecture hours. 3 credits. May be repeated. An advanced seminar in which students and faculty from the three subspecialty areas meet and discuss the professional and conceptual aspects of interdisciplinary design activity. Students will draw upon past knowledge and current investigations.

DESI 603 Design and Visual Communication Education

Semester course; 3 lecture hours. 3 credits. This course will explore the philosophical, informational, and technical aspects of design education.

Fashion Design and Merchandising(FASH)

FASH 145 Computers for Fashion I

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Laptop computer required. Basic computer skills required. This course introduces students to contemporary technology with emphasis on basic computer graphics software used in the fashion industry today.

FASH 201 Construction Techniques

Semester course; 1 lecture and 4 studio hours. 3 credits. The basic principles involved in garment construction with emphasis on professional design-room practices in sewing, pressing and finishing of garments. Knowledge of basic sewing is advisable.

FASH 202 Draping

Semester course; 1 lecture and 4 studio hours. 3 credits. Basic principles of three-dimensional patternmaking by draping muslin on a dress form. Student will be required to purchase the specified dress form.

FASH 203-204 Patternmaking

Continuous courses; 1 lecture and 4 studio hours. 3-3 credits. Basic principles of patternmaking, developing various styles from master patterns and creating designs to be constructed in muslin. Students also will draft a set of master patterns and learn to "true" the pattern to produce production ready patterns.

FASH 205-206 Fashion Drawing I

Continuous courses; 1 lecture and 4 studio hours. 3-3 credits. Introduction to the fashion figure working from models and photographs. Covers flat drawing techniques and fashion design theory. Explores different media and the use of color.

FASH 210 Visual Merchandising

Semester course; 3 lecture hours. 3 credits. Theory and practical application of visual merchandising techniques in the fashion industry. Development of design concepts, fixturing, layout and presentation for retail, manufacturing and special events. Use of computer-aided design.

FASH 240 Survey of the Fashion Industry I

Semester course; 3 lecture hours. 3 credits. A survey of the apparel industry emphasizing the role of the designer and the various stages of production.

FASH 241 Survey of the Fashion Industry II

Semester course; 3 lecture hours. 3 credits. An analysis of the apparel industry emphasizing retail aspects.

FASH 245 Computers for Fashion II

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: FASH 145. Laptop computer required. Assumes basic computer skills. This course introduces advanced skills in technology by utilizing graphic, illustration and desktop publishing software as they are used in the fashion industry.

FASH 250 Concepts of Fashion Merchandising Environment

Semester course; 3 lecture hours. 3 credits. Basic research techniques and analysis skills for evaluating contemporary fashion and apparel topics.

FASH 290 Textiles for the Fashion Industry

Semester course; 3 lecture hours. 3 credits. This course is designed to develop an under standing of the factors which influence the tactile behaviors of fabrics during garment design, manufacture and wear. Apparel fiber construction, finish and properties both natural and man-made will be analyzed.

FASH 301, 302 Design I Studio

Semester course; 1 lecture and 4 studio hours. 3 credits. May be repeated. Prerequisite: Completion of all sophomore studio courses. A series of courses that focus on selected topics in design, reflecting current fashion emphasis. See the Schedule of Classes for specific topics to be offered each semester.

FASH 319 Contemporary Fashion

Semester course; 3 lecture hours. 3 credits. An in-depth study of fashion beginning at the Industrial Revolution and continuing to the present from a historical and socioeconomic point of view. Hands-on examination of vintage garments and field trips to museum collections.

FASH 330/IDES 330/GDES 330 The Business of Design

Semester course; 3 lecture hours. 3 credits. This course introduces basic global economics and general design business concepts such as the free enterprise system, legal forms of business and financial considerations. It also surveys business and management practices such as planning, decision making, communication, global ethics, marketing, human resources, finance and entrepreneurial skills needed to open a design business. Formerly FASH 330/CARD 330/IDES 330.

FASH 341 Merchandise Planning and Control

Semester course; 3 lecture hours. 3 credits. Theory and mathematical application of the major elements of retail buying and merchandising. Discussion covers planning and control of inventory, profit analysis, merchandise pricing and purchase negotiation.

FASH 342 Retail Buying Simulation

Semester course; 3 lecture hours. 3 credits. Prerequisites: FASH 341 and INFO 162. Practical application of retail buying in relation to the calculations for a six-month buying plan for a department within a department store. The simulation includes projection of sales, stock levels, markdowns, purchases, gross margins, markup, etc.

FASH 343 Fashion Forecasting

Semester course; 3 lecture hours. 3 credits. Using basic principles to identify, track and analyze current trends, students will develop a fashion forecast. Demographic, economic, social and historical forces of behavior will be evaluated.

FASH 350 Fashion Promotion

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. Through lecture and field experience, students are exposed to technical and creative aspects of fashion promotion and public relations. A variety of media are utilized. Students may be required to spend time outside the classroom on promotional activities.

FASH 370/GDES 407/IDES 370 Design History: 20th and 21st Centuries

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTF 105-106. Study of the major theories and styles on communication arts, fashion and interior environments of the 20th and 21st centuries. Contemporary analysis of cultural conditions and the manner in which designers respond to those conditions.

FASH 390/INTL 390 Historic and Ethnic Textiles

Semester course; 3 lecture hours. 3 credits. Prerequisite: FASH 290 or IDES 446 or permission of instructor. An examination of the history of textile design and production around the world.

FASH 391 Fashion Workshop

Semester course; variable hours. 1-3 credits. May be repeated for a maximum total of 6 credits. A topical workshop offered in various areas of fashion not included in the regular curriculum. See the Schedule of Classes for specific topics to be offered each semester.

FASH 401, 402 Design II Studio

Semester course; 1 lecture and 4 studio hours. 3 credits. May be repeated. Prerequisites: Completion of all sophomore studio courses and permission of instructor. A series of upper level design classes for the advanced or skilled student, reflecting current topics in the fashion industry. See the Schedule of Classes for specific topics to be offered each semester.

FASH 403 Design Theory and Illustration I

Semester course; 1 lecture and 4 studio hours. 3 credits. May be repeated. Prerequisite: Completion of all Department of Fashion sophomore studio courses. A series of design theory and illustration topics that address current fashion and support the Department of Fashion design courses. See the Schedule of Classes for specific topics to be offered each semester.

FASH 404 Design Theory and Illustration II

Semester course; 1 lecture and 4 studio hours. 3 credits. May be repeated. Prerequisites: Completion of all Department of Fashion sophomore studio courses and permission of instructor. A series of advanced design theory and illustration topics that address current fashion, challenge the skilled student and support the Department of Fashion design courses. See the Schedule of Classes for specific topics to be offered each semester.

FASH 443 Supervision and Management

Semester course; 3 lecture hours. 3 credits. The study of advanced leadership skills as they relate to the fashion industry. Topics include team building, negotiations, time and stress management, and communications. Emphasis placed on leadership and supervision skills across cultures.

FASH 445 Advanced Application in Store Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: FASH 341. Studies operational functions as related to the objective and decision making procedures inherent in successful small business retailing. Quantitative strategies will be applied as students develop a model plan for a retail business.

FASH 450 Line Development

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: FASH 341. Students will learn the fundamentals of producing a line of apparel, accessories or home fashions from conception to consumer. Emphasis will be placed on market research, specification sheets, costing, sourcing, production and sales.

FASH 451 Importing and Exporting Fashion

Semester course; 3 lecture hours. 3 credits. Prerequisites: FASH 450. An overview and introduction to import/export theory, government regulations and global sourcing. Students will gain insight to the dynamics and cultures of the international fashion marketplace.

FASH 490 Fashion Seminar

Short course (5 weeks); 3 lecture hours. 1 credit. A professional seminar for senior fashion majors. Lectures will cover career opportunities and job preparation.

FASH 492 Independent Study in the Fashion Industry

Semester course; 1-3 credits. May be repeated. Prerequisite: Junior or senior standing as a major in fashion design or fashion merchandising. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor; approval of department chair necessary prior to registration. This course will be limited to those students who have demonstrated intense commitment to a particular area of study within the fashion industry.

FASH 493 Fashion Internship

1-3 credits. It may be a single internship for 3 credits or several (maximum 3) totaling 3 credits. Open to junior and senior-level fashion majors only. A practicum in which students apply on-the-job the formal classroom and studio training they have received in their option (design, merchandising) on campus.

Graphic Design(GDES)

GDES 191 Studio Topics in Design

Semester course; 3-9 studio hours. 1-3 credits. May be repeated with different topics for a maximum of 9 credits. Open to nonmajors. Topical studio focusing on visual exploration and the creation of expressive imagery in conjunction with functional communications. See the Schedule of Classes for specific topics to be offered. Formerly CARD 191.

GDES 192 Managing Your Machine

Semester course; 5 lecture/laboratory hours. 1 credit. Prerequisite: successful completion of the Art Foundation Program. A design foundation workshop that emphasizes microprocessor hardware operations, software procedures and workflow methods necessary for contemporary communication design practice. Formerly CARD 192.

GDES 193 Visual Thinking

Semester course; 5 lecture/laboratory hours. 1 credit. Prerequisite: successful completion of the Art Foundation Program. A design foundation workshop that emphasizes the observing, documenting and inventing of 3-dimensional structure, form, space and function through the use of hand-drawing techniques. Formerly CARD 193.

GDES 194 Image Capturing and Editing

Semester course; 5 lecture/laboratory hours. 1 credit. Prerequisite: successful completion of the Art Foundation Program. A design foundation workshop that emphasizes the capturing, editing and printing of digital images. Formerly CARD 194.

GDES 195 Graphic Representation

Semester course; 5 lecture/laboratory hours. 1 credit. A design foundation workshop that emphasizes the generating, translation and rendering of digital images. Formerly CARD 195.

GDES 196 Type Technology and Application

Semester course; 5 lecture/laboratory hours. 1 credit. A design foundation workshop that emphasizes the management and applications of type and fonts. Formerly CARD 196.

GDES 197 Output Technology and Application

Semester course; 5 lecture/laboratory hours. 1 credit. A design foundation workshop that emphasizes the use of tools, processes and techniques for print reproduction. Formerly CARD 197.

GDES 205 Design Methods and Processes

Semester course; 2 lecture and 3 studio hours. 3 credits. An in-depth investigation of the theoretical aspects of the design process within the context of designing effective visual communications. Formerly CARD 205.

GDES 210 Communication Design Visual Fundamentals

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: successful completion of the Art Foundation Program. Basic visual and cognitive organizational processes for the practice of communication arts and design are presented through lectures and demonstrated through studio exercises. Includes visual perception and organization, visual problem-solving techniques, and visual ideation. Formerly CARD 210.

GDES 211 Typography I

Semester course; 2 lecture and 3 studio hours. 3 credits. An introduction to communication problem solving through the visual medium of language The fundamentals of typography and typographic design are explored in experimental and practical projects. Formerly CARD 211.

GDES 212 Design Form and Communication

Semester course; 2 lecture and 3 studio hours or 4 lecture and 6 studio hours. 3 credits for Richmond; 6 credits for VCUQ. The relationship of form and communication in graphic design is explored through theoretical and applied projects. The impact of typography and imagery and their syntactic relations upon audience and content is stressed. Formerly CARD 212.

GDES 213 Intermediate Typography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: GDES 211. An intermediate exploration of typography as an expressive and functional communication vehicle. Emphasis is placed on defining effective design criteria to meet the reader's needs, the communicator's intent and the designer's formal sensibilities. Formerly CARD 213.

GDES 214 Imaging I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the Art Foundation Program. Cannot be taken for credit with COAR 331. A studio course focusing on the use of digital imaging techniques for communication purposes. The processes and techniques for making and working with digital images are explored. Formerly CARD 214.

GDES 216 Imaging II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: GDES 214. A studio course focusing on the creation of visual images for communication purposes. The processes and media for making visual images and the limits of visual literacy are explored. Formerly CARD 216.

GDES 252 History of Visual Communication

Semester course; 3 lecture hours. 3 credits. An investigation of contemporary visual communication concepts, media and images, and their role in contemporary society. Formerly CARD 252.

GDES 291 Studio Topics in Design

Semester course; 3-9 studio hours. 1-3 credits. May be repeated with different topics for a maximum of 9 credits. Open only to majors in the School of the Arts. Topical studio focusing on visual exploration and the creation of expressive imagery in conjunction with functional communications. See Schedule of Classes for specific topics to be offered. Formerly CARD 291.

GDES 300 Creative Strategies

Semester course; 2 lecture and 3 studio hours. 3 credits. A course in which alternative creative communication problem-solving strategies are investigated. Formerly CARD 300.

GDES 308 Web Page Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequiste: Permission of instructor. A course developing the design of Web sites. Emphasis is placed on the visual design, navigation, development, communication and authoring of Web sites. Formerly CARD 308.

GDES 310 Graphic Design: Publications

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: GDES 212. Pre- or corequisite: GDES 312. An introduction to the design process and applied realization of print-based publications. Considers the form and communication of the printed page from the tradition of print to the organizational principles outside that tradition through lectures, demonstrations and problem solving. Formerly CARD 310.

GDES 311 Graphic Design: Interactive Design

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: COAR 310. Prerequisite: GDES 313 for students attending VCU School of the Arts in Qatar only. Pre- or corequisite: GDES 412. An examination of the conceptual and technical issues involved in the design and production of interactive documents. The course addresses the possibilities and limitations of computer-generated images, sound and digital video as they relate to visual communication problem solving. Formerly CARD 311.

GDES 312 Typography II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: GDES 211. Corequisite: GDES 310. An intermediate exploration of typography as an expressive and functional communication vehicle. Emphasis is placed on defining effective design criteria to meet the reader's needs, the communicator's intent and the designer's formal sensibilities. Formerly CARD 312.

GDES 315 Time-based Media

Semester course; 2 lecture and 3 studio hours. 3 credits. Required of the Communication Arts and Design students at the VCU School of the Arts in Qatar. A fundamentals course that introduces the element of time as a design component and surveys the potential applications for motion in visual communication. The intent is to establish a working knowledge of software relevant motion graphics and interactive design. This course establishes the foundation principles for both vector and raster time-based software. Formerly CARD 315.

GDES 330/IDES 330/FASH 330 The Business of Design

Semester course; 3 lecture hours. 3 credits. Introduces basic global economics and general design business concepts such as the free enterprise system, legal forms of business and financial considerations. Also surveys business and management practices such as planning, decision making, communication, global ethics, marketing, human resources, finance and entrepreneurial skills needed to open a design business. Formerly CARD 330/IDES 330/FASH 330.

GDES 341 Art Direction I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: GDES 211 and 228. An introduction to the integrated activities of strategy, conceptual development and design. Formerly CARD 341.

GDES 345 Print I

Semester course; 2 lecture and 3 studio hours. 3 credits. An introduction to the design process and applied realizations of print-based materials and outcomes. Addresses the form and communication of the printed page from the tradition of print to the organizational principles outside that tradition. Objectives accomplished through lectures, demonstrations and problem solving. Formerly CARD 345.

GDES 346 Sequential I

Semester course; 2 lecture and 3 studio hours. 3 credits. Studio course that introduces the conceptual and technical issues involved in the design and production of sequential documents and time-based compositions. Addresses the possibilities and limitations of the integration of word, image, video and sound as they relate to problem solving in visual communication. Formerly CARD 346.

GDES 347 Interaction I

Semester course; 2 lecture and 3 studio hours. 3 credits. An introduction to the conceptual and technical issues involved in the design and production of interactive documents and environments. Addresses the possibilities and limitations of computer-generated images, sound and digital video as they relate to problem solving in visual communication. Formerly CARD 347.

GDES 356 Studio Management

Semester course; 3 lecture hours. 3 credits. A study of business and management factors that relate to creative design. Topics include marketing, structure and organization; financial factors; ethical and legal aspects; and management of design, illustration and photography studios. Formerly CARD 356.

GDES 365 Print II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: GDES 345. An advanced studio course devoted to the study of systematic and methodological approaches to the design process and applied realization of print-based materials and outcomes. Emphasizes rigorous objective and experimental research methods in approaches to various professional situations. Objectives accomplished through lectures, demonstrations and team-based approaches to problem solving. Formerly CARD 365.

GDES 366 Sequential II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: GDES 346. A studio course devoted to the design and production of advanced projects in sequential design, with focus on research, problem definition and team-based approaches to problem solving. Formerly CARD 366.

GDES 367 Interaction II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: GDES 347. A studio course devoted to the design and production of advanced projects in interaction design and experience design with focus on research, problem definition and team-based approaches to problem solving. Formerly CARD 367.

GDES 370/FASH 370/IDES 370 Design History: 20th and 21st Centuries

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTF 105-106. Study of the major theories and styles on communication arts, fashion and interior environments of the 20th and 21st centuries. Contemporary analysis of cultural conditions and the manner in which designers respond to those conditions. Formerly CARD 370/FASH 370/IDES 370.

GDES 391 Lecture Topics in Design

Semester course; variable hours. 1-3 credits per semester. May be repeated for a maximum of 9 credits. Topical lectures in design issues and visual communications. Formerly CARD 391.

GDES 392 Research/Individual Study

Semester course; 1-2 lecture and 3-6 studio hours. 2-4 credits. May be repeated for credit. Prerequisites: Permission of instructor, approval of faculty adviser and chair. The structuring, research, execution and presentation of an independent project in visual communications under the direction of a faculty adviser. The student will be encouraged to become a self-generating problem seeker and solver with the ability to carry out self-stated goals. Formerly CARD 392.

GDES 407 Senior Project

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: GDES 321 and 326. An advanced course in the conceptualization, execution, realization and documentation of a portfolio project. Students will be required to create and structure a major project that will develop and test their conceptual, contextual and technical abilities. Project work will be exhibited, documented or printed. Various drawing, painting and mixed media will be explored. Assignments will incorporate applicable references to the history of art and contemporary developments. Formerly CARD 407.

GDES 410 Communication Design: Systems in Design

Semester course; 4 lecture and 6 studio hours. 6 credits. Pre- or corequisite: GDES 312. The study of systematic and methodological approaches to communication design through the solving of complex problems in visual communication. Emphasis is placed on objective process and research in approaches to various professional situations. Formerly CARD 410.

GDES 411 Communication Design: Design Studio

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: GDES 410. A course in which project situations of professional visual communication offices are approached in an educational context. Problems that represent current visual communication problems are presented. Formerly CARD 411.

GDES 412 Typographics III

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: GDES 310 and 312. Advanced problems in typographic design with emphasis upon the development of a personal creative approach to form and communication. Formerly CARD 412.

GDES 413 Package Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: GDES 213 and 367. Theoretical and studio investigation of three-dimensional structural principals as they relate to the area of packaging, exhibition and environmental design. Formerly CARD 413.

GDES 414 Exhibition and Environmental Graphic Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: GDES 213 and 366. Study of the presentation of information in large-scale, three-dimensional formats. Exploration of exhibition and environmental design, including developing imagery and typography, understanding the use of "wayfinding" (identification, interpretation and orientation) and human factors, communicating of programmed content. Formerly CARD 414.

GDES 415 Communication Design: Motion Graphics

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisites: GDES 213 and 366. Required for Communication Arts and Design students at the VCU School of the Arts in Qatar. An exploration of time and motion as it applies to visual communication in non-interactive linear narratives. Examines the basic principles of broadcast and film and covers the integration of motion graphics within these formats. Formerly CARD 415.

GDES 416 Motivational Graphics

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: GDES 213 and 366. Study in the development of visual communication performance criteria and practical strategies that influence audience attitudes and behavior. Formerly CARD 416.

GDES 417 Interdisciplinary Team Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: GDES 213 and 366. Advanced projects in visual communication in which student design teams solve complex problems requiring collaboration. Formerly CARD 417.

GDES 418 Design Center: Print Media

Semester course; 2 lecture and 3 studio hours. 3 credits. Course may be repeated for credit. Prerequisites: GDES 213 and 366, and portfolio review by faculty. A professional studio to give students practical experience working with faculty on design projects for the university and nonprofit community organizations. Formerly CARD 418.

GDES 419 Electronic Imaging

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: GDES 216 or permission of instructor. An advanced exploration into the use of the computer and other electronic peripheral devices in the creation of expressive imagery and functional communications. Formerly CARD 419.

GDES 422 Design Center: Internet Media

Semester course; 2 lecture and 3 studio hours. 3 credits. Course may be repeated for a total of 6 credits. Prerequisites: GDES 213 and 237, and portfolio review by faculty. A professional studio to give students practical experience working under faculty guidance on design projects for university clients and nonprofit community organizations. Formerly CARD 422.

GDES 445 Problem Seeking

Semester course; 3 lecture hours. 3 credits. A seminar exploring the nature, scope and implications of defining design objectives in terms of limitations, requirements and potentials of a product's implementation, performance and life cycle. Formerly CARD 445.

GDES 470 Senior Seminar

Semester course; 3 lecture hours. 3 credits. An examination of selected theoretical, historical, aesthetic and social areas of concern to the graphic designer. Scholarly research, critical analysis and discussion are expected. Formerly CARD 470.

GDES 472 Senior Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. Project situations of professional visual communication offices are approached in an educational context. Problems presented are representative of current visual communication needs. Self-initiated problems based on determined need or student interest are emphasized. Formerly CARD 472.

GDES 491 Studio Topics in Design

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for credit. Topical studio focusing on research and experimentation in specialized visual communication media. Formerly CARD 491.

GDES 492 Design Internship

Semester course; 1-3 credits. May be repeated for a maximum of 3 credits. Prerequisites: Senior standing, 3.0 GPA or permission of the chair. Supervised pragmatic work experiences. Training is provided under the direction and supervision of qualified professional practitioners. Formerly CARD 492.

GDES 567 Visual Interface Design

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisite: Permission of instructor. A course concentrating on the visual design and development of human-computer interface systems. Emphasis is placed on visual design processes and methods in the diverse arena of user interface design. Formerly CARD 567.

GDES 591 Advanced Studio Topics in Visual Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: permission of instructor. May be repeated for a maximum of 6 credits. Topical studio focusing on research and experimentation in specialized visual communication media. Formerly CARD 591.

GDES 593 Visual Communications Internship

Semester course; 3 or 6 credits. May be repeated to a maximum of 6 credits. Prerequisite: Permission of chair required. Supervised study in cross-disciplinary visual communications research projects to integrate theory with practice. Training is provided under the direction and supervision of qualified professional practitioners and a faculty adviser. Formerly CARD 593.

GDES 611 Visual Communications Workshop

Semester course; 18 studio hours. 9 credits. May be repeated. A team-taught studio course focusing on the philosophical, communicative, and aesthetic relationships of visual communications problem solving and the effective articulation of concepts. Formerly CARD 611.

GDES 621 Visual Communications Seminar

Semester course; 3 lecture hours. 3 credits. May be repeated. A detailed examination of selected theoretical, historical, aesthetic, and social areas of concern to the designer. Scholarly research, critical analysis, and discussion are expected. Formerly CARD 621.

GDES 631 Visual Communications Teaching Practicum

Semester course; 1 lecture and 6 practicum hours. 3 credits. Prerequisite: Permission of department chair. Observation, instruction, and practice to develop skills in the design, organization, and conduct of courses in visual communications. Explores multiple teaching strategies, student development, learning styles, and evaluation techniques. Formerly CARD 631.

GDES 692 Visual Communications Research/Individual Study

Semester course; 6 studio hours. 3 credits. May be repeated. The structuring, research, execution, and presentation of an independent project in visual communications under the guidance of a faculty adviser. Formerly CARD 692.

GDES 697 Directed Research in Visual Communications

Semester course; 12 studio hours. 6 credits. Prerequisites: successful completion of 30 credit hours of graduate study and permission of department chair. Supervised investigation and presentation of selected problems in visual communications. Formerly CARD 697.

GDES 699 Creative Project

Semester course; 1-6 credits. May be repeated. Prerequisites: successful completion of 30 credit hours of graduate study and permission of department chair. A course based on exploration and testing of original and expressive ideas in visual communications. Executed under the supervision of a graduate adviser and review committee. Formerly CARD 699.

GDES 799 Thesis

Semester course; 1-6 credits. May be repeated. Prerequisites: successful completion of 30 credit hours of graduate study and permission of department chair. Preparation of a thesis based on carefully planned and executed independent research or study under the supervision of a graduate adviser and thesis committee. Research emphasis must be placed on problems/processes that represent significant study in design. Formerly CARD 799.

Interior Design(IDES)

IDES 103-104 Introductory Studio Course

Continuous course; 1 lecture and 2 laboratory hours. 2-2 credits. This course is an introduction to the complex and multifaceted field of interior design as an applied art and as a business for non-interior design majors. Basic design elements, principles and practices, historical and related architectural background material will be reviewed.

IDES 201 Introductory Interior Design Studio I

Semester course; 2 lecture/seminar and 6 studio hours. 4 credits. Prerequisites: All Art Foundation courses. Corequisites: IDES 211, 231 and 321. Interior design majors only; other School of the Arts majors by approval. Introduction to identification and applications of fundamental interior design issues through applied projects. Emphasis includes: developing design ideas, understanding design philosophies, design principles and elements, human factors, defining and solving problems creatively, analyzing spatial and functional requirements, applying design processes, creating an aesthetic space and preparing a presentation as related to interior design.

IDES 202 Introductory Interior Design Studio II

Semester course; 2 lecture/seminar and 6 studio hours. 4 credits. Prerequisites: All Art Foundation courses, IDES 201, 211, 231 and 321. Corequisites: IDES 212, 252 and 311. Interior Design majors only; other School of the Arts majors by approval. Expands upon the interior design issues introduced in IDES 201 through their application in small scale interiors projects of increasing size and complexity. Emphasizes the further development of methods and processes for design development, understanding of basic design principles and elements, and ways of analyzing design requirements through written, oral, graphic and three-dimensional documentation.

IDES 211 Interior Graphics I

Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisites: All Art Foundation courses. Corequisites: IDES 201, 231 and 321. Interior design majors only; other School of the Arts majors by approval. Introduction to manual graphic communication techniques in interior design including drafting, sketching, rendering, perspective drawing, presentation formats and model-making for professional graphic presentations.

IDES 212 Interior Graphics II

Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisites: All Art Foundation Program courses, IDES 201, 211, 231 and 321. Corequisites: IDES 202, 252, 311 and 323. Interior design majors only; other School of the Arts majors by approval. Laptop computer required. Introduction to computer graphic communication language and techniques in interior design drafting, rendering, perspective drawing, presentation formats and 3-D imaging for professional graphic presentations.

IDES 231 Fundamentals of Interior Design

Semester course; 3 lecture hours. 3 credits. Required of all incoming interior design majors. Open to Interior Design majors and Home Fashion Merchandising majors only. Interior Design majors are required to enroll concurrently in IDES 201, 211 and 321. Introduction to the theories, methods and processes of interior design. Facilitates the transition of skills and knowledge from the Art Foundation Program to specific interior design applications and focuses on analysis and evaluation of interior environments as a support and supplement to the studio experience.

IDES 241 Physical and Social Behavior

Semester course; 3 lecture hours. 3 credits. Prerequisite: IDES 231. Theories of behavioral and social aspects of interior design. Study of how people interpret, evaluate and act in the built environment. Social, cultural and economic factors are included.

IDES 251 Historic Environments: Ancient through 19th Century

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTH 102 and 104. Study of the major paradigms, theories and styles of the built environment (interior design, furniture and architecture) from antiquity to the late 19th century. Contemporary analysis of cultural conditions and the manner in which designers and architects respond to those conditions.

IDES 252 Historic Environments: 20-21st Centuries

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTH 102 and 104. Study of the major paradigms, theories and styles of architecture, interior environments and furniture from the beginnings of modernism to the present day. Contemporary analysis of cultural conditions and the manner in which designers and architects respond to those conditions.

IDES 301 Interior Design Studio I

Semester course; 2 lecture/seminar and 6 studio hours. 4 credits. Prerequisite: Successful completion of the interior design sophomore portfolio review. Corequisites: IDES 251, 312 and 323. Interior design majors only. Laptop computer required. Discussion and application of design philosophies, theories and creative design strategies at the intermediate level. Emphasis includes: research, survey and analysis, design processes, spatial and functional analysis, design elements and principles, human factors, creative problem-solving, code requirements, selection of interior components, and preparation of a presentation.

IDES 302 Interior Design Studio II

Semester course; 2 lecture/seminar and 6 studio hours. 4 credits. Prerequisite: IDES 301. Corequisites: IDES 324, 422 and 431. Interior design majors only. Laptop computer required. Continued discussion and application of design philosophies, theories and creative design strategies at the intermediate level. Emphasis includes: research, survey and analysis, design processes, spatial and functional analysis, design elements and principles, human factors, creative problem-solving, code requirements, selection of interior components, and preparation of a presentation.

IDES 311 Advanced Interior Graphics I

Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisites: IDES 201, 211, 231 and 321. Corequisites: IDES 202, 212 and 252. Interior design majors only. Laptop computer required. Advanced manual graphic communication techniques in interior design including drafting, sketching, rendering, perspective drawing, presentation formats and model-making for professional graphic presentations. Computer graphic techniques including software such as AutoCAD, Adobe Photoshop, Adobe Illustrator and Dreamweaver.

IDES 312 Advanced Interior Graphics II

Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisite: IDES 311. Interior design majors only. Laptop computer required. Advanced computer graphic communication techniques in interior design including drafting, rendering, perspective drawing, presentation formats and 3-D imaging for professional graphic presentations.

IDES 321 Interior Materials and Textiles

Semester course; 3 lecture hours. 3 credits. Interior design and home fashion merchandising students only. Investigation, selection and practical application of materials and textiles in interior environments.

IDES 322 Color in Interior Environments

Semester course; 3 lecture hours. 3 credits. Prerequisites: All Art Foundation Program studio courses and IDES 231 or comparable experience by approval. Interior design and School of the Arts majors only. Advanced study of color and its impact on interior spaces; theory and practical applications.

IDES 323 Light and Color in Interior Environments

Semester course; 3 lecture hours. 3 credits. Prerequisite: Successful completion of the Interior Design sophomore portfolio review. Corequisites: IDES 301 and 312. Interior design and School of the Arts majors only. The study of illumination and color and their impact on people in interior spaces; theory and practical applications.

IDES 324 Furniture Design

Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisite: Successful completion of the Interior Design sophomore portfolio review or permission of instructor. Interior design, crafts, sculpture and theater design majors only. Advanced study of furniture design and custom millwork as related to the design of interior environments. Original student designs are developed through the study of structure and materials.

IDES 330/FASH 330/GDES 330 The Business of Design

Semester course; 3 lecture hours. 3 credits. This course introduces basic global economics and general design business concepts such as the free enterprise system, legal forms of business and financial considerations. It also surveys business and management practices such as planning, decision making, communication, global ethics, marketing, human resources, finance and entrepreneurial skills needed to open a design business. Formerly IDES 330/CARD 330/FASH 330.

IDES 370/FASH 370/GDES 370 Design History: 20th and 21st Centuries

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTF 105-106. Study of the major theories and styles on communication arts, fashion and interior environments of the 20th and 21st centuries. Contemporary analysis of cultural conditions and the manner in which designers respond to those conditions.

IDES 400 Senior Interior Design Studio I

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisites: IDES 302 and 422. Corequisite: IDES 441. Interior design majors only. Laptop computer required. Study of construction documents on the computer as related to the design of interior environments and as applied to a studio project.

IDES 401 Senior Interior Design Studio II

Semester course; 2 lecture/seminar and 6 studio hours. 4 credits. Prerequisites: IDES 400 and 441. Corequisite: IDES 442. Interior design majors only. Department-approved senior interior design project. Advanced design experience of student's choice of an interior environment of complex scope and scale to meet the needs of specific clients and prepare students for the practice of the profession. The project addresses issues of design of the 21st century and integrates all aspects of the curriculum.

IDES 421 Construction Documents

Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisites: All Art Foundation Program studio courses and IDES 201, 202, 231, 212, 312 and concurrent enrollment in IDES 301, 302, 303, 304 or 401. Interior design majors only. Laptop computer required. Study of construction documents on the computer as related to the design of interior environments.

IDES 422 Building Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: IDES 301 and 323. Corequisite: IDES 302. Interior design majors only. Contemporary theories and techniques in the design of buildings as related to interior design, small structural considerations, HVAC, acoustics, plumbing and the attributes of materials.

IDES 431 ID Business Practices

Semester course; 3 lecture hours. 3 credits. Prerequisites: IDES 201 and IDES 231. Interior design majors only. Writing intensive. Advanced study of the interior design profession as related to professional and business practices including: responsibilities, services, ethics, business and project management, and marketing.

IDES 441 Senior Design Seminar I

Semester course; 2 lecture hours. 2 credits. Prerequisite: IDES 302. Corequisite: IDES 400. Interior design majors only. Discussions of current design theories, issues and concerns of the built environment, future studies and the global community as applied to senior studio.

IDES 442 Senior Design Seminar II

Semester course; 2 lecture hours. 2 credits. Prerequisites: IDES 400 and 441. Corequisite: IDES 401. Interior design majors only. Continued discussions of current design theories, issues and concerns about the built environment, futures studies and the global community as applied to senior studio.

IDES 491 Topics in Interior Design

Semester course; 1-4 credits. May be repeated for a maximum of 8 credits. Prerequisite: Permission of the instructor. An in-depth study of a topical issue in interior design. See the Schedule of Classes for specific topics to be offered each semester.

IDES 492 Independent Study in Interior Design

Semester course; variable hours. 1-3 credits. May be repeated for maximum of six credits. Prerequisites: Junior or senior standing as a major in interior design. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

IDES 493 Interior Design Internship

Semester course; 3 credits. Prerequisites: Consent of coordinator and department chair. IDES 201, 202, 211, 212, 231, 241, 251 or 252; and one of either 301, 302, 303 or 304; and 2.2 GPA in major course work in interior design. Interior design majors only. Provides supervised practical work experiences that are coordinated with professional interior designers in the field. Formal arrangements must be made. Graded as pass/fail.

IDES 500 Art and Design Methods Workshop

Semester course; 6 lecture and 12 studio hours. 12 credits. Open only to first-professional track graduate students in interior environments. Provides accelerated instruction in art and design methods for the student with no art background by fully immersing the student in a rigorous studio environment. Focuses on the development of 2-D and 3-D art and design skills. Covers 2-D design methods, 3-D design methods, color theory, and drawing and presentation methods.

IDES 501, 502 Introductory Graduate Design Studio I and II

Semester courses; 3 lecture and 12 studio hours. 9 credits. Open to first-professional track graduate students in interior environments only. Provides accelerated studio and graphics instruction for designing interior environments for the entering first-professional track student that does not have previous experience in interior design. Course work is highly sequenced and accelerates in complexity as the semester progresses and combines the development of technical skills with conceptual thinking and design development processes. Courses emphasize interior design development through studio projects and the development of the skills and practices of interior design.

IDES 521 Advanced Material Studies for Interior Environments

Semester course; 2 lecture hours. 2 credits. Open only to first-professional track graduate students in interior environments. Investigation, selection and practical application of materials and textiles in interior environments.

IDES 522 Environmental Factors for Interior Environments

Semester course; 2 lecture hours. 2 credits. Open to first-professional track students only. Contemporary theories and techniques in the design of buildings as related to interior design, small structural considerations, HVAC, acoustics, plumbing and the attributes of building materials.

IDES 531 Principles and Practices of Interior Environments

Semester course; 2 lecture hours. 2 credits. Introduction to the theories, methods and processes of interior design. Facilitates specific interior design applications and focuses on analysis and evaluation of interior environments as a support and supplement to the studio experience.

IDES 591 Topics in Interior Design

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Consent of instructor. Explores selected topics of current and relevant interest in interior design. Topics will vary each semester and focus on the needs of the student.

IDES 601 Graduate Interior Environments Studio

Semester course; 3 lecture and 12 studio hours. 9 credits. May be repeated. Open to graduate students in interior environments; graduate students from other School of Arts graduate programs may enroll with the consent of the instructor. Provides advanced studio for designing in specialized areas of interior environments. Topics will vary each semester.

IDES 611 Advanced Graphics for Interior Environments I

Semester course; 4 studio hours. 2 credits. Open only to first-professional track graduate students in interior environments. Provides advanced graphics instruction for designing interior environments for the first-professional track student. Course work is highly sequenced and accelerates in complexity as the semester progresses and focuses on the development of technical drawing, rendering and presentation skills for the interior designer.

IDES 612 Advanced Graphics for Interior Environments II

Semester course; 4 studio hours. 2 credits. Open only to first-professional track graduate students in interior environments. Provides advanced graphics instruction for designing interior environments for the first-professional track student using the computer. Course work is highly sequenced and accelerates in complexity as the semester progresses and focuses on the development of computer-based skills and programs such as AutoCAD, 3-D Viz and Form Z.

IDES 623 Advanced Design Studies

Semester course; 3 or 6 lecture/seminar hours. 3 or 6 credits. Interior design majors only. Supervised investigation and presentation of selected problems and issues in interior design.

IDES 624 Advanced Furniture Design

Semester course; 4 studio hours. 2 credits. For first-professional track students only. Advanced study of furniture design and custom millwork as related to the design of interior environments. Original student designs are developed through the study of structure and materials.

IDES 626 Advanced Light and Color for Interior Environments

Semester course; 2 lecture hours. 2 credits. Open only to first-professional track graduate students in interior environments. The study of illumination and its impact on people in interior spaces; theory and practical applications.

IDES 631 Ethics and Business Procedures for Interior Environments

Semester course; 2 lecture hours. 2 credits. Open only to first-professional track graduate students in interior environments. Advanced study of the interior design profession as related to professional and business practices including: responsibilities, services, ethics, business and project management, and marketing.

IDES 635 Teaching Practicum in Interior Environments

Semester course; 1 lecture and 6 laboratory hours. 3 credits. Prerequisite: Completion of one graduate studio. Familiarizes students with different types of teaching methods and practices in interior design curriculums. Observation, instruction and practice in the design, organization, and conduct of courses in interior design. Explores multiple teaching strategies, student development, learning styles and evaluation techniques.

IDES 651 History and Theory of Interior Environments I

Semester course; 2 lecture hours. 2 credits. Open only to first-professional students. Study of the major paradigms, theories and styles of the built environment (interior design, furniture and architecture) from antiquity to the late-19th century.

IDES 652 History and Theory of Interior Environments II

Semester course; 2 lecture hours. 2 credits. Study of the major paradigms, theories and styles of architecture, interior environments and furniture from the beginnings of modernism to the present day.

IDES 690 Graduate Seminar in Interior Environments

Semester course; 3 lecture hours. 3 credits. A detailed selected investigation of theoretical, historical, aesthetic and social areas of concern to the interior designer. Scholarly research, critical analysis and discussion are expected. The course requires investigative work using resources such as library and archive materials, journals, Internet sources, surveys, oral histories, interviews, case study design, and field documentation and evaluation.

IDES 693 Interior Design Internship

Semester course; 6, 8 or 12 studio hours. 3, 4 or 6 credits. Prerequisite: Consent of instructor. Interior design majors only. Provides supervised practical work experiences that are coordinated with professional interior designers under the guidance of interior design faculty. Formal arrangements must be made.

IDES 699 Creative Project - Thesis

Semester course; 2, 6 or 12 studio hours. 1, 3 or 6 credits. May be repeated. Prerequisite: Approval of Departmental Review Committee. The project must test an original design theory synthesized through the development of a design process, investigative research and an individual project of complex scale and scope.

Kinetic Imaging(KINE)

KINE 208 Introduction to Computer Techniques

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: successful completion of Art Foundation Program and permission of department chair. Covers basic video editing techniques and the software necessary for contemporary video, animation and sound art practice. Formerly CARD 208.

KINE 233 Media Arts Survey

Semester course; 3 lecture hours. 3 credits. A historical overview of contemporary media art to include video art, sound art, the Internet and other technology-based art movements. Formerly CARD 233.

KINE 234 Introduction to Animation

Semester course; 2 lecture and 3 studio hours. 3 credits. An introduction to the techniques and principles of animation as frame-by-frame sequential media, covering pre-production methods particular to animation, and a survey of historical techniques with an emphasis in viewing and responding to animated work. Formerly CARD 234.

KINE 235 Electronic Animation I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: Kine 208 and 234. An introduction to various video and electronic animation techniques. Formerly CARD 235.

KINE 236 Introduction to Video

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: KINE 208. A study of the processes and equipment necessary for producing and editing work on videotape. Formerly CARD 236.

KINE 237 Sound Communications

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: KINE 208. The basic theory and production of media-based sound. Formerly CARD 237.

KINE 308 Web Page Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Permission of instructor. A course developing the design of Web sites. Emphasis is placed on the visual design, navigation, development, communication and authoring of Web sites. Formerly CARD 308.

KINE 336 Video I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: KINE 236. A comprehensive course in video communication nonnarrative strategies and documentary formats. Formerly CARD 336.

KINE 338 Computer Graphics II: 3-D Modeling

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: KINE 208 or permission of instructor. An introduction into the use of the computer as a tool for modeling and rendering 3-D objects. Formerly CARD 338.

KINE 357 Critical Issues in the Media

Semester course; 3 lecture hours. 3 credits. Topics, theory and genre affecting media and time-based mediums are explored through critical discourse, readings, screenings and lectures. Formerly CARD 357.

KINE 392 Research/Individual Study

Semester course; 1-2 lecture and 3-6 studio hours. 2-4 credits. May be repeated for credit. Prerequisites: Permission of instructor, approval of faculty adviser and chair. The structuring, research, execution and presentation of an independent project in visual communications under the direction of a faculty adviser. The student will be encouraged to become a self-generating problem seeker and solver with the ability to carry out self-stated goals. Formerly CARD 392.

KINE 403 Senior Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Senior status. To be taken in the last semester of the senior year. Critical analysis and development of the student's exit portfolio with emphasis on strengthening focus and concept inherent in the body of work. Formerly CARD 403.

KINE 434 Electronic Animation II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: KINE 334. Students will work with advanced techniques and have the opportunity to design and produce their own projects. Formerly CARD 434.

KINE 436 Video II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: KINE 336. A comprehensive course in video communication exploring narrative strategies and form-content relationships. Formerly CARD 436.

KINE 438 Computer Graphics III: 3-D Animation

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Prerequisite: KINE 338. Advanced study of computer modeling and the introduction of 3-D animation. Formerly CARD 438.

KINE 439 Video III

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Prerequisite: KINE 436. An advanced course focusing on short subject pieces in video. Formerly CARD 439.

KINE 464 Electronic Animation III

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Prerequisites: KINE 434. An advanced course in animation studies. Formerly CARD 464.

KINE 491 Studio Topics

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for credit. Topical studio focusing on research and experimentation in specialized visual communication media. Formerly CARD 491.

Music History, Literature and Theory(MHIS)

MHIS 105-106 Introduction to Writing Music

Continuous courses; 3 lecture hours. 3-3 credits. For non-music majors only. Creating and harmonizing melodies, principles of notation and elementary music theory. Second semester emphasis is on creative aspects.

MHIS 110 Elements of Music

Semester course; 3 lecture hours. 3 credits. No degree credit for music majors. A study of music notation, scale and triad forms. Aural skill development will parallel the theoretical studies. Intended to prepare music majors for core curriculum study.

MHIS 117 Computers in Music

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Study and application of music software on mainframe and personal computers. The student will be expected to demonstrate competence in the high-level languages, PASCAL and BASIC. Projects will focus on programming for educators and composers.

MHIS 120 Introduction to Musical Styles

Semester course; 1 lecture and 2 laboratory hours. 2 credits. A study of the major styles and forms of western music with emphasis on the development of active cognitive listening skills through guided listening to selected recorded music.
Effective Fall 2006 MHIS 120 Introduction to World Musical Styles
Semester course; 3 lecture hours. 3 credits. A study of the major styles and forms of Western art music and non-European musical cultures and practices. Attention will be given to various aspects of music within those cultures, Western and otherwise. An emphasis will be placed on the development of active cognitive listening skills through guided listening to selected recorded music from Western and non-European societies.

MHIS 145-146 Theory and Aural Skills I-II

Continuous courses; 2 lecture and 3 laboratory hours. 4-4 credits. Open to music majors and minors only. The application of music theory, aural skills and keyboard knowledge are combined in the study of harmonic and melodic structure. First semester begins with rudiments and progresses to diatonic and secondary harmony as applied to phrase structure in music. Emphasis is placed upon the development of aural skills as applied to the presented material.
Effective Fall 2006

MHIS 147 Jazz Theory and Aural Skills

Semester course; 3 lecture hours. 3 credits. Prerequisites: MHIS 145 and 165 or permission of instructor. Theoretical and aural recognition of established melodic, harmonic and rhythmic traditions within jazz so as to apply successfully to creative performance-practice and composition-arranging pursuits.

MHIS 201 Acoustics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Recommended prerequisite: MATH 101. Physical properties of sound and wave mechanics applied to the study and analysis of music and musical instruments. Topics will include instrumental and vocal sound production and perception, timbrel characteristics and pitch theory.

MHIS 243 Music Appreciation

Semester course; 3 lecture hours. 3 credits. Not open to music majors. Designed to encourage understanding of music from selected periods. Development of active cognitive listening skills through guided listening to selected recorded music.

MHIS 245-246 Theory and Aural Skills III-IV

Continuous courses; 2 lecture and 3 laboratory hours. 4-4 credits. Prerequisite: MHIS 146. Open to music majors. The application of music theory, aural skills and keyboard knowledge are combined in the study of harmonic and melodic structure. Second year continues with chromatic harmony and modulations and concludes with modern techniques as applied to form in music. Elements of popular styles and jazz are incorporated as appropriate. Emphasis is placed upon the development of aural skills as applied to the presented material.

MHIS 250/AFAM 250 Introduction to African-American Music

Semester courses; 3 lecture hours. 3 credits. An introductory survey of black involvement with the development of music in America from 1607 to the present. African-American musical styles will be studied from many aspects, including their African roots and contemporary popular expression. Performance practices will be analyzed and active cognitive listening skills developed through guided listening to selected recordings.

MHIS 303 Piano Literature

Semester courses; 2 lecture hours. 2 credits. A survey of stringed keyboard literature. Historical, formal and stylistic considerations of the various periods and composers of keyboard music. Listening and reading assignments included.
Effective Fall 2006 MHIS 303, 304 Piano Literature

Semester courses; 2 lecture hours. 2, 2 credits. A survey of stringed keyboard literature. Historical, formal and stylistic considerations of the various periods and composers of keyboard music. Listening and reading assignments included. Fall semester: Baroque and Classical periods (1600-1828); spring semester: Romantic, Modern and Contemporary periods (1828-present).

MHIS 305 Form and Analysis I

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 246 or permission of instructor. An analytical study of musical forms and salient features of melody, harmony, rhythm and timbre of late Baroque, Classical, early and late Romantic compositions.

MHIS 306 Form and Analysis II

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 305 or permission of instructor. Study of traditional and new approaches to form in the music of the 20th century. Examination of post-tonal harmony as a determinant of form, formal aspects of motivicism, contour, rhythm, register, timbre and texture.

MHIS 307/PHYS 307 The Physics of Sound and Music

Semester course; 3 lecture hours. 3 credits. Prerequisites: A 100- or 200 level physics course or equivalent and the ability to read music or sing or play a musical instrument, or permission of instructor. Basics of the physics of waves and sound. Fourier synthesis, tone quality, human ear and voice, musical temperament and pitch, physics of musical instruments, electronic synthesizers, sound recording and reproduction, room and auditorium acoustics. Not applicable toward the physics major.

MHIS 311 Jazz Arranging I

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 246 or permission of instructor. A study of the basic harmonic, melodic, notational and orchestrational techniques needed to draft a successful jazz arrangement. The final project will be to write an arrangement for a 12-piece jazz ensemble.

MHIS 312 Jazz Arranging II

Semester course; 3 lecture hours. 3 credits. Prerequisite: MUSC 311 or permission of instructor. Advanced harmonic, melodic and orchestrational techniques applied to writing for the small jazz ensemble, vocal group and large jazz orchestra.

MHIS 321, 322, 323 Music History I-III

Semester courses; 2 lecture hours. 2, 2, 2 credits. Prerequisite: MHIS 120 or MHIS 243. Study of Western music in a historical context from antiquity to the present. Semester courses divided into the following: antiquity to baroque era, classical to romantic, and 20th century.
Effective Fall 2006 MHIS 321, 322 Music History I, II
Semester courses; 3 lecture hours. 3, 3 credits. Prerequisite: MHIS 120. Study of Western music in a historical context from antiquity to the present. Semester courses divided into the following: antiquity through the Classical era, Romantic era to 21st century.

MHIS 324 Jazz History

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Study of jazz in a historical context from pre-jazz roots to contemporary styles.

MHIS 336 Organ Literature and Design

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 201 or permission of instructor. A survey of organ music with correlating studies in the design and construction of pipe organs from 1500 to the present.

MHIS 350/AFAM 350/INTL 370 Studies in the Music of the African Continent and Diaspora

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. Prerequisite: MHIS 243, MHIS/AFAM 250 or permission of instructor. An in-depth examination of selected topics and issues in African-derived musical and cultural traditions. See the Schedule of Classes for specific topics to be offered each semester.

MHIS 380 Survey of the Music Industry

Semester course; 3 lecture hours. 3 credits. Topics include copyright, business organization, music production, management, recording, free lancing, grants, taxation and careers allied with music.

MHIS 392 and 492 Independent Study

Semester courses; variable hours. 1-6 credits per semester. Maximum total of 6 credits. Determination of the amount of credit and permission of the instructor and department chair must be obtained prior to registration for the course. Open generally only to students of junior and senior standing who have individual interests in areas not otherwise available to the student.

MHIS 405 Jazz Form and Analysis I

Semester course; 3 lecture hours. 3 credits. Prerequisites: MHIS 312 or permission of instructor. Arranging and performance-practice techniques across selected jazz styles.

MHIS 406 Jazz Form and Analysis II

Semester course; 2 lecture hours. 2 credits. Prerequisites: MHIS 405 or 411, or permission of instructor. Continuing study of arranging and performance-practice techniques across selected jazz styles.

MHIS 411 Jazz Arranging III

Semester course; 3 lecture hours. 3 credits. Availability contingent upon student demand and faculty resources. Techniques of arranging for the contemporary pop medium.

MHIS 412 Jazz Arranging IV

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 411 or permission of instructor. A study of the techniques used in modal, blues and other forms of contemporary jazz composition.

MHIS 465 Song Literature

Semester courses; 2 lecture hours. 2 credits. A survey of the vocal literature of Germany, France, England and other countries.

MHIS 491 Topics in Music

Semester course; variable hours. 1-3 credits per semester. May be repeated for a maximum of 9 credits. Flexible semester courses in selected aspects of music performance, theory, literature or history. See the Schedule of Classes for specific topics to be offered each semester.

MHIS 513 Arranging

Semester course; 3 lecture hours. 3 credits. Practical, technical, and conceptual considerations of arranging and transcribing for vocal and instrumental groups will be explored. Students will demonstrate competence in these creative areas to the optimum level of school and/or church music organizations.

MHIS 551-552 Orchestral Repertoire

Semester courses; 1 lecture or 1 lecture and 2 laboratory hours. 1 or 2 credits. Performance and study of selected major symphonic works from historical, analytical, and stylistic perspectives. Research reports will include comparisons of interpretations. Repertoire will consist of basic audition pieces selected by orchestras. Laboratory sessions will utilize available instrumentation for performance.

MHIS 566 Jazz History and Analysis

Semester course; 3 lecture hours. 3 credits. An examination of the evolution of jazz from its beginnings through the Swing Era. Students will transcribe and analyze improvised solos and compositions by the tradition's principal innovators.

MHIS 591 Topics in Music

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 9 credits. Flexible term courses in selected aspects of music performance, theory, literature, or history. See the Schedule of Classes for specific topics to be offered each semester.

MHIS 592, 692 Individual Project

Semester courses; 1-6 credits. Prerequisites: permission of supervising faculty member, adviser and department chair. Open only to degree-seeking graduate students in music. Individual work in an area not otherwise available to the student.

MHIS 615 Seminar in Music Theory

Semester course; 2 lecture hours. 2 credits. May be repeated up to four times with different topics. Topical discussions and relevant research appropriate to the principal eras of music development.

MHIS 650 Seminar in Music History

Semester course; 2 lecture hours. 2 credits. May be repeated up to four times with different topics. Prerequisite: MHIS 690. An intensive study of a limited phase or segment of music history through examination of relevant materials and extended class discussion.

MHIS 666 20th-century Music

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Impressionistic, expressionistic, neoclassic, and neoromantic influences and styles of music. Development of new sound-generating techniques and methods for ordering the new tonal materials.

MHIS 667 Music of the Middle Ages and the Renaissance

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Principal musical developments from the first through the 16th centuries. Sacred and secular monophonic, homophonic, and polyphonic forms and styles; the development of instrumental idioms and forms.

MHIS 668 Music of the Baroque

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Principal developments, c. 1590-1750; accompanied monody and the beginning of opera; forms and styles of sacred and secular compositions.

MHIS 669 Music of Rococo and Classical Eras

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Major development in sacred and secular forms and styles, c. 1730-1828; social and artistic influences on music; dominance of instrumental music; Mozart, Beethoven, and the German Symphony.

MHIS 670 Music of the Romantic Era

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 690 (may be taken concurrently). Influence of the Romantic Era on concepts of musical forms and styles; the development of the art song, the growth of opera, the exploitation of instruments and tonality.

MHIS 690 Bibliography and Methods of Research

Semester course; 2 lecture hours. 2 credits. A course to introduce graduate students to the chief bibliographic materials in music and music education to help develop skills of research and writing necessary to produce a thesis or other formal research paper.

MHIS 798 Research Project

Semester course; 2 credits. Corequisite: APPM 799 Final research or expository document for performance and composition majors. Content to be approved by graduate committee.

Music Education(MUED)

MUED 380 Introduction to Music Education

Semester course; 1 lecture and 2 laboratory hours. 2 credits. An introduction to the profession of music education. Emphasis on the study of the historical development of music education in the U.S. along with current thinking, trends, practices and approaches in the profession, and the formation of a personal philosophy of music education. Substantial practicum experience is a fundamental aspect of this course. Formerly MUED 390.

MUED 391 Processes of Music Education

Semester course; 3 lecture hours. 3 credits. Prerequisite: MUED 290. Study of current methods and materials of music in education. Orff, Dalcroze, Kodaly, Manhattanville and other modern music education systems will be discussed, observed and demonstrated.
Effective Fall 2006 MUED 381 Methods and Practicum in Elementary Music Education
Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MUED 380. Study of current methods and materials of music education at the elementary level. Orff, Dalcroze, Kodaly, Gordon and other current music education approaches for the young child will be discussed, observed and demonstrated. An intensive directed practicum is a fundamental aspect of this course.

MUED 392 Conducting and Rehearsal Techniques

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: APPM 381 and MUED 290, or permission of instructor. Development of enhanced conducting and rehearsal skills for school instrumental or choral groups. Emphasis on developing conducting technique, pacing, selecting and arranging appropriate materials and age appropriate musical goals.
Effective Fall 2006 MUED 382 Scondary Methods/Practicum and Rehearsal Techniques
Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisites: APPM 381 and MUED 381, or permission of instructor(s). Development of the varied skills required to successfully administer a secondary music education program. Emphasis on understanding program structure, development and methodologies; development of conducting technique, rehearsal strategies and selecting/arranging literature appropriate for musical growth of students.

MUED 483 Special Workshop in Music Education

Semester course; 0.5-3 credits. Flexible semester courses on selected aspects of music education. See the Schedule of Classes for specific topics to be offered each semester.

MUED 583 Special Workshop in Music Education

Semester course; 0.5-3 credits. Flexible term courses on selected aspects of music education. See the Schedule of Classes for specific topics to be offered each semester.

MUED 591 Topics in Music Education

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits with different topics. Flexible semester courses in selected topics in music education philosophy, curriculum, integrated and interdisciplinary arts, technology and selected topics of current interest or needs relative to music education. See the Schedule of Classes for specific topics to be offered each semester.

MUED 600 Seminar in Music Education

Semester course; 3 lecture hours. 3 credits. May be repeated up to two times with different topics. Investigation of contemporary issues and problems in music education. Students will present oral reports and written papers, which explore new directions and implications for music educators and music education programs.

MUED 610 Psychology of Music

Semester course; 3 lecture hours. 3 credits. Provides an introduction of the psychological foundations of music behavior. Topics will include functions of music in human society and culture, psychoacoustics of musical sound, cognitive processes of music perception and the creation/recreation of music, affective response, music learning theories and measurement of musical ability and learning.

MUED 620 Introduction to Research in Music Education

Semester course; 3 lecture hours. 3 credits. Development of fundamental skills necessary to understand and evaluate research in music education. Focuses on the basic principles, concepts and techniques of research methodology applied specifically to music education. Includes introduction to quantitative, qualitative, ethnographic and historical methodology.

MUED 676 School Music Supervision and Administration

Semester course; 2 lecture hours. 2 credits. The study of the organization, curriculum, course content, administration, and personnel problems in public school music.

MUED 799 Thesis

Semester course; 1-3 credits. May be repeated. Prerequisite: Permission of the music education coordinator. Preparation of a thesis based on independent research.

Music Composition(MUSC)

MUSC 201 Class Composition I

Semester course; 2 lecture hours. 2 credits. Prerequisites: APPM 166, MHIS 146 and permission of instructor. Open to all music majors and required of potential composition majors; the emphasis of this class will be on simple rhythmic and melodic studies.

MUSC 315 Counterpoint I

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 246. This class concentrates on two-part writing, canons, species, exercises, short two-voiced pieces and inventions.

MUSC 316 Counterpoint II

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 246. Availability contingent upon student demand and faculty resources. Three- and four-part writing forms based on the chorale; contrapuntal variation forms and fugue will be studied.

MUSC 406 Orchestration

Semester course; 3 lecture hours. 3 credits. No degree credit for graduate composition majors. Prerequisite: MHIS 246. Application of idiomatic scoring devices for orchestral instruments and voices in both large and small combinations.

MUSC 611-612 Analysis for Performance and Composition

Continuous courses; 2 lecture hours. 2 credits. Analysis of the organization, combination, and manipulation of elements devices of music from the 18th century to the present with demonstration of this knowledge through performance.

MUSC 620 Composition Seminar

Semester course; 2 lecture hours. 2 credits. May be repeated up to four times for credit. Discussion, analysis, and criticism of selected compositions pertinent to the improvement of student skills and understanding.

Painting and Printmaking(PAPR)

The following graduate courses may be taken by undergraduates for degree credit: PAPR 525, 527 and 528. See the Graduate and Professional Programs Bulletin for course descriptions.

PAPR 205 Painting, Basic

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits. An introduction to the use of paints with an emphasis on the organization of the artistic image, through the use of plastic form and color, coupled with analysis of historical and contemporary work.

PAPR 209 Materials: Printmaking

Semester course; 2 lecture and 6 studio hours. 4 credits. An introduction to three principal printmaking techniques: etching, lithography and screenprinting.

PAPR 214 Printmaking, Basic

Semester course; 1 lecture and 6 studio hours. 3 credits. Fundamentals of printmaking. Introduction of basic problems of techniques and composition.

PAPR 221 Drawing, Basic

Semester course; 9 studio hours. 3 credits. May be repeated for a maximum of 6 credits. Drawing instruction with attention to extension of the student's knowledge of the tools of drawing. Materials and techniques will be related to pictorial organization.

PAPR 255-256 Drawing and Painting, Basic

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. Development of basic skills; exploring structure, color, form and image. Students will be exposed to class critiques as a means of analyzing their creative works.

PAPR 303, 304 Painting, Intermediate

Semester courses; 1 lecture and 6 studio hours. 3, 3 credits. Prerequisites: 3 credits of basic painting or permission of instructor. Primary emphasis on the development of an individual direction in the context of contemporary ideas and images in painting.

PAPR 305 Painting, Intermediate

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits. Prerequisites: 4 credits of basic painting or permission of instructor. Primary emphasis on the development of an individual direction in the context of contemporary ideas and images in painting.

PAPR 315 Printmaking, Intermediate (Etching)

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits. Prerequisite: PAPR 209 or permission of instructor. Investigation of etching printmaking, drypoint, engraving, aquatint, soft grounds and related techniques.

PAPR 317 Printmaking, Intermediate (Lithography)

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits. Prerequisite: PAPR 209 or permission of instructor. Investigation of techniques and technical printing problems in lithographic printing process from stones and plates.

PAPR 319 Printmaking, Intermediate (Screenprinting)

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits. Prerequisite: PAPR 209 or permission of instructor. An investigation of cut, hand-drawn and photographic stencil techniques and printing on a variety of surfaces.

PAPR 321 Drawing, Intermediate

Semester course; 9 studio hours. 3 credits. May be repeated for a maximum of 6 credits. Prerequisites: 3 credits of basic drawing or permission of instructor. Drawing for advanced students with special emphasis on creative response to the drawing as a work of art.

PAPR 324 Drawing, Intermediate

Semester course; 9 studio hours. 3 credits. Prerequisites: 3 credits of basic drawing or permission of instructor. Drawing for intermediate students with emphasis on problematic thinking and dealing with drawing as an aesthetic form.

PAPR 326 Color

Semester course; 3 lecture hours. 3 credits. A course examining the concepts governing the use of color. Historical and contemporary concepts and methods of application will be explored.

PAPR 329 Life Drawing

Semester course; 6 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Prerequisite: Foundation drawing. Explores the structural and muscular systems of the human body with emphasis upon proportional relationships, chiaroscuro, contour, volume and foreshortening.

PAPR 355, 356 Drawing and Painting, Intermediate

Semester course; 9 studio hours. 3, 3 credits. Prerequisites: 3 credits of basic drawing or painting or permission of instructor. Intermediate instruction in drawing and painting. Models, both nude and clothed, and still lifes are used.

PAPR 392 Independent Study in Painting and Printmaking

Semester course; variable hours. 1-3 credits. May be repeated for a maximum total of six credits. Prerequisites: Junior standing as a major in painting and printmaking and approval of department chair and instructor. Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

PAPR 403, 404 Painting, Advanced

Semester courses; 1 lecture and 6 studio hours. 3, 3 credits. Prerequisites: 3 credits of intermediate painting or permission of instructor. More ambitious projects with the aim of developing in the senior student a highly professional approach and achievement in his or her work. Individual as well as group discussions.

PAPR 405 Painting, Advanced

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 20 credits. Prerequisites: 4 credits of intermediate printmaking or permission of instructor. More ambitious projects with the aim of developing in senior students a highly professional approach and achievement in their work. Individual as well as group discussions.

PAPR 412 Printmaking, Advanced (Lithography)

Semester course; 9 studio hours. 3 credits. Prerequisites: 3 credits of intermediate printmaking or permission of instructor. Specialization in one medium. Aesthetic suitability of the design to a particular medium is emphasized.

PAPR 413 Printmaking, Advanced (Etching)

Semester course; 9 studio hours. 3 credits. Prerequisites: 3 credits of intermediate printmaking or permission of instructor. Concentration on one medium with emphasis on creative techniques.

PAPR 415 Printmaking, Advanced (Etching)

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 20 credits. Prerequisites: 4 credits of intermediate printmaking or permission of instructor. Specialization in one medium with emphasis upon technical research and aesthetic suitability of the design to the particular medium used.

PAPR 417 Printmaking, Advanced (Lithography)

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 20 credits. Prerequisites: 4 credits of intermediate printmaking or permission of instructor. Further investigation of techniques and technical printing problems in the lithographic printing process from stones and plates.

PAPR 419 Printmaking, Advanced (Screenprinting)

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 20 credits. Prerequisites: 4 credits of intermediate printmaking or permission of instructor. Further exploration of cut, hand-drawn and photographic stencil techniques and printing on a variety of surfaces.

PAPR 421 Drawing, Advanced

Semester course; 9 studio hours. 3 credits. May be repeated for a maximum of 15 credits. Prerequisites: 3 credits of intermediate drawing or permission of instructor. A studio for drawing with individual criticism. Special attention is given to contemporary concepts.

PAPR 423 Experimental Printmaking

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for a maximum of 8 credits. Prerequisites: 3 credits of intermediate printmaking or permission of instructor. Relief printing, collographs, monoprints, photoengraving and mixed media will be investigated.

PAPR 455-456 Drawing and Painting, Advanced

Continuous courses; 9 studio hours. 3-3 credits. Prerequisites: 3 credits of intermediate drawing or painting or permission of instructor. Advanced instruction in drawing and painting. Models, both nude and clothed, and still lifes are used.

PAPR 490 Senior Seminar

Semester course; 3 lecture hours. 2 credits. Information to help graduating seniors in the department of painting and printmaking meet the professional requirements involved in exhibiting and promoting their creative work and in functioning as an artist. Writing intensive.

PAPR 491 Topics in Painting and Printmaking

Semester course; 1-4 credits. May be repeated with different topics for a maximum of 12 credits. Topical course focusing on creative expression and research in the areas of painting and printmaking. See the Schedule of Classes for specific topics to be offered.

PAPR 492 Independent Study in Painting and Printmaking

Semester course; variable hours. 1-3 credits. May be repeated for a maximum total of six credits. Prerequisites: Senior status as a major in painting and printmaking and approval of department chair and instructor Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

PAPR 525 Issues in Contemporary Visual Arts

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. Prerequisite: Painting and printmaking majors only The investigation of content and meaning of major directions in contemporary art as they relate to the studio. Students will relate their own work to major movements in contemporary visual art.

PAPR 527, 528 Art and Critical Theory

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisite: General art history or equivalent. Major themes in art criticism and theory from 1940 to the present. This course provides an introduction to the literature of art criticism as well as artists' writings in relation to studio production.

PAPR 591 Topics in Painting and Printmaking

Semester course; 1-4 credits. May be repeated for a maximum of 9 credits with different content. This course will explore selected topics of current interests or needs relative to painting and printmaking. See the Schedule of Classes for specific topics to be offered each semester.

PAPR 605 Graduate Painting

Semester course; 6 or 12 studio hours. 3 or 6 credits. May be repeated. A studio class in which primary emphasis is placed on the creative disciplines of contemporary painting. Special attention is given to the development of personal expression through individual criticism.

PAPR 615 Graduate Printmaking

Semester courses; 6 or 12 studio hours. 3 or 6 credits. May be repeated. Specialization in one printmaking medium with emphasis upon technical research and the aesthetic suitability of design to medium.

PAPR 621 Graduate Drawing

Semester course; 6 studio hours. 3 credits. May be repeated. A studio class with individual criticism. Special attention is given to contemporary concepts. Permission of instructor required for non-painting and printmaking majors.

PAPR 690 Graduate Seminar

Semester course; 1 or 3 lecture hours. 1 or 3 credits. May be repeated. Degree requirement for graduate students in the Department of Painting and Printmaking. Weekly seminar for the purpose of discussion of recent artistic developments in painting and printmaking. Critiques dealing with student work will take place.

Photography and Film(PHTO)

PHTO 233 Elements of the Moving Image

Semester course; 4 lecture hours. 4 credits. A survey of new media and their origins. An exploration of this visual phenomena and its relationship to modern society.

PHTO 243 Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. Adjustable camera is required. Study of fundamental camera techniques and basic photographic processes in relation to visual communication. An emphasis will be placed on photography's expressive possibilities.

PHTO 245 Design Photography I

Semester course; 2 lecture and 3 studio hours. 3 credits. For communication art and design majors only or permission of instructor. A comprehensive beginning class covering an introduction to the camera, the process of exposure, developing, and black-and-white printmaking.

PHTO 260 Photographic Sequencing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 243 or PHTO 245. Exploration and development of photographic sequencing abilities in conjunction with matching image based ideas to other forms of communication. Application of editing sequences in relation to personal bodies of work.

PHTO 305 The Zone System

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHTO 341 and 350, or permission of instructor. Students learn to previsualize the photographic image through controlled exposure and film development techniques.

PHTO 306 Post Visualization

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTO 305 or permission of instructor. Students will learn practical applications of choosing the correct materials and techniques needed to produce a professional quality photographic print.

PHTO 307 Photographic Processes and Techniques

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 243 or 245 or permission of instructor. Various alternative photographic processes will be explored. Emphasis is placed upon technical expertise and creation of a body of work incorporating these various processes.

PHTO 309 View Camera Operation and Technique

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 243 or 245 or permission of instructor. A course in understanding and using the 4x5 view camera for optimum photographic results. Emphasis is on how the camera functions, the use of Polaroid materials, and developing and printing larger format negatives to produce high quality prints.

PHTO 341 Intermediate Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 245 or permission of the instructor. Emphasis is placed on expanding the student's ability to express ideas photographically.

PHTO 350 Concepts in Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 341 or permission of instructor. Students utilize the visual and technical skill mastered in previous courses to explore today's contemporary trends of photographic expression. Emphasis will be placed on developing an individual style.

PHTO 351 Portrait Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 345 Design Photography or PHTO 350 Intermediate Photography. Students explore the various visual possibilities of the use of portrait photography.

PHTO 360 Digital Filmmaking I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 380. Surveys the digitally based studies including computer animation, computer imaging, digital film and video, networked computing, interactive multimedia and related areas.

PHTO 361 Digital Filmmaking II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: PHTO 380 and PHTO 360. Surveys the procedural, technical and creative applications of the digital environment for the preproduction, production and postproduction phases in the making of a film.

PHTO 370 Filmmaker as Director

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 376 or permission of instructor. Develop a methodology for working with actors in a film production, by arranging auditions, creating an environment for improvisation and analyzing an actor's performance. Learn how to integrate a performance into the total filmmaking process.

PHTO 375 Filmmaking I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 233. Techniques for production of short silent films with emphasis on visual language.

PHTO 376 Filmmaking II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: PHTO 375 and PHTO 233. Techniques for production of short films with emphasis on light as the primary expressive tool.

PHTO 377 The Film Image

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 9 credits. An examination of production techniques and problems encountered by the filmmaker in creating the motion picture image. A selected number of narrative, documentary, experimental and animated films are viewed as source material and dealt with from a production point of view. The films chosen for discussion vary from semester to semester.

PHTO 380 Digital Photography I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: CARD 207 or permission of instructor. Students edit, manipulate and print their photographically derived images through the use of current image editing software.

PHTO 381 Digital Photography II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 380 or permission of instructor. Using photographic image-editing software, students learn to achieve accurate color output through color calibration, printing inks and color separations.

PHTO 392 Film Animation I

Semester course; 2 lecture and 3 studio hours. 3 credits. Techniques for the production of short animated films.

PHTO 393 Film Animation II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 392. Advanced techniques for the production of a short animated film.

PHTO 420 Senior Portfolio

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated up to 6 credits. Prerequisite: Senior status in photography and film concentration. To be taken in the senior year. Critical analysis and development of the student's exit portfolio with emphasis on a consistent visual style with thematic concepts.

PHTO 435 Professional Photographic Practices

Semester course; 3 lecture hours. 3 credits. The study of vocabulary, procedures and working realities specific to the occupations of photography and film.

PHTO 441 Studio Photography

Semester courses; 2 lecture and 3 studio hours. 3 credits. Prerequisites: PHTO 341, 350 and 309, or permission of instructor. A course that explores various studio applications of photography through the utilizatio of tungsten and strobe lighting. Lectures and studio assignments explore table top photography.

PHTO 442 Location Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: PHTO 309, 341 and 350, or permission of instructor. A course that explores the technical, aesthetic and logistic experience of a photographer working on location.

PHTO 445 Color Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for maximum of 6 credits. Prerequisite: PHTO 350 or permission of instructor. The creative use of color in photography throug experience of negative to positive printing.

PHTO 475-476 Filmmaking Workshop

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. Prerequisite: Permission of instructor. The production of a motion picture with the assistance of students in the various production crew roles.

PHTO 481 Filmmaking III

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 376. Techniques for production of short film projects in 16mm format with emphasis on sound as an integral part of production.

PHTO 484 Advanced Film Production Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Prerequisites: PHTO 481 and permission of instructor. The production of an advanced motion picture project.

PHTO 489-490 Motion Picture Special Effects

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. Prerequisite: PHTO 376 or permission of instructor. An exploration of special effects for film production.

PHTO 491 Topics in Photography and Film

Semester course; variable hours. 1-4 credits. May be repeated with different topics for a maximum of 12 credits. Prerequisite: Permission of instructor. A seminar and/or workshop offered on a variety of photography or film issues not included in the regular curriculum. See schedule of classes for specific topics covered each semester.

PHTO 492 Independent Study in Photography and Film

Semester course; variable hours. 1-3 credits. May be repeated for a maximum total of six credits. Prerequisites: Junior or senior standing as a major in photography and film, and approval of department chair and instructor. Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

PHTO 495 Photography and Film Internship

Semester course; 10 hours per week for a total of 150 hours of professional work experience. 3 credits. Prerequisite: Consent of coordinator and department chair. Supervised practical work experiences are coordinated with professionals in the field of photography or film.

PHTO 500 Photographic Studio and Seminar

Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisite: Permission of instructor. A seminar that examines the technical and aesthetic components of photography and filmmaking processes and the language and theories of photography and film criticism.

PHTO 601 Photographic Studio

Semester course; 6 or 12 studio hours. 3 or 6 credits. May be repeated. Prerequisite: Nonmajors may enroll with permission of instructor. Student will work on specific problems relating to the areas of their major interests. Options will be available in black and white photography, color photography, and motion picture photography.

PHTO 621 Research in Photography and Film

Semester course; 6 or 12 studio hours. 3 or 6 credits. May be repeated. Prerequisite: Nonmajors may enroll with permission of instructor. Students will engage in appropriate theoretical, experimental, or historical research in a specific area.

PHTO 690 Seminar in Photography and Film

Semester course; 3 lecture hours. 3 credits. May be repeated. An examination of contemporary issues and developments in photography and film. Students will have a chance to discuss their work and the work of others.

PHTO 692 Independent Study in Photography and Film

Semester course; variable lecture hours. 1 to 3 credits. May be repeated for a maximum of six credits. Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor.

PHTO 693 Fieldwork, Internship

Semester course; 6 or 12 studio hours. 3 or 6 credits. May be repeated. Professional field experience in the theoretical and practical applications of photography and/or film through cooperative organizations. Formal arrangements will be made with state agencies, industries, community organizations, and professionals in the field.

PHTO 699 Graduate Exhibition

Semester course; 1 or 3 lecture hours. 1 or 3 credits. To be taken the last semester of graduate program with approval of the department chair and review of student's record. Students in this course will prepare and mount an exhibition of their own work. In addition, they will be asked to provide a complete documentation of the sources and ideas presented in the exhibition.

Sculpture(SCPT)

SCPT 209, 210 Introduction to Sculpture

Semester courses; 2 lecture and 3 studio hours. 3, 3 credits. Open to non-art majors only. The course will offer an opportunity for students to work with some of the ideas and materials of sculpture through slides, lecture and studio involvement.

SCPT 211, 212 Sculpture

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. The primary goal of this course is the effective expression of ideas. The student is introduced to the basic tools, materials and techniques with attention given to problem solving.

SCPT 217, 218 Sculptural Concepts

Semester courses; 3 lecture and 3 studio hours. 4, 4 credits. Prerequisite: Permission of instructor. A study of contemporary technology, philosophy, criticism and their relation to material resources and technical practices.

SCPT 311, 312 Sculpture

Semester courses; 3 lecture and 6 studio hours. 4, 4 credits. May be repeated for a maximum of 8 credits. The emphasis in this course is on creative independence. The student is encouraged to utilize a variety of materials in order to express his ideas.

SCPT 313, 314/413, 414 Dimensional Concepts

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. An opportunity for the sculpture student to extend and expand upon traditional methods of expression and to explore new areas.

SCPT 411, 412 Sculpture

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. May be repeated for a maximum of 16 credits. The majority of the student's activities occur in the studio with emphasis on the development of a personal style.

SCPT 417 Seminar in Contemporary Sculpture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. A forum for consideration and discussion of recent developments.

SCPT 419 Professional Studio Practicum

Semester course; 9 studio hours. 3 credits. May be repeated. Prerequisite: Permission of departmental chair. A studio class that provides a continuation of the student's work in sculpture. This course will be recorded as an elective for a sculpture major.

SCPT 491 Topics in Sculpture

Semester course; 1-4 credits. May be repeated for a maximum of 16 credits. Prerequisite: Permission of instructor. A seminar or workshop on a selected issue or topic in the field of sculpture. See the Schedule of Classes for specific topics to be offered each semester.

SCPT 492 Independent Study in Sculpture

Semester course; variable hours. 1-4 credits. May be repeated for a maximum total of eight credits. Prerequisites: Senior standing as a major in sculpture and approval of department chair and instructor. Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

SCPT 500, 600 Graduate Sculpture

Semester course; 4, 8 or 12 studio hours. 2, 4 or 6 credits. May be repeated. Emphasis on individual creative production with periodic exposure of student's work and ideas to the critical attention of the teaching faculty of the department of sculpture and other graduate students.

SCPT 517 Seminar in Contemporary Sculpture

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. A forum for consideration and discussion of recent developments in the field.

SCPT 591 Topics in Sculpture

Semester course; variable hours. 1-4 credits. May be repeated for a maximum of 12 credits. This course will explore selected topics of current interests or needs relative to sculpture. See the Schedule of Classes for specific topics to be offered each semester.

SCPT 690 Graduate Seminar

Semester course; 4 lecture hours. 4 credits. May be repeated. Degree requirement for graduate students in the department of sculpture. Weekly seminar for the purpose of exploring recent developments in sculpture and conducting critiques in which students can discuss the ideas and attitudes manifest in their work.

SCPT 692 Independent Study in Sculpture

Semester course; variable lecture hours. 1 to 4 credits. Prerequisite: Approval of supervising faculty member and department chair necessary prior to registration. This course will be limited to graduate students in sculpture in high standing within the program. Learning experiences will be designed with the supervising faculty member in the form of a contract between student and instructor.

Speech(SPCH)

SPCH 121 Effective Speech

Semester course; 3 lecture hours. 3 credits. Structured speaking and critical listening experiences within the basic forms of speech communication: interpersonal, small group and public.

SPCH 321 Speech for Business and the Professions

Semester course; 3 lecture hours. 3 credits. Theory and practice in the oral communication process. Organization and presentation of informative and persuasive subject matter in professional contexts related to the student's major area of interest.

Theatre(THEA)

With permission of instructor, the following graduate courses may be taken by undergraduates for degree credit: THEA 501-502, THEA 505-506, THEA 508 and THEA 513-514. Graduate-level course descriptions are available online: http://www.vcu.edu/bulletins.

THEA 103 Stagecraft

Semester course; 9 studio hours. 3 credits. The fundamental methods, materials and techniques of set construction for the stage. Participation in departmental productions.

THEA 104 Costume Construction

Semester course; 9 studio hours. 3 credits. The fundamental methods, materials and techniques of costume construction for the stage. Participation in departmental productions.

THEA 107, 108 Introduction to Stage Performance

Semester courses; 3 lecture hours. 3, 3 credits. For non-theatre majors. A survey and application of the basic elements in stage performing; acting, scene study, voice and movement.

THEA 113-114 Acting I

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Open only to theatre majors upon satisfactory audition. Development of personal resources; an exploration of performance skills through theatre games, role playing, improvisation and work on basic script units.

THEA 201-202 Stage Voice and Speech

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Open only to theatre majors upon satisfactory audition. A study of the basic elements of voice and speech to include International Phonetic Alphabet, ear training, sound production, breathing and application of voice and speech elements to prose and poetry.

THEA 203-204 Movement for the Actor

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. Open to theatre majors only. A study of the basic elements of movement for the actor.

THEA 211-212 Introduction to Drama

Continuous courses; 3 lecture hours. 3-3 credits. Analysis and critical examination of plays for methods of interpretation and production qualities. Writing intensive.

THEA 213-214 Acting II

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Prerequisites: THEA 113-114 or equivalent. Open only to theatre majors upon satisfactory audition or with permission of instructor. A practical application of the psychophysical basis of acting through exploration, improvisation, scoring and performance of scenes.

THEA 221 Introduction to Scene Design

Semester course; 3 lecture hours. 3 credits. An introduction to the theories, practices and procedures of designing for the stage.

THEA 223, 224 Practicum in Theatre Technology

Semester courses; 9 studio hours. 3, 3 credits. Prerequisites: THEA 103 and THEA 104. Advanced study in theatre technologies and the materials and methodologies of stage construction.

THEA 225 Basic Stage Electronics-Lighting

Semester course; 3 lecture hours. 3 credits. A study of the properties and basic principles of electricity as they relate to the utilization of light on the stage. Participation in departmental productions.

THEA 227-228 Basic Stage Costuming and Makeup

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Prerequisite: THEA 104 or permission of instructor. A study of the techniques used to dress the performer, including design theory and make up application. Participation in departmental productions.

THEA 229 Introduction to Lighting Design

Semester course; 2 lecture and 3 studio hours. 3 credits. A study of issues concerning the properties of light and electricity as they relate to theatre including design, composition and color.

THEA 251, 252/351, 352/451, 452 Rehearsal and Performance

Semester courses; 2, 4 or 6 studio hours. 1, 2 or 3 credits. Work in acting, management, design or technical areas within a TheatreVCU production.

THEA 292 Independent Study in Theatre

Semester course; variable hours. 1-3 credits. May be repeated for a maximum total of six credits. Prerequisites: Sophomore standing as a major in theatre and approval of department chair and instructor. Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

THEA 301-302 Advanced Stage Voice and Speech

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. May be repeated for a maximum of 6-6 credits. Prerequisites: THEA 201-202. Additional prerequisite for THEA 302: "B" or better in THEA 301. Open only to theatre majors upon satisfactory audition or with permission of instructor. First semester: Study of major stage dialects. Second semester: Study and practice in the use of stage voice and speech applied to the plays of Shakespeare.

THEA 303/AFAM 303 Black Theatre

Semester course; 3 lecture hours. 3 credits. A study of the major developments in the evolution of black theatre through readings and studio performances in black-related and black theatre dramaturgy.

THEA 305-306 Advanced Scenic Design I-II

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. Prerequisites: THEA 221 and permission of instructor. A study of the techniques and methods of scene design.

THEA 307-308 History of the Theatre

Continuous courses; 3 lecture hours. 3-3 credits. A study and analysis of theatre history: the architecture, the performer and performances, the stage, the production methods and the audience.

THEA 309, 310 History of Costumes

Semester courses; 3 lecture hours. 3, 3 credits. Illustrated lectures on the history of clothing from primitive times to the present.

THEA 311-312 Advanced Movement for the Actor

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. Prerequisites: THEA 203-204. Additional prerequisite for THEA 312: "B" or better in THEA 311. Open only to theatre majors upon completion of satisfactory audition or with permission of instructor. An advanced-level approach to movement for the actor emphasizing physical control, flexibility and various techniques of stage combat with and without weapons. First semester: Study and practice in techniques of unarmed combat for the stage. Second semester: Study and practice in techniques of armed combat for the stage.

THEA 313-314 Actor's Studio I

Continuous courses; 1 lecture and 4 studio hours. 3-3 credits. Prerequisites: THEA 213-214. Additional prerequisite for THEA 314: "B" or better in THEA 313. Open only to theatre majors upon completion of a satisfactory audition or with permission of instructor. Students will learn techniques for approaching specific acting problems associated with the performance of various modern and contemporary acting styles.

THEA 315 Audition Technique

Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisites: "B" or better in THEA 313. Open only to theatre majors upon completion of a satisfactory audition or with permission of instructor. Concentrated work using various techniques and methods of auditioning for the stage, television and film.

THEA 321, 322 Research Techniques for Costume Design

Semester courses; 2 lecture and 2 studio hours. 3, 3 credits. Prerequisite: Permission of instructor. A seminar in research and design of costumes for the theatre, including discussion of fabrics and special construction methods used in stage costuming. Participation in departmental productions.

THEA 323 Practicum in Advanced Theatre Technology

Semester course; 9 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Advanced study in theatre technologies and technical management.

THEA 324 Practicum in Stage Lighting

Semester course; 9 studio hours. 3 credits. May be repeated for a maximum of 9 credits. Practical application in the methodologies of stage lighting.

THEA 325 Stage Management

Semester course; 2 lecture and 2 studio hours. 3 credits. Prerequisite: Permission of instructor. The fundamental responsibilities and techniques of professional stage management.

THEA 326 Theatrical Sound Design

Semester course; 3 lecture hours. 3 credits. May be repeated for up to 9 credits with permission of instructor. A study of sound design theory and the practical application of those ideas in creating sound designs for theatrical productions.

THEA 327 Theatrical Drafting

Semester course; 3 lecture hours. 3 credits. Prerequisites: THEA 221 and permission of instructor. Computer based instruction in the procedures and techniques of drafting for the theatre, including preparation and presentation, perspective, rotation, development and graphic solutions pertaining to theatrical construction problems.

THEA 330, 331/430, 431 Production

Semester courses; 1 or 2 lecture and 4 or 8 laboratory hours. 3 or 6 credits per semester. Open only to theatre majors. The design, rehearsal and performance of dramatic works.

THEA 340, 341/440, 441 Theatre Projects

Semester courses; 1 or 2 lecture and 4 or 8 laboratory hours. 3 or 6 credits per semester. Open only to theatre majors. Individual or group projects in acting, directing, costume design, stage design or dramaturgy.

THEA 361-362 Directing

Continuous courses; 3 lecture hours. 3-3 credits. Open only to theatre majors. Lectures and discussions on the theories of stage direction; problems involved in the production of period plays and a study of modern theories. Writing intensive.

THEA 392 Independent Study in Theatre

Semester course; variable hours. 1-3 credits. May be repeated for a maximum total of six credits. Prerequisites: Junior standing as a major in theatre and approval of department chair and instructor. Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

THEA 403, 404 History of Dramatic Literature

Semester courses; 3 lecture hours. 3, 3 credits. Study and analysis of dramatic literature. First semester: Aeschylus through Shakespeare. Second semester: Corneille to Ibsen.

THEA 407 Advanced Scenic Technique

Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisite: THEA 221 and permission of instructor. An intensive involvement in contemporary theory and practice of scenic techniques. Participation in departmental productions.

THEA 413 Actor's Studio II

Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisites: "B" or better in THEA 314. Open only to theatre majors upon completion of satisfactory audition or with permission of instructor. Students will learn techniques for approaching specific acting problems associated with the performance of various classical acting styles.

THEA 414 Actor's Studio III

Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisite: "B" or better in THEA 314. Open only to theatre majors upon completion of a satisfactory audition or with permission of instructor. Students will learn techniques for approaching specific acting problems associated with performance in front of the camera.

THEA 415 The Business of Theatre

Semester course; 3 lecture hours. 3 credits. Prerequisites: "B" or better in THEA 314. Open only to theatre majors upon completion of a satisfactory audition or with permission of instructor. An analysis and survey of beginning and maintaining a successful professional career in theatre, television and film, including information about contracts, unions, agents/managers, casting directors, taxes and other life strategies.

THEA 421, 422 Advanced Costume Design

Semester courses; 2 lecture and 2 studio hours. 3, 3 credits. Prerequisites: THEA 321 and 322, or permission of instructor. An advanced study of the techniques, methods and problems of costume design for the student who plans to enter the field professionally.

THEA 423, 424 Modern Drama

Semester courses; 3 lecture hours. 3, 3 credits. Intensive study of major continental and American plays.

THEA 426/ENGL 426 Playwriting

Semester course; 3 lecture hours. 3 credits. May be repeated once for credit. Prerequisite: ENGL 317 or permission of instructor. A practical introduction to the creation of original scripts for theatre. Works may be selected for reading and performance. May not be used to satisfy the literature requirement of the College of Humanities and Sciences.

THEA 429 Advanced Lighting Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: THEA 229 and permission of instructor. Advanced study of the methods, problems and techniques of lighting design for the student who plans to enter the field professionally.

THEA 491 Topics in Theatre

Semester course; variable hours. 1-3 credits per semester. May be repeated for a maximum of 9 credits. Flexible semester course in selected aspects of performance, theory, literature or history. See the Schedule of Classes for specific topics to be offered each semester.

THEA 492 Independent Study in Theatre

Semester course; variable hours. 1-3 credits per semester. May be repeated for a maximum of nine credits. Prerequisites: Senior standing as a major in theatre and approval of department chair and instructor. Individual instruction and supervision of a special project. Learning experiences should be designed with the supervising faculty member in the form of a contract between student and instructor. This course is limited to those students who have demonstrated an exceptional level of ability and intense commitment to their discipline.

THEA 493, 494 Professional Internship

Semester courses; 3-9 credits. A practicum in theatre conducted in cooperation with selected professional or semi-professional theatre organizations.

THEA 501, 502 Stage Voice and Speech

Semester course; 3, 3 credits. May be repeated with permission of instructor. Provides advanced work on breathing, support and projection of the voice with application to the demands of classical texts and/or dialects.

THEA 505 Advanced Scene Design III

Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisites: THEA 306 and permission of instructor. Intensive study of the professional standards and practices expected of scene designers.

THEA 506 Advanced Scene Design IV

Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisites: THEA 505 and permission of instructor. Continued intensive study of the professional standards and practices expected of scene designers.

THEA 508 Scene Painting

Semester course; 10 studio hours. 3 credits. May be repeated with permission of instructor for up to 12 credits. Study of the materials and techniques of scenic painting as well as the practices and expectations of those pursuing careers as scenic artists.

THEA 509 Theatre History

Semester course; 3 lecture hours. 3 credits. Study of modern theatre practice, dramatic literature and theory from the development of naturalism through the late 20th century.

THEA 510 Theatre Historiography

Semester course; 3 lecture hours. 3 credits. Study of how theatre history is documented and researched, and the theoretical perspectives that inform its writing.

THEA 513-514 Acting Styles

Continuous courses; 6 studio hours. 3-3 credits. Prerequisite: Permission of instructor. Open only to theatre majors upon satisfactory audition. A study of the history and theory of acting styles from the Greeks to the present.

THEA 517 Physical Acting

Semester course; may be repeated for a total of 12 credits. Prerequisite: Permission of instructor. Exploration and discovery of the principles of movement and their practical application to the stage. Emphasis on character development, solo and group scene work, physical comedy, and stage combat.

THEA 519 Theatre Pedagogy

Semester course; 3 lecture hours. 3 credits. Theory and practice in the teaching of college-level theatre.

THEA 593 Professional Internship

Semester course; 3-9 credits. May be repeated. Prerequisite: Permission of department chair. Majors only. A practicum in theatre conducted in cooperation with selected professional or semiprofessional theatre organizations.

THEA 603 Dramatic Literature and Theory

Semester course; 3 lecture hours. 3 credits. Multicultural study of selected plays in the history of dramatic literature, criticism and theory.

THEA 604 Modern Theatre: Theory and Practice

Semester course; 3 lecture hours. 3 credits. Seminar in the performance practices, texts and theories that have shaped the theatre throughout the 20th century.

THEA 605-606 Advanced Studies in Stage Design

Continuous courses; 1 lecture and 4 studio hours. 3-3 credits. Prerequisite: Permission of instructor. An advanced study in specific problems in stage design.

THEA 607 Problems in Scenic Techniques

Semester course; 1 lecture and 4 studio hours. 3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced, detailed study of selected problems in contemporary theory and practice of scenic technique.

THEA 609 Seminar in Production Process

Semester course; 1 lecture and 4 laboratory hours. 3 credits. May be repeated with different topics for a maximum of 9 credits. Students and faculty in design, technical theatre, and performance working together in studio situations to identify and solve problems relating to the planning, preparation, and realization of productions.

THEA 613 Advanced Problems in Acting

Semester course; 3 credits. May be repeated with permission of instructor. Focus on acting problems related to the actor's needs to develop proficiency in craft areas.

THEA 621, 622 Problems in Costume Design

Semester courses; 2 lecture and 2 studio hours. 3, 3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced study in specific problems in costume design.

THEA 623, 624 Advanced Studies in Modern Drama

Semester course; 3 lecture hours. 3, 3 credits. Intensive, detailed studies of selected subjects in major 19th- and 20th-century drama.

THEA 630 Production

Semester course; 6 laboratory hours. 3 credits. May be repeated. The design, rehearsal, and performance of dramatic works.

THEA 640, 641 Advanced Theatre Projects

Semester course; 1 or 2 lecture and 4 or 8 laboratory hours. 3 or 6 credits per semester. May be repeated. Individual or group projects in acting, directing, costume design, stage design or dramaturgy.

THEA 651 Advanced Design Studio

Semester course; 1 lecture and 4 laboratory hours. May be repeated. Intensive individual training in design and presentation processes as they apply to contemporary professional production.

THEA 661, 662 Problems in Stage Directing

Semester courses; 3 lecture hours. 3, 3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced, detailed study of selected aspects of directing techniques for the stage.

THEA 693 Colloquium and Practical Training

Semester course; 2 lecture and 2 studio hours. 3 credits. May be repeated for a maximum of 12 credits. Literary, historical, and theoretical studies together with specialized voice and movement training related to dramatic works in production.

THEA 694 Theatre Pedagogy Professional Internship

Semester course; 1 or 3 lecture hours. 1, 3 or 6 credits. May be repeated. Prerequisites: THEA 519 and permission of the graduate adviser in theatre. Research, design, and either implementation or thoroughly planned implementation of a curricular research and development project of relevance to a formal speech and/or theatre pedagogy program.

THEA 697 Research and Special Problems in Theatre

Semester course; 1 or 3 credits. May be repeated with permission of graduate adviser. Individually directed study and research under faculty supervision on approved research problems or projects in theatre.

THEA 698 Creative Project

Semester course; 3 credits. Provides the culminating performance or design experience in the student's degree emphasis. Adjudicated by the faculty.

THEA 699 Creative Project Evaluation

Semester course; 3 credits. Provides the student in acting, directing, costume design, and stage design the opportunity to document and evaluate the creative project. Defended before a committee of the faculty.

THEA 791 Seminar in Special Issues in Theatre

Semester course; variable hours. 1-3 credits per semester. May be repeated for a maximum of 9 credits. Prerequisite: Permission of instructor. An advanced, detailed study of selected, contemporary issues not included in the regular curriculum. See the Schedule of Classes for specific topics to be offered each semester.

THEA 799 Thesis

Semester course; 1-6 credits. May be repeated. Prerequisite: Permission of the department graduate studies adviser and department chair. Preparation of a thesis based on independent research.

Theatre Lab(THEZ)

THEZ 221L Introduction to Scene Design Laboratory

Semester course; 3 studio hours. 1 credit. Pre- or corequisite: THEA 221. Participation in departmental productions. Observation and participation in the practical application of scene design in performance.

THEZ 223L, 224L Practicum in Theatre Technology Laboratory

Semester courses; 3 studio hours. 1, 1 credit. Observation and participation in the practical application of theatre technology in performance.

THEZ 225L Basic Stage Electronics-Lighting Laboratory

Semester course; 2 studio hours. 1 credit. The practical application in production of the ideas, principles and theories discussed in design/technical courses.

THEZ 227L, 228L Basic Stage Costuming and Make-up Laboratory

Semester courses; 2 studio hours. 1, 1 credit. The practical application in production of the ideas, principles and theories discussed in design/technical courses.

THEZ 229L Introduction to Lighting Design Laboratory

Semester course; 2 studio hours. 1 credit. The practical application in production of the ideas, principles and theories discussed in design/technical courses.

THEZ 305L, 306L Scene Design Laboratory

Semester courses; 2 studio hours. 1, 1 credit. The practical application in production of the ideas, principles and theories discussed in design technical courses.

THEZ 321L, 322L Research Techniques for Costume Design Laboratory

Semester courses; 2 studio hours. 1, 1 credit. The practical application in production of the ideas, principles and theories discussed in design/technical courses.

THEZ 323L Practicum in Advanced Theatre Technology

Semester course; 3 studio hours. 1 credit. Pre- or corequisite: THEA 323. Observation and experience in a practical situation with an emphasis on leadership and crew management.

THEZ 324L Practicum in Stage Lighting

Semester course; 3 studio hours. 1 credit. Pre- or corequisite: THEA 324. Observation and experience in a practical situation with an emphasis on leadership and crew management.

THEZ 326L Theatrical Sound Design Laboratory

Semester course; 3 studio hours. 1 credit. Pre- or corequisite: THEA 326. Participation in departmental productions. Observation and participation in the practical application of sound design and execution in performance.

THEZ 407L Advanced Scenic Technique Laboratory

Semester course; 2 studio hours. 1 credit. The practical application in production of the ideas, principles and theories discussed in design/technical courses.

THEZ 421L, 422L Advanced Costume Design Laboratory

Semester courses; 2 studio hours. 1, 1 credit. The practical application in production of the ideas, principles and theories discussed in design/technical courses.

THEZ 429L Advanced Lighting Design Laboratory

Semester course; 2 studio hours. 1 credit. The practical application in production of the ideas, principles and theories discussed in design/technical courses.

School of Business

Accounting(ACCT)

ACCT 202 Accounting for Non-business Majors

Semester course; 3 lecture hours. 3 credits. The course is open only to non-business students. A nontechnical introduction to the principles of financial and managerial accounting with emphasis on the use and interpretation of financial reports, managerial planning and control. The course is for the individual who seeks a basic knowledge of accounting and its uses. It is designed for the user of accounting information rather than the preparer. This course cannot be substituted for ACCT 203, 204 or 205.

ACCT 203-204 Introduction to Accounting

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MATH 141 or equivalent. Theoretical and technical facets of financial and managerial accounting for business. Accumulation, analysis, interpretation and uses of accounting information.

ACCT 205 Introductory Accounting Survey

Semester course; 3 lecture hours. 3 credits. Restricted to students in the post-baccalaureate undergraduate certificate programs in accounting and information systems, students seeking a B.S. in Financial Technology, students enrolled in the School of Engineering, or by permission of instructor. An accelerated course covering theoretical and technical facets of financial and managerial accounting for business. Accumulation analysis, interpretation and uses of accounting information. May not be counted toward any of the B.S. programs offered by the School of Business other than the B.S. in Financial Technology.

ACCT 303-304 Intermediate Accounting I and II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: Competency in word processing and spreadsheets, ACCT 204, and junior standing. Grade of "C" or higher in ACCT 303 is required to take ACCT 304. Theoretical standards and procedures for accumulating and reporting financial information about business. Classification, valuation and timing involved in determination of income and asset/equity measurement.

ACCT 305 Tax Planning for Individuals

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 203. Not open to accounting majors. A general course in tax accounting concepts and procedures for students with a minimum of previous work in accounting. Emphasis is on aspects of taxation affecting the individual: federal and state income, estate, inheritance, gift, excise and payroll taxes; fundamentals of tax planning. Credit will not be given for both, this course and ACCT 405.

ACCT 306 Cost Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisites: Competency in word processing and spreadsheets, ACCT 204, and junior standing. Cost accumulation for inventory pricing and income determination. Cost behavior concepts for planning and control. Job order and process cost systems, standard costs, budgets and special topics in relevant costs for managerial decisions.

ACCT 307 Accounting Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: Competency in word processing and spreadsheets, ACCT 204, and junior standing. Examines design and evaluation of manual and computerized accounting information systems. Emphasis on the system of internal controls and the impact of computers on those controls.

ACCT 401 Governmental and Not-for-profit Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisites: ACCT 303-304, grade of "C" or higher in ACCT 304, and junior standing. The role of accounting in the management of resources entrusted to government and nonprofit entities, including accounting and reporting standards. Accounting in municipalities and nonprofit entities such as hospitals, charitable and health organizations, and colleges and universities.

ACCT 402 Advanced Cost Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 306. An advanced conceptual cost/managerial course designed to familiarize students with the more complex aspects of cost/managerial accounting concepts including process costing, standard costing, activity-based costing, Just-in-Time inventory systems, enterprise resource planning and issues relating to the relative strengths and limitations of managerial accounting.

ACCT 403 Management Control Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 307. An advanced conceptual management control systems course designed to expose students to the theoretical and conceptual foundations of management control systems (MCS) and to integrate accounting into the managerial decision/control process. Uses a predominantly case-oriented approach. While primary emphasis will be on integrating accounting into the management control process, significant attention also will be devoted to the behavioral issues involved in management control system design and implementation. Students also will receive hands-on experience in structuring and formulating control systems in an Enterprise Resource Planning system environment.

ACCT 404 Advanced Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisites: grade of "C" or higher in ACCT 304 and junior standing. Financial accounting for complex business relationships, including home office-branch accounting, business combinations, consolidated financial statements, partnerships and governmental funds.

ACCT 405 Tax Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 161 and INFO 162 or equivalent competency, ACCT 204, and junior standing. Income tax legislation and the concept of taxable income; federal income tax law applicable to individuals.

ACCT 406 Auditing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 301, grade of "C" or higher in ACCT 304 and ACCT 307, and junior standing. A study of the conceptual, theoretical and practical procedures applicable to auditing - both external and internal. Primary emphasis is placed upon the theory of audit evidence; the objectives, techniques and procedures for financial and operational audit reports.

ACCT 407 Advanced Auditing

3 lecture hours. 3 credits. Prerequisites: ACCT 406 and junior standing. An in-depth analysis of advanced topics in auditing. Topics include statements on auditing standards, unaudited statements, advanced statistical sampling applications and auditing in computer environments. Emphasis is given to preparing students for the auditing section of the CPA examination.

ACCT 410 Advanced Tax Accounting

3 lecture hours. 3 credits. Prerequisites: ACCT 405 and junior standing. Complex tax problems of the trust, partnership and corporation. Particular emphasis is given to tax planning.

ACCT 481-482/MRBL 481-482 Law for Accountants I and II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: Senior accounting major or permission of instructor. Provides detailed examination of laws that are of particular importance to accountants, along with ethical considerations and social and political influences. First semester: contracts, sales, agency, commercial paper, secured transactions and bankruptcy. Second semester: security regulations, antitrust, partnerships, corporations, suretyship, insurance, wills and trusts. Students may not receive degree credit for MRBL 481-482 and for MRBL 323, 324.

ACCT 492 Independent Study in Accounting

Semester course; 1-3 credits. Maximum total of 3 credits. Prerequisites: junior or senior standing as a major in a business curriculum and approval of adviser and department chair prior to course registration. Intensive study under supervision of a faculty member in an area not covered in-depth or contained in the regular curriculum.

ACCT 493 Internship in Accounting

Semester course; 3 credits. Prerequisites: senior standing in the major offering the internship and permission of the department chair. Intention to enroll must be indicated to the instructor prior to or during advance registration for semester of credit. Involves students in a meaningful experience in a setting appropriate to the major. Graded as pass/fail at the option of the department.

ACCT 506 Auditing

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 304 or equivalent with grade of "C" or higher. This course examines conceptual content and practical procedures applicable to auditing, both external and internal. Primary emphasis is placed on the theory of audit evidence; the objectives, methods and procedures for audits of financial statements; and the meaning of the various audit reports. The content also includes statements on auditing standards, attest standards and statistical sampling applications.

ACCT 507 Fundamentals of Accounting

Semester course; 3 lecture hours. 3 credits. Theoretical and technical facets of financial and managerial accounting for business. This is a graduate foundation course.

ACCT 513 Financial Reporting

Semester course; 3 lecture hours. 3 credits. Prerequisite: A grade of "C" or higher in ACCT 304. Financial auditing for complex business relationships, including business combinations, consolidated financial statements, restatement of foreign financial statements, foreign currency transactions, derivative instruments, partnership accounting and pension accounting. Emphasis is on current issues confronting accountants and financial reporting and the potential impact of these issues on business entities.

ACCT 601 Financial Accounting Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 credits in accounting or permission of instructor, including ACCT 304 or equivalent. The historical development of accounting thought and the way it has been influenced by social, political, and economic forces. Analysis of the structure and methodology emphasizes objectives, postulates, and principles. Income determination and asset equity valuation, in both theory and practice.

ACCT 602 Managerial Accounting Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 semester credits in accounting (or permission of instructor) including ACCT 306 or equivalent. Advanced aspects of the use of accounting information in the management process. Cost-based decision making and control systems are related to short- and long-term objectives of the firm.

ACCT 603 Environment of Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 credits in accounting, (or permission of instructor). The organization of the profession and accounting standard-setting bodies. Areas covered will include FASB, AICPA, SEC, other governmental regulatory agencies and current and emerging accounting issues and pronouncements.

ACCT 604 Auditing

Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 semester credits in accounting (or permission of instructor) including ACCT 406 or equivalent. Development of auditing theory, special disclosure issues, statistical sampling, ethical, legal, and social responsibilities of external and internal auditors. Emphasis on contemporary topics in auditing.

ACCT 605 Governmental and Not-for-profit Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 507. Budgeting, accounting, reporting, and related issues and pronouncements for governmental and not-for-profit organizations.

ACCT 606 International Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 507. International dimensions of accounting; national differences in accounting thought and practice; problems and issues.

ACCT 608 Managerial Accounting Concepts

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 507 or equivalent. The use of accounting information contained in reports to management. The functions of planning, decision making, and control are studied as accounting data are reported through the firm's information system and in special analyses.

ACCT 609 State and Local Taxation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405 or equivalent. Examination of the tax problems and planning opportunities inherent in state and local taxation, with emphasis on the problems of interstate business operations.

ACCT 662 Accounting Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: ACCT 507 and either ACCT 307, INFO 360, or INFO 560 or equivalent. Study of accounting systems, concepts, and applications with reference to actual problems encountered in the analysis, design, implementation, use, audit, and evaluation of accounting systems in a computer environment.

ACCT 678 Accounting Controls for Not-for-profit Organizations

Semester course; 3 lecture hours. 3 credits. This course is for non-business students who have a need to understand and use accounting information in their professions. The basics of compiling and analyzing financial information for governmental and other not-for-profit entities will be reviewed. In addition, the use of accounting as a control method in these entities will be studied. Students will be required to investigate ways accounting relates to their particular areas of interest. May not be included in the 30 semester credits of advanced work required for any of the master's degrees offered by the School of Business.

ACCT 679 International Taxation

Semester course; 3 lecture hours. 3 credits. Prerequisite: 24 semester credits in accounting (or permission of instructor) including ACCT 682 or equivalent. Problems of international taxation and business tax planning approaches. Tax implications of exporting and manufacturing abroad, foreign losses, and repatriation of earnings.

ACCT 680 Tax Research

Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 semester credits in accounting (or permission of instructor) including ACCT 405 or equivalent. Tax research methodology; the sources of tax law and their relationship to tax research.

ACCT 681 Tax Administration

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405 or equivalent. The Internal Revenue Service and the practices and procedures involved and/or available for the settlement of tax controversies and common elections of accounting methods.

ACCT 682 Corporate Taxation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405 or equivalent. Corporate tax laws as related to the corporations involved and to individual shareholders; tax aspects of the creation, operation, reorganization, and partial liquidation of corporations; corporate distributions.

ACCT 683 Taxation of Reorganizations

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 682. Continuation of the study of corporate taxation, with emphasis on corporate liquidations and reorganizations as well as collapsible corporations.

ACCT 684 Partnership Taxation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405 or equivalent. Tax problems related to organization, operation, and liquidation of a partnership. Also, tax problems of Subchapter S corporations, tax-exempt organizations, private foundations and other special corporate forms.

ACCT 685 Taxation of Property Transactions

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405. Tax problems and elections relating to acquisition, holding, and disposition of property. Tax planning in relation to comparisons of sales and exchanges as methods of acquiring and disposing of property; study of Section 1245, 1250, and 1231.

ACCT 686 Taxation of Pensions/Deferred Compensation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 682. Tax law as related to pensions, profit-sharing, and deferred compensation plans, and the tax consequences related thereto for individuals and businesses.

ACCT 687 Fiduciary Income Taxation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405 or equivalent. Tax laws relating to estates and to inter vivos and testamentary trusts. Tax planning will be stressed.

ACCT 688 Estate and Gift Taxation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405 or equivalent. Concepts of gross estate, marital deduction, powers of appointment, gross gifts, exclusions, deductions, and credits; tax aspects of estate planning.

ACCT 689 Estate Planning

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 688. Estate planning as it encompasses the acquisition, protection, and disposition of property; the role of the accountant in estate planning.

ACCT 690 Research Seminar in Accounting

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by the director of graduate programs in business. This course is designed to provide research experience for candidates not following the ACCT 798-799 program.

ACCT 691 Topics in Accounting

Semester course; 1-3 lecture hours. 1, 2 or 3 credits. Study of current topics. Topics may vary from semester to semester.

ACCT 697 Guided Study in Accounting

Semester course; 3 lecture hours. 1, 2 or 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

ACCT 790 Doctoral Seminar

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Analyzes and critiques general theories, practices and functions in a specialized area of accounting research.

ACCT 791 Doctoral Seminar: Managerial Accounting

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Presents contemporary issues in managerial accounting and auditing research.

ACCT 792 Doctoral Seminar: Financial Accounting

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Presents and analyzes contemporary issues in financial accounting.

ACCT 794 Doctoral Seminar: Research Methods in Accounting

Semester course; 3 lecture hours. 3 credits. Open only to Ph.D. students in business. Provides knowledge and skills for advanced accounting research.

ACCT 798-799 Thesis in Accounting

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

ACCT 898 Dissertation Research in Accounting

1-12 credits. Limited to Ph.D. in business candidates.

E-business(EBUS)

EBUS 201 Introduction to E-business

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 160 or CMSC 128, permission of instructor. Introduces students to management, marketing and legal considerations generated by electronic business activities. Topics include: the role of technology in organizational design and supply chain management; online contracts, intellectual property and jurisdiction of crimes committed using computers; online consumer behavior, business-to-business and business-to-consumer exchanges, and Internet marketing.

EBUS 202 Introduction to E-business Technologies

Semester course; 3 lecture hours. 3 credits. Prerequisite: EBUS 201 or permission of the instructor. Introduces students to the technologies used in e-business. Students will be introduced to current or emerging Web languages, e-business suites, software packages, Web application servers and other packages used in creating and running Web applications.

Economics(ECON)

ECON 101/INTL 102 Introduction to Political Economy

Semester course; 3 lecture hours. 3 credits. Seminar on the development of critical thought and economic analysis of policy issues. Focus is on how policy choices affect society and the individual, the economic methodology that guides policy choices, and the institutional and political environments within which policy is derived. Issues cover a broad range of topics including environmental issues, tax policy, inflation expectations, unemployment, foreign trade and the effectiveness of fiscal and monetary policies.

ECON 203 Introduction to Economics

Semester course; 3 lecture hours. 3 credits. A survey of economic principles, institutions and problems. The course is designed to provide basic economic understanding for students who do not expect to major in economics or in the School of Business. Not applicable for credit toward economics and business majors.

ECON 205 The Economics of Product Development and Markets

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 141. An introduction to some of the fundamental economic concepts necessary to effectively operate in today's marketplace. Basic elements of microeconomics, net present value analysis and market strategy will be covered in class. The goal is to provide students with a better understanding of how to approach business problems and of proven problem solving techniques. Appropriate for engineering and non-engineering students.

ECON 210-211 Principles of Economics

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MATH 001 or satisfactory score on the Mathematics Placement Test. A course designed to acquaint the student with a theoretical and practical understanding of the economic institutions and problems of the American economy. First semester: Microeconomics. Second semester: Macroeconomics.

ECON 291 Topics in Economics

Variable hours. Variable credit. Maximum of 3 credits per topic. Prerequisite: Permission of instructor. An in-depth study of selected business topics. Graded as pass/fail at the option of the department.

ECON 301 Microeconomic Theory

3 lecture hours. 3 credits. Prerequisites: ECON 210-211 and junior standing. Analysis of the principles that govern production, exchange and consumption of goods and services. Topics include demand analysis, production and cost theory, price and output determination, theory of markets and distribution theory.

ECON 302 Macroeconomic Theory

3 lecture hours. 3 credits. Prerequisites: ECON 210-211 and junior standing. A general survey of national income analysis and macroeconomic theory. Detailed study of public policies affecting price levels, employment, economic growth and the balance of payments.

ECON 303 Managerial Economics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211, MGMT 212 or MATH 200, and junior standing. Application of tools of economic analysis to allocation problems in profit and nonprofit organizations. Models for evaluating revenue, production, cost and pricing will be presented. Emphasis on developing decision rules for turning data into information for solving problems. Students may not receive credit for ECON 203, ECON 210 or ECON 211.

ECON 305 Public Finance - State and Local

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210 or ECON 203, and junior standing. An economic analysis of state and local government budgeting, revenue sources and expenditures. Students may not receive credit for ECON 203, ECON 210 or ECON 211.

ECON 306 Public Finance - Federal

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210 or ECON 203, and junior standing. An economic analysis of the fiscal decision process, revenue sources and expenditures at the federal level.

ECON 307 Money and Banking

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211, or ECON 203, and junior standing. A study of money, financial markets and the financial structure with emphasis on commercial banks and the Federal Reserve System. Relationships between economic activity and money supply are introduced.

ECON 312 E-commerce and Markets for Information Goods

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 203 or ECON 205 or ECON 210. This course surveys the ways that information and emerging information technologies affect market organization and market efficiency. Competitive strategies and regulatory policy for information markets also are considered. Topics include network effects, first mover advantages, auctions, price discrimination and organizational structure.

ECON 313 Economics of Transportation

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210 or ECON 203, and junior standing. An economic analysis of the transportation industry with special emphasis on regulation, public policy, and urban transportation.

ECON 315/AFAM 315/INTL 315 Economic Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210 or ECON 203, and junior standing. Introduction to the process of economic development. Surveys development theory and experiences of underdeveloped countries of Africa, Asia, Latin America and the Caribbean and of developed countries. Explores obstacles to development and policies and tools for stimulating economic development.

ECON 321/URSP 321 Urban Economics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210 or ECON 203, and junior standing. An introduction to urban economics, with an emphasis on the economics of agglomeration and the role of externalities in the urban economy. Economic analysis of the provision of urban public services and urban public financing, especially in politically fragmented areas.

ECON 325 Environmental Economics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing The application of economic analysis to externalities such as air and water pollution, pesticide control, land use planning and other environmental issues. The role of cost/benefit analysis in the decision-making process is developed. Efficiency and equity issues are evaluated.

ECON 329/INTL 329 International Economics

3 lecture hours. 3 credits. Prerequisites: ECON 210-211 and junior standing. An analysis of economic and political influences on exports and imports, balance of payments, foreign investment, exchange rates and international monetary systems.

ECON 401 Introduction to Econometrics

3 lecture hours. 3 credits. Prerequisites: ECON 210-211, MGMT 301 or STAT 210, and junior standing. Sources and uses of economic data; includes the application of statistical methods and regression analysis to time series and cross-section data to test hypotheses of micro- and macroeconomics.

ECON 402 Business Cycles and Forecasting

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211 and junior standing. An examination of repetitive variations in business activity. The measurement and analysis of economic fluctuations and how they affect the business environment. Stresses modern forecasting techniques.

ECON 403 Introduction to Mathematical Economics

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 212 or MATH 200, ECON 210-211, and junior standing. The application of mathematical techniques to economic theory and economic models.

ECON 419/HIST 333 History of Economic Thought

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211 and junior standing. A survey of the ideas of major economic contributors to modern economic thought. Theories of value, growth and distribution from the 18th through the 20th centuries will be presented.

ECON 421 Government and Business

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211 and junior standing. The application of economic analysis to the behavior of business, industry and government regulation. Topics include the causes and exercise of monopoly power, antitrust enforcement, public utilities and industry studies.

ECON 431 Labor Economics

3 lecture hours. 3 credits. Prerequisites: ECON 210-211 and junior standing. Analysis of labor markets and institutions to gain an understanding of the process of wage and employment determination. Both historic and current topics are included.

ECON 489 Senior Seminar in Economics

3 lecture hours. 3 credits. Prerequisites: ECON 301 and 302, or permission of instructor. Papers on current research of enrolled students, faculty and guests. Analysis of economic theory and problems on advanced level.

ECON 491 Topics in Economics

Semester course; variable hours. Variable credit. Maximum of 3 credits per topics course; maximum total of 6 credits for all topics courses. Prerequisite: Junior standing. An in-depth study of a selected economic topic, to be announced in advance.

ECON 492 Independent Study in Economics

Semester course; 1-3 credits. Maximum total of 3 credits. Prerequisites: junior or senior standing as an economics major and approval of adviser and department chair prior to course registration. Intensive study under supervision of a faculty member in an area not covered in depth or contained in the regular curriculum.

ECON 493 Internship in Economics

Semester course; the student is expected to work at the site 15-20 hours per week. 1-3 credits. Prerequisites: junior standing, a minimum of 3.0 GPA in economics courses, at least 15 economics credits and permission of the department chair. Intention to enroll must be indicated to the instructor prior to or during registration for semester of credit. The internship is designed to give students practical experience in an appropriate supervised environment in the public or private sector.

ECON 500 Concepts in Economics

Semester course; 3 lecture hours. 3 credits. Not open to students who have completed ECON 210 and 211 or the equivalent. Essential economic concepts including the price system, price determination in imperfectly competitive markets, employment theory, and monetary theory. This is a foundation course.

ECON 604 Advanced Microeconomic Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate course in intermediate microeconomic theory or theory of the firm. Theory of prices and markets; value and distribution. Partial and general equilibrium analysis.

ECON 605 Economic Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: 12 semester hours of economics. Examination of problems of poverty and economic policies in developing countries. Areas considered are Southeast Asia, Middle East, Africa, and Latin America.

ECON 606 Urban Economic Problems

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. A study of the location of economic activity, zoning, blight and unemployment, urban renewal, and redevelopment programs.

ECON 607 Advanced Macroeconomic Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate course in macroeconomic theory. National income analysis, monetary and fiscal theory and policy, and general equilibrium analysis.

ECON 609 Advanced International Economics

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. An advanced-level examination of why trade occurs, balance of payments concept and adjustment, international equilibrium, forward exchange, markets, international investment, and international organizations.

ECON 610 Managerial Economics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 500 or equivalent. Analysis of business decisions, applying tools of economic theory. Decisions on demand, production, cost, prices, profits, and investments.

ECON 612 Econometrics

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 401 or equivalent or permission of instructor. Provides empirical content to the theoretical concepts of the economics by formulating and estimating models. Introduction to simultaneous equation problems in economics and the studies of production, demand, and consumption functions.

ECON 614 Mathematical Economics

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 403 or equivalent or permission of instructor. Economic analysis utilizing simple mathematical methods. Includes derivation and exposition of theories and the application of tools to widen the scope and increase the usefulness of economics.

ECON 616 Advanced Public Finance

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent or permission of instructor. Theory and application of public finance, including taxation, expenditures, and budgeting. Special attention to cost-benefit analysis and to intergovernmental relations in federal system.

ECON 617 Financial Markets

Semester course; 3 lecture hours. 3 credits. Prerequisites: money and banking, or intermediate macroeconomics. Theories of markets for loanable funds are related to empirical findings and institutional structures. Yields of financial assets, kinds of debt instruments, financial institutions, public policy, financial models, and the role of money and credit in economic growth are considered.

ECON 620 The Economics of Industry

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 301, 303, or 610, or the equivalent. The application of economic analysis to the structure, conduct, and performance of industry; public regulation and policies to promote workable competition.

ECON 621 Topics in Economics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 500 or equivalent and permission of instructor. Study of specialized topic(s) in economics.

ECON 623 Anomalies in Financial Economics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 617 and ECON 401 or equivalent. Considers anomalies, or evidence that is inconsistent with or difficult to explain using received theory in economics. Studying anomalies is useful both to develop a better, subtler understanding of received theory and to recognize how the theory may be refined or changed to resolve the anomalies. Anomalies considered include the equity premium puzzle, excess-volatility, over-reaction and under-reaction of asset prices, and asset allocation puzzles. In some cases a proposed anomaly can be explained by more careful treatment of the problem. In other cases, new theories (e.g., noise-trader models) are put forward to explain anomalies.

ECON 624/HADM 624 Health Economics

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. Develops an understanding of (1) economics as a managerial tool in making choices or decisions that will provide for an optimum allocation of limited health care resources, and (2) economics as a way of thinking about and approaching issues of public policy in financing and organizing health and medical services. Individual research on crucial or controversial economic issues in the health field.

ECON 631 Labor Market Theory and Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 600 or one year undergraduate principles of economics. The study of theories and applications designed to analyze wage rate, wage structure, and employment patterns. Studies exploring specific labor markets and problems will be examined.

ECON 641 Econometric Time-series Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 612. Provides the analytical and programming tools needed to adeptly handle the statistical analyses of econometric time-series data. Topics include: stationarity, unit-roots, univariate time-series models, Vector Autoregressions (VARS), and co-integration. These tools will be used to analyze movements in interest rates, exchange rates and equity markets as well as the transmission of monetary policy actions.

ECON 642 Panel and Nonlinear Methods in Econometrics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 612. Includes panel data analysis (fixed and random effects); identification and estimation of nonlinear models, limited dependent variable models (probit, logit, tobit, etc.), duration models; and hypothesis/specification tests. The techniques discussed in class will be used to analyze a variety of empirical questions. The course has an applications rather than a theoretical focus.

ECON 682 An Economic Approach to Environmental Issues

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 500 or equivalent. The effect of externalities in terms of efficiency and equity considerations. The role and problems of benefit-cost analysis in decision making is developed. The interrelationship of air, water, and land quality issues is analyzed. The use rate of natural resources, energy consumption, and the steady-state economy and their impacts are evaluated.

ECON 690 Research Seminar in Economics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 604, 607, and 612. Familiarizes students with various research methodologies and research techniques, and provides in an elected field of economics, research experience and a survey of the literature.

ECON 691 Topics in Economics

Semester course; 1-3 lecture hours. 1, 2 or 3 credits. Study of current topics. Topics may vary from semester to semester.

ECON 693 Field Project in Economics

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

ECON 697 Guided Study in Economics

Semester course; 3 lecture hours. 1, 2 or 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

ECON 798-799 Thesis in Economics

Year course; 6 credits. Prerequisite: approval of the proposed work is required by the graduate adviser and the proposed thesis adviser. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

Finance, Insurance and Real Estate(FIRE)

FIRE 291 Topics in Finance, Insurance and Real Estate

Variable hours. Variable credit. Maximum of 3 credits per topic. Prerequisite: Permission of instructor. An in-depth study of selected business topics. Graded as pass/fail at the option of the department.

FIRE 311 Financial Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: ACCT 204 (or ACCT 202 for non-business majors) and junior standing. Pre- or corequisite: MGMT 301. Principles of optimal financial policy in the procurement and management of wealth by profit-seeking enterprises; the application of theory to financial decisions involving cash flow, capital structure and capital budgeting.

FIRE 312 Intermediate Financial Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 302, FIRE 311 and junior standing. Advanced topics in financial management with emphasis on the theoretical bases for the valuation of the firm.

FIRE 313 Financial Management for Small Business

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 311 and junior standing. This course emphasizes financial management needs for entrepreneurs or persons who expect to be employed in closely held corporations.

FIRE 314 Investments

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 301, and FIRE 311 or permission of department chair, and junior standing. An analysis of the market for long-term corporate securities. Emphasis is given to the valuation of bonds, common stocks, options and convertible securities and portfolio concepts. Designed to provide an understanding of the functioning of an efficient market.

FIRE 315 Personal Financial Planning

Semester course; 3 lecture hours. 3 credits. Designed to assist households and those providing financial services and advice to households in making complex financial decisions. Units include income and expenditure, credit, borrowing, banking, savings, insurance, home buying, investment and estate planning.

FIRE 316 Principles of Real Estate

Semester course; 3 lecture hours. 3 credits. Principles and practices of real estate development, financing, brokerage, appraisal, legal instruments and governmental land use influences.

FIRE 317 Real Property Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing Real property economics and planning, marketing and management of leased properties.

FIRE 318 Real Estate Negotiating

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing Introduces principles and techniques of negotiating in the marketing and financing of real estate.

FIRE 326/MRBL 326 Real Estate Law

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 323 or equivalent, and junior standing or permission of instructor. Legal fundamentals of real estate including contracts, concepts of title, title examination, easements, conveyances, liens and recording statutes.

FIRE 330 Regulatory Aspects of Safety and Risk Control

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing Examines political, scientific and social concepts of risk that influence the regulation of certain societal hazards and threats. Includes a survey of federal and state laws, regulations and standards that impact upon employment, the environment, industrial security, consumer protection and occupational safety and health.

FIRE 332 System Safety

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. Addresses the concepts and practices of system safety; included are basic system concepts, application of system safety techniques, qualitative and quantitative applications such as fault-free, failure-mode-and-effects, MORT and cost-benefit analyses.

FIRE 333 Risk and Insurance

Semester course; 3 lecture hours. 3 credits. Nature of risk; insurance and other risk handling methods; examination of basic life, health, property, and liability principles and coverages.

FIRE 334 Incident Investigation and Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. Reviews various conceptual and analytical models used in accident/incident investigation strategies and reporting systems, report formats, data collection methods, causal inferences, problem identification and data analysis; in-depth case studies and epidemiological reviews of recent events will be emphasized.

FIRE 413/INTL 413 Comparative Financial Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 311 and junior standing. An analysis of the structure and functioning of financial systems in different parts of the world. Emphasis is on the evolution of such systems in relation to the U.S. financial system. Different regions of the world may be studied in different semesters.

FIRE 414 Security Analysis and Portfolio Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 302, FIRE 314 and junior standing. A detailed analysis of stocks and bonds as well as options and futures. Emphasis is on models for portfolio selection, revision and performance evaluation.

FIRE 416/INTL 416 International Financial Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 311 and junior standing. Financial management of business in an international environment. Emphasis on tools and techniques to prepare financial managers of multinational firms to effectively respond to the challenges of the international environment.

FIRE 417 Cases in Financial Management

3 lecture hours. 3 credits. Pre- or corequisites: FIRE 312 and junior standing. Cases involving financial decisions for various forms of business enterprises.

FIRE 423 Real Estate Brokerage

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 316 and junior standing, or permission of instructor. Considers administrative principles and practices of real estate brokerage, financial control and marketing of real property.

FIRE 424 Property and Liability Insurance

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 333, or permission of instructor, and junior standing. Property and liability risk identification and measurement. Major commercial line coverages including fire, marine, automobile, general liability, worker's compensation, fidelity and surety bonds.

FIRE 425 Real Estate Appraisal

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing or permission of instructor. Designed for persons who have completed a course in principles of real estate or its equivalent, or have experience in the real estate field. Topics include neighborhood and site analysis using cost, market and income approaches.

FIRE 426 Life and Health Insurance

3 lecture hours. 3 credits. Prerequisite: Junior standing. The function, nature and uses of life and health insurance and annuities; operational aspects of life insurance companies. Full-time students who pass this course can receive credit for the CLU HS323 examination from the American College. See instructor for details.

FIRE 428 Employee Benefit Planning

Semester course; 3 lecture hours. 3 credits. Management of group life, health, disability and retirement plans. New developments in employee benefits, plan design, administration, cost, funding, regulation and tax considerations.

FIRE 429 Real Estate Finance

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing or permission of instructor. Instruments, techniques and institutions of real estate finance; the mortgage market; financing process; mortgage risk analysis; creative financing; emphasis on policies and procedures used in financing residential and commercial properties.

FIRE 430 Issues in Risk Management and Insurance

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. The course focuses on the timely issues in the field of risk management and insurance. It looks at the role of government and the insurance industry, and the use of other financial solutions in handling risks faced by businesses and individuals. The topics covered change to reflect current societal and industry issues and to explore new risk management innovations.

FIRE 431 Advanced Real Estate Appraisal

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 425 and junior standing or permission of instructor. Provides a comprehensive study of the principles and concepts underlying the income approach to investment property appraisal and the mathematics of yield capitalization.

FIRE 432/MRBL 432 Insurance Law

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. The legal concepts and doctrines applicable to insurance. Fundamental legal aspects of life, health, property and liability insurance.

FIRE 437 Funds Management in Financial Institutions

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 311 and junior standing. Funds management techniques for selected financial institutions including investment companies (mutual funds), life and casualty insurers, savings and loans, mutual savings banks, commercial banks, pension funds.

FIRE 444/MGMT 444 Occupational Safety, Health and Security

Semester course; 3 lecture hours. 3 credits. Covers the principles and practices, and regulatory dimensions of occupational safety, health and security. Causes of workplace health hazard exposures, accidents and domestic and international industrial violence are studied with an emphasis on prevention. Characteristics of effective occupational safety, health and workplace security programs are studied to facilitate understanding and application in the workplace.

FIRE 455 Options, Futures and Swaps

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 312 or FIRE 314, and junior standing. Analysis and valuation of speculative securities and markets, including options, futures and swaps with emphasis on their use for hedging and speculative purposes. Major valuation models and term structure models are discussed with applications to problems in finance considered.

FIRE 465 Managing Financial Risk

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 314, STAT 321 and junior standing. Sources of financial risk. Enterprise-wide financial risk software such as SAS Risk Dimensions (or similar software) will be utilized to learn about value at risk, credit risk, stress testing financial risk management models and how to manage financial risk.

FIRE 466 E-business Risk Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: EBUS 201 and EBUS 202, or permission of instructor, and junior standing. An analysis of the risks associated with e-business and the practice of e-commerce.

FIRE 491 Topics in Finance, Insurance and Real Estate

Semester course; variable hours. Variable credit. Maximum of 3 credits per course; maximum total of 6 credits for all topic courses. Prerequisite: Junior standing. An in-depth study of a selected business topic, to be announced in advance.

FIRE 492 Independent Study in Finance, Insurance and Real Estate

Semester course; 1-3 credits. Maximum total of 3 credits. Prerequisites: junior or senior standing as a major in a business curriculum and approval of adviser and department chair prior to course registration. Intensive study under supervision of a faculty member in an area not covered in-depth or contained in the regular curriculum.

FIRE 493 Internship in Finance, Insurance and Real Estate

Semester course; 3 credits. Prerequisites: senior standing with a major in finance (either the finance or insurance track) or real estate, a minimum GPA of 2.8 and permission of the Department of Finance, Insurance and Real Estate department chair or the director of the insurance or real estate program. Involves students in a meaningful experience in finance, insurance or real estate. Intention to enroll must be indicated to the chair or appropriate program director.

FIRE 520 Financial Concepts of Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 507 or equivalent. Pre- or corequisite: MGMT 524 or equivalent. Not open to students who have completed FIRE 311 or the equivalent. A study of the essential concepts of financial management in a global environment, including working capital management, capital budgeting, capital structure planning and dividend policy. This is a foundation course.

FIRE 533 Insurance Education Institute for High School Teachers

3 credits. This is a summer course designed for high school teachers in such fields as business, marketing, economics, mathematics, social sciences, history, life skills, home economics, or other disciplines in which the subject of risk and insurance can be incorporated into the curriculum. Teachers will learn about risk management, life, health, auto, homeowners insurance and financial planning. They will receive instructional materials and guidance to develop lesson plans for their use in teaching the subject to their students.

FIRE 621 Cases in Financial Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 520 or equivalent. Analysis, in a global environment, of financial problems and policies of nonfinancial firms, including capital management, capital rationing and cost of capital, and capital structure.

FIRE 622 Financial Management of Financial Institutions

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 520 or equivalent. Understanding the application of concepts relevant to the financial management of financial institutions in a global environment.

FIRE 623 Financial Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 520 or equivalent. Analyzes the theory and practice of corporate finance. Detailed investigation of the investment and financing decision of the firm in an environment of uncertainty.

FIRE 625 Group Insurance and Pension Planning

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 520 and MRBL 530 or equivalents. Analysis of major elements of employee benefit plans including: life, health and disability benefits, pension, and profit-sharing plans. Design principles, financing, legal, and tax considerations are examined. Major issues and new developments. Courses directly related to risk, insurance and employee benefits are approved for Virginia Insurance Continuing Education. Forty-two credits for insurance agents. Contact the director of insurance studies for further information.

FIRE 626 Risk Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 520, MRBL 530, and MGMT 524 or equivalent. Property and liability risks faced by businesses and public institutions are studied. Insurance and alternative methods of controlling and financing these risks are analyzed and compared. Courses directly related to risk, insurance and employee benefits are approved for Virginia Insurance Continuing Education. Forty-two credits for insurance agents. Contact the director of insurance studies for further information.

FIRE 627 Real Estate Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A study of the development process; including market analysis, site selection, pre-acquisition strategic planning, and project management.

FIRE 628 Using GIS in Real Estate Decisions

Semester course; 3 lecture hours. 3 credits. Acquaints students with Geographic Information Systems technology as a means of selecting and comparatively analyzing prospective sites. Students will use GIS software in making location decisions.

FIRE 629 Real Estate Investment Analysis

Semester course; 3 lecture hours. 3 credits. Housing demand forecasting, commercial site selection, and real estate investment analysis.

FIRE 635 Investments and Security Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 520 and MGMT 524 or equivalent. The process of investing in stocks and bonds in a global environment, from the analysis of individual securities to portfolio formation and evaluation, using experiential analytic exercises.

FIRE 638 Real Property Investment Law

Semester course; 3 lecture hours. 3 credits. Prerequisite: MRBL 323 or equivalent, or permission of instructor. Covers legal aspects of real property development from acquisition through disposition; emphasizes selection of appropriate ownership form, financing, operation, and tax considerations.

FIRE 639 International Finance

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 520 or equivalent. A study of financial management of multinational enterprises, banks, firms with foreign subsidiaries, exporters, and service industries. Additionally, financing trade and investments, international money and capital markets, foreign exchange risks, and governmental policies will be covered.

FIRE 650 Derivatives

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 520 or equivalent. Analysis of derivatives contracts: forwards, futures, swaps and options. Study of valuation, pricing and use of derivatives to manage risk in a global environment.

FIRE 654 Short-term Financial Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 520 or equivalent. Techniques of short-term financial management (or working capital management) in a global environment for business firms, including understanding payment systems to achieve efficient cash management of accounts receivable, management of inventory, management of accounts payable, and short-term borrowing from banks and other suppliers of short-term credit.

FIRE 657 Current Issues in Investments and Markets

3 lecture hours. 3 credits. Prerequisite: FIRE 635. Advanced study of selected topics in global investments and securities markets using experiential exercises. Topics selected by the instructor. Readings from recent journals, cases, and/or software may be used. Possible topics may include: fixed income mathematics; portfolio management; advanced investments theory; factors explaining security price movements; advanced security analysis; using information to make investment decisions; and security market microstructure.

FIRE 658 Real Estate Finance and Investments

Semester course; 3 lecture hours. 3 credits. Prerequisites: FIRE 431 or permission of instructor. Emphasizes economic and financial analysis of commercial real estate investments, alternative financing structures and surveys recent trends in the securitization of commercial real estate debt and equity markets.

FIRE 664 Current Issues in Corporate Finance

Semester course; 3 lecture hours. 3 credits. Prerequisite: FIRE 621 or FIRE 623. Advanced study of selected topics in corporate finance and financial management in global entrepreneurial settings. Topics selected by the instructor. Readings from recent journals, cases and/or software may be used. Possible topics include: theory and evidence concerning major corporate financial policy decisions, bankruptcy costs and agency costs that relate to capital structure and dividend policy, issues in corporate control, alternative methods of issuing and retiring securities mergers and acquisitions, advanced valuation theory, advanced financial analysis, advanced capital budgeting, using information to make financial decisions.

FIRE 690 Research Seminar in Finance, Insurance and Real Estate

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by the director of graduate programs. This course is designed to provide research experience for candidates not following the FIRE 798-799 program.

FIRE 691 Topics in Finance, Insurance and Real Estate

Semester course; 1-3 lecture hours. 1, 2 or 3 credits. Study of current topics. Topics may vary from semester to semester.

FIRE 693 Field Project in Finance, Insurance and Real Estate

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project using experiential exercises. A written report of the investigations is required. To be taken at the end of the program.

FIRE 697 Guided Study in Finance, Insurance and Real Estate

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education in an international environment will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

FIRE 758 Theory of Finance

Semester course; 3 lecture hours. 3 credits. Prerequisites: All foundation courses, 12 hours of graduate business courses, and two advanced finance courses including FIRE 623 or permission of chair. Advanced discussion of the theoretical underpinnings of modern financial theory as applied to choice under uncertainty and efficient capital markets. Includes a detailed analysis of state-preference theory, mean-variance uncertainty and market equilibrium. In depth investigation of the seminal empirical findings as pertains to capital structure and dividend policy.

FIRE 759 Portfolio Theory and Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 and FIRE 635 or equivalent. A study of current theory of valuation and performance of portfolios, focusing on models to express the risk/return characteristics of the portfolio. Includes models for portfolio selection and for evaluation of managed portfolios.

FIRE 798-799 Thesis in Finance, Insurance and Real Estate

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

Fast Track M.B.A.(FMBA)

FMBA 601-602 Team Building and Leadership

6 credits. Presents how organizations steer members toward what needs doing. Design, functions and creation of teams, engaging leadership and motivation processes to set and achieve organizational goals; management of emerging communication and evaluation processes; interacting with boards and with customers are developed across disciplines.

FMBA 603 Business Foundations

3 credits. Presents how to build a foundation in business quantitative techniques. Concepts of accounting/financial reporting, quality, finance concepts, control and hypothesis testing are developed and integrated across disciplines.

FMBA 604, 605, 606 Analysis and Decisions

Semester course; 9 credits. Presents how organizations define and choose. Concepts and tools of problem solving for administrative decisions; concepts and tools of measurement, planning, and control; management of conflict, cooperation, negotiation, and implementation are developed and integrated across disciplines.

FMBA 607 Global Challenges

Semester course; 3 credits. Presents an educational tour for direct experience of influences and perspectives: France, Great Britain, Indonesia or Mexico.

FMBA 608 Organizational Culture

3 credits. Presents how organizations develop and operate. Concepts of information technology-adding values, environmental regulations/law, entrepreneurial culture, probability market orientation and management functions are explored.

FMBA 609-610 Productivity and Innovation

6 credits. Presents how organizations change and improve. Management of creativity, critical thinking and rewards; development of resources; implementing concepts of quality, effectiveness and change are developed across disciplines.

FMBA 611-613 Strategic Management

9 credits. Presents how organizations define, plan and accomplish missions. Comprehensive integration of business functions and processes; systems thinking, managing shareholder value; anticipating and interacting with changing internal and external environments; formulation and implementation of strategy and integrated across disciplines.

Information Systems(INFO)

INFO 160 Introduction to Windows and the Internet

Semester course; 1 credit. Familiarizes students with basic computer concepts and introduces them to the microcomputer environment and the Internet. Topics include an introduction to hardware and software, accessing the Internet and the use of Web browsers as well as hands-on experience with a windows-based microcomputer system and the Internet. This course requires no prior knowledge of computers and it provides the necessary foundation for introductory application courses. Graded as pass/fail. Administered as a self-paced, computer aided instructional course.

INFO 161 Introduction to Microcomputer-based Word Processing Packages

Semester course; 1 credit. Prerequisite: INFO 160 or equivalent knowledge. Introduces students to fundamental use of a microcomputer-based word processor. Topics include document preparation and modification, tab sets and indentation, bullets and lists, and table formats. The course will help students prepare documents and papers that other VCU course work may require. Graded as pass/fail. Administered as a self-paced, computer aided instructional course.

INFO 162 Introduction to Microcomputer-based Spreadsheet Packages

Semester course; 1 credit. Prerequisite: INFO 160 or equivalent knowledge. Introduces students to fundamentals of spreadsheet processing on the microcomputer. Topics include the entering of text, numbers and formulas, formatting, moving, copying, recalculation, graphing, retrieving, saving, and printing. The course will help students prepare financial analyses and products other VCU course work may require. Graded as pass/fail. Administered as a self-paced, computer aided instructional course.

INFO 163 Introduction to Web Page Design and Application Software

Semester course; 1 credit. Prerequisite: INFO 160, 161 or equivalent knowledge. Introduces students to Web page design and construction using application software. Topics include Web page creation and modification, hypertext links, tables, graphics, and Web site organization. Administered as a self-paced, computer-aided instructional course.

INFO 164 Intermediate Microcomputer-based Word Processing Packages

Semester course; 1 credit. Prerequisite: INFO 160, 161 or equivalent knowledge. Introduces students to intermediate use of a microcomputer-based word processor. Topics to include master documents, mail merge, directories, professional newsletters, forms, macros and linking to other applications. This course is designed for those students with some prior experience with computer-based word processing packages and will assist students with academic and professional career development. Graded as pass/fail. Administered as a self-paced, computer-aided instructional course.

INFO 165 Intermediate Microcomputer-based Spreadsheet Packages

Semester course; 1 credit. Prerequisite: INFO 162 or equivalent knowledge. Topics include the creation and use of macros, advanced formulas, statistical and financial functions, and lists. Designed for those students with some prior experience with computer-based spreadsheets. Administered as a self-paced, computer-aided instructional course.

INFO 166 Introduction to Microcomputer-based Database Packages

Semester course; 1 credit. Prerequisite: INFO 160 or equivalent knowledge. Introduces students to the fundamental use of a microcomputer-based database management system package. Topics include creating and editing tables and forms, sorting and filtering data and generating reports and mailing lists. Designed for those students not majoring in information systems. Graded as pass/fail. Administered as self-paced, computer-aided instructional course.

INFO 167 Introduction to Internet Researching

Semester course; 1 lecture hour. 1 credit. Prerequisite: INFO 160 and 161 or equivalent. Course emphasizes Internet search tools and research skills development while expanding students understanding of the World Wide Web and its resources. Students will learn to explore and evaluate the various types of search sites, including the VCU Library Internet resources and learn skills for developing researching strategies. Using a microcomputer-based Web browser such as Internet Explorer or Netscape, students will learn about advanced browser features that will aid them in their search efforts. This course provides the necessary foundation to help students better find and use Web resources for documents and papers that other VCU course work may require.

INFO 168 Introduction to Microcomputer-based Presentation Packages

Semester course; 1 credit. Prerequisite: INFO 160 or equivalent knowledge. Familiarizes students with the fundamental use of a microcomputer-based presentation package. Topics include creating and editing presentations, creating and modifying drawing objects and adding clip art. The course will help students prepare presentations and products other VCU course work may require. Graded as pass/fail. Administered as self-paced, computer aided instructional course.

INFO 169 Multimedia Presentations

Short course; 1 lecture hour. 5 weeks. 1 credit. Prerequisite: INFO 168 or equivalent knowledge. Familiarizes students with the fundamental use of multimedia to enhance presentations. Topics include adding animation, creating templates, linking to other resources as well as audio and video. The course will help students to prepare more effective and professional presentations.

INFO 250 Introduction to Programming

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 160 or equivalent knowledge, MGMT 171, or permission of the instructor. Introduces students to writing, testing and debugging Java programs using simple logic and algorithms. Basic Java applets and the graphic user interface are covered. Cannot be used as an elective in the information systems major.

INFO 291 Topics in Information Systems

Variable hours. Variable credit. Maximum of 3 credits per topic. Prerequisite: Permission of instructor. An in-depth study of selected business topics. Graded as pass/fail at the option of the department.

INFO 300 Computer Hardware and Software

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: INFO 250 or equivalent. Principles of computer hardware and software architecture, organization and operation. Introduction to data structures.

INFO 350 Intermediate Programming

Semester course; 3 lecture hours. 3 credits. Prerequisite: A grade of "C" or better in INFO 250 or equivalent knowledge. Pre- or corequisite: INFO 300. Complex algorithms and hierarchical Java class libraries are introduced. The course emphasizes building business applications using Java Swing components, events and message handling. HTML and Web site generation are covered. Students cannot receive credit for both CMSC 256 and INFO 350.

INFO 360 Business Information Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 160, INFO 161 and INFO 162 or equivalent knowledge, and sophomore standing. Provides an understanding of the importance of computer-based information in the success of the firm. Emphasis is on the role of information systems within each of the functional areas of business. Major concepts include data management, decision support and management information systems.

INFO 361 Systems Analysis and Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 360 and junior standing. Examines the concepts, tools and techniques used to develop and support computer-based information systems. Systems planning, analysis, design and implementation are covered. Behavioral and model building aspects of systems development are emphasized throughout.

INFO 364 Database Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 250, INFO 360 and junior standing. Designed to prepare students for development of systems involving databases and database management.

INFO 370 Fundamentals of Data Communications

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 300 and junior standing. Introduction and overview of computer networks and data communications. Provides an understanding of the underlying concepts of computer networking. Emphasis is placed on terminology, techniques and issues in networking systems.

INFO 450 Advanced Programming

Semester course; 3 lecture hours. 3 credits. Prerequisites: A grade of "C" or better in INFO 350 and junior standing. The course covers advanced programming concepts using the Java and C++ languages. Topics include pointers, advanced GUI components and the building of multithreaded applications containing reusable components based upon design patterns and advanced data structures. Students cannot receive credit for both CMSC 245/246 and INFO 450.

INFO 451 Java Support for E-business

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of "C" or better in INFO 350 and 364, and junior standing. The course focuses on the technical aspects of developing of e-business systems using Servlets and JSP. It will integrate the student's prior knowledge of GUI development on the client-side with server-side Java applications in a multi-tiered environment that includes database connectivity. Students will use XML, messaging and distributed registries along with Web Services to support the sharing of data and processes for e-business applications.

INFO 461 Information Systems Planning

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 361 and junior standing. Concentrated study of planning methods and techniques required for defining, planning, integrating and implementing information technology projects consistent with the organizational strategic plan and mission.

INFO 463 Business Process Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 361, permission of instructor and junior standing. A survey of legacy system re-engineering technologies in which the student becomes familiar with a variety of tools used in practice and has the opportunity to develop applications using these tools under supervision. Selection of technologies is determined each semester.

INFO 465 Projects in Information Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 361, 364 and junior standing. The student's behavioral and technical skills developed in INFO 361 and INFO 364 are challenged by participating in a team systems development project. Appropriate computer assisted software engineering (CASE) tools are used throughout the project, from requirement specification to implementation and testing.

INFO 468 Information Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 361, 364, permission of instructor and junior standing. A study of information engineering as a model-based, data-centric approach to integrating organizational strategic planning with enterprise information systems development. Involves readings, group discussion and case studies.

INFO 472 LAN Administration

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 370 and junior standing. Reviews the various types of Local Area Network (LAN) technology, with a strong emphasis on their underlying protocols. The importance of security and how to achieve it also is covered. This conceptual basis is complemented with a hands-on introduction to LAN administration using some of the most commonly deployed network operating systems (NOS).

INFO 474 Internetworking and TCP/IP

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 370 and junior standing. In-depth discussion of the TCP/IP protocol suite and its application to internetworking. Other topics include security and application protocols.

INFO 491 Topics in Information Systems

Semester course; variable hours. Variable credit. Maximum of 3 credits per course; maximum total of 6 credits for all topic courses. Prerequisite: Junior standing. An in-depth study of a selected business topic, to be announced in advance.

INFO 492 Independent Study in Information Systems

Semester course; 1-3 credits. Maximum total of 3 credits. Prerequisites: junior or senior standing as a major in a business curriculum and approval of adviser and department chair prior to course registration. Intensive study under supervision of a faculty member in an area not covered in-depth or contained in the regular curriculum.

INFO 493 Internship in Information Systems

Semester course; 3 lecture hours. 3 credits. Pre- or corequisites: 3.2 GPA in major, permission of director of ISRI, INFO 370 and 465. Intention to enroll must be indicated to director prior to or during advance registration of the semester of credit. Involves students in a meaningful experience, typically 20 hours per week, in a setting appropriate to the major. Students enrolled in INFO 493 may register for a maximum of six credit hours of other course work.

INFO 610 Analysis and Design of Database Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 464 or equivalent. Designed to prepare students for the development of information systems using databases and database management techniques.

INFO 611 Data Engineering

Semester course; 3 lecture hours. 3 credits. Teaches the process of reengineering data from current to desired structures. Covers a range of methods, tools and techniques for reverse engineering existing schemas and data structure definitions used as the basis for designing more suitable data structures. Appropriate case tools provide students with practical experience.

INFO 614 Data Mining

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 464 or INFO 610. A data mining process has the goal of discovering nontrivial, interesting and actionable knowledge from data in databases. The course introduces important concepts, models and techniques of data mining for modern organizations. Students gain a deeper understanding of concepts and techniques covered in lectures by doing a practical term project that applies one or more of the data mining models and techniques. Students also are given the opportunity to gain knowledge on the features and functionalities of state-of-the-art data mining software through their preparation of a research report.

INFO 616 Data Warehousing

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 610. Covers important concepts and techniques in the design and implementation of a data warehouse. Topics include: the data warehouse architecture, the logical and physical design issues in the data warehousing development process, technical factors (i.e., hardware, client/server technology, data warehousing and DBMS technologies) and implementation considerations (i.e., data extraction, clean-up and transformation tools). Introduces Online Analytical Processing (OLAP) and Data Mining.

INFO 619 Computer-assisted Simulation

Semester course; 3 lecture hours. 3 credits. Prerequisite: Knowledge of computer programming and MGMT 524 or equivalent. Investigates the concepts and applications of different types of computer-assisted simulation modeling approaches. Includes experimental design, systems modeling, programming in a simulation language, and model validation. Emphasis will be on discrete simulation techniques in a business environment.

INFO 620 Data Communications

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 370 or equivalent. Computer network design, communication line control, and communication hardware and software.

INFO 622 Network Security and Administration

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 620. Studies the principles of network security and its application to real networks. Also covers the use of intrusion detection, intrusion prevention and other related tools.

INFO 630 Systems Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 361 and 464. Covers business process and data requirements modeling for information systems, using advanced methods and techniques. Students will gain hands-on experience developing specifications and a functional prototype application with current CASE and development tools.

INFO 632 Business Process Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 661 or INFO 640 or equivalent. Critically reviews business process (re)engineering methods and practices. The discipline of Business Process and Application Architectures and modularization are examined. Issues in the implementation of application support for business processes are discussed. The discussion includes strategy visioning, performance benchmarking, process modeling and analysis, and planning organizational change. State-of-the-art business engineering tool-sets such as SAP Business Engineer and J.D. Edwards Business Engineering tool-sets are extensively used to provide practical experience.

INFO 640 Information Systems Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 360 or equivalent. A detailed study of the issues, principles, techniques and best practices in managing information systems and enterprise knowledge as organizational resources. Managing enterprise knowledge and information systems involves taking a disciplined approach to managing the infrastructures and harnessing the collective knowledge capital and brain power of individuals and organizations. Topics include: IT operations, issues in strategic management, establishing standards and procedures, performance evaluation and benchmarking, hardware and software acquisition, physical environments and security issues, outsourcing and partnerships, personnel, knowledge ontology, meta-knowledge and others.

INFO 641 Strategic Information Systems Planning

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or 661 or permission from the director of graduate studies in the School of Business. Focuses on developing, implementing and evaluating strategic plans for corporate information systems. Assesses the role of information systems as a competitive tool. Methods and frameworks for strategic analysis are introduced. Mechanisms for establishing an information systems strategy are presented. Emphasis placed on understanding change management issues in IS planning for organizations.

INFO 642 Decision Support and Intelligent Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 610 and 630. Focuses on the design and deployment of decision technology of two broad types: decision support systems, which are meant to be employed in an advisory capacity by their human users, and intelligent systems, which are generally designed as autonomous decision agents and so intended to displace human functionaries.

INFO 643 Information Technology Project Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or 661 or permission from the director of graduate studies in the School of Business. Provides a clear understanding of project management techniques. Covers aspects of planning, organizing, controlling and implementing IT projects. IT project management processes, project scheduling and links with information systems strategy and change management are explored.

INFO 644 Information Systems Security

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or 661 or permission from the director of graduate studies in the School of Business. Explores issues related to protecting information resources of a firm. Various tools and techniques useful for assessing IS security concerns in organizations are introduced. Principles and models for IS security management are presented. Overall the course provides a managerially oriented frame of reference for dealing with IS security issues.

INFO 654 Systems Interface Design

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 640 or 661. Analyzes factors important in designing the interface for business information systems. Includes designing and developing systems for the Internet. Requires students to work in teams to produce prototype interactive systems.

INFO 658 Electronic Commerce

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 661 or INFO 640. Overviews the emerging field of electronic commerce with emphasis on how information technologies and networks will change the exchange of goods and services in the 21st century. Specific topics include technological infrastructures, types of applications, key policy issues and future trends. Students are evaluated through case study analysis and research, readings, short papers and a class project.

INFO 661 Information Systems for Managers

Semester course; 3 lecture hours. 3 credits. Prerequisites: Completion of all M.B.A. foundation courses or equivalent. This course is restricted to M.B.A. students and must be taken concurrently with MGMT 641. Provides an understanding of the importance and role of information systems in modern business decision making. Emphasizes choices about information technology and managing projects.

INFO 664 Emerging Issues in Information Technology

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 641 and INFO 661. This course is restricted to M.B.A. students and must be taken concurrently with MGMT 675. An investigation of the current and emerging issues in information technology and its role in organizations.

INFO 690 Research Seminar in Information Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by the director of graduate programs. This course is designed to provide research experience for candidates not following the INFO 798-799 program.

INFO 691 Topics in Information Systems

Semester course; 1-3 lecture hours. 1, 2 or 3 credits. Study of current topics. Topics may vary from semester to semester.

INFO 693 Field Project in Information Systems

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

INFO 697 Guided Study in Information Systems

Semester course; 3 lecture hours. 1, 2 or 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

INFO 700 Principles of Scientific Inquiry in Business

3 lecture hours. 3 credits. A seminar on the philosophical and epistemological foundations of scientific inquiry as they relate to research in business and its allied disciplines. The focus will be on the underlying logic, elements, reach and limits of alternative frameworks such as positivism, empiricism, and Bayesean analysis and the conditions under which each is the preferred method of inquiry.

INFO 710 Database Systems

Semester course; 3 lecture hours. 3 credits. Explores advanced concepts related to management of modern organizations' data resources. Focuses on data administration and the technical aspects of database systems. Some of the database research issues covered include: data quality, design, security, metadata, XML databases and data warehousing. Prepares students for further research into aspects of database systems.

INFO 720 Analysis and Design of Systems

Semester course; 3 lecture hours. 3 credits. Covers the philosophical and theoretical foundations of information systems development methodologies and their evolution. Provides an intellectual foundation for students wishing to write a doctoral dissertation in this subject matter. Students will be required to read and analyze articles considered fundamental to the current understanding of the subject.

INFO 730 Information Systems Strategy

Semester course; 3 lecture hours. 3 credits. Provides the basis for further Ph.D.-level work in information systems strategy. Covers the theoretical foundations of the subject area. In particular the economic, phychological, sociological and cultural aspects are considered. This focus helps students to identify different research orientations and helps develop an informed opinion on critical research areas.

INFO 740 Decision Support and Intelligent Systems

Semester course; 3 lecture hours. 3 credits. Provides the basis for further Ph.D.-level work in decision support and intelligent systems. Explores the theoretical and technical aspects of the subject area. It helps students identify different research orientations with respect to the notion of intelligent systems and build an informed opinion on critical research areas. Explores issues around classes of decision predicates and decision situations. The course also helps students understand technical innovations in decision technologies as they relate to the study of decision support and intelligent systems.

INFO 750 Information Systems Security

Semester course; 3 lecture hours. 3 credits. Provides the basis for further Ph.D.-level work in information systems security. Covers the theoretical aspects of the subject area. It helps students identify different research orientations with respect to IS security and build an informed opinion on critical research areas. Explores issues around what IS security is (ontology) and how to acquire the relevant knowledge (epistemology). The course also helps students understand methods of social science research as they relate to IS security.

INFO 760 Knowledge Management

Semester course; 3 lecture hours. 3 credits. Explores advanced concepts related to knowledge management and knowledge discovery in modern organizations. Material for the course is drawn from research papers and doctoral dissertations. Requires a high level of student participation, particularly in their critical reviews and presentation of relevant research materials.

INFO 767 Information Systems Network Design

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 467 or INFO 667. Introduction to the concepts of data communication network design. Wide area, local, and distributed networks are studied together with their interrelationship to business information systems. Case study orientation throughout.

INFO 798-799 Thesis in Information Systems

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

INFO 898 Dissertation Research in Information Systems

1-12 credits. Limited to Ph.D. in business candidates.

Information Technology Management(ISTM)

ISTM 671 Organizational Culture and Team Building

Semester course; 3 lecture hours. 3 credits. Provides students an understanding of the impact information technology has made in defining an organization's culture and the processes that are used to support operational and strategic decision making. Groupware tools are used to simulate how organizations use computer-based collaboration software for sharing information, ideas and knowledge designed for improved productivity and decision making in order to enhance the organization's competitiveness strategically. Topics include: organizational culture and team building in the age of new business models, virtual work environments, privacy, telecommuting, monitoring Internet access and content, and communication etiquette, electronic teleconferencing, video, data and web conferencing.

ISTM 672 Information Systems Management

Semester course; 3 lecture hours. 3 credits. Examines the information requirements of an organization. The difference in the kinds of information needed at operational, administrative, strategic and organizational levels are emphasized. Planning and implementing a comprehensive information system and methods to measure its effectiveness are discussed. Topics include Capability Maturity Models, managerial support systems and information resources planning.

ISTM 673 Analysis and Decisions

Semester course; 3 lecture hours. 3 credits. Focuses on the analysis and decisions required for selecting new systems or technology. Specifically, the course covers business requirements analysis, system life-cycle models, Unified Process and other system development methodologies, structural and behavioral system models, CASE tools, decision analysis for vendor and technology selection, feasibility and risk analysis, and implementation and transition management.

ISTM 674 Emerging Technologies

Semester course; 3 lecture hours. 3 credits. Designed to identify emerging computer hardware, software and communication/network technologies that impact the design and implementation of new information systems. Topics will address emerging technologies that are changing data storage, modes of information processing and media for dissemination. Managerial challenges and issues, including new and existing technology compatibility, the return on new technology investments, and strategies for assessing and mitigating an organization's risk exposure are examined.

ISTM 675 IS Planning and Project Management

Semester course; 3 lecture hours. 3 credits. Provides a basic framework for understanding IT project management, building on the skills needed to manage projects of all sizes. Topics include the project life cycle, project team, project selection, project organization, project planning, negotiation and conflict resolution, and resource management. The responsibility and authority of a program manager and the integration of program functions in a complex organizational structure will be addressed. Through a combination of simulation activities with formal presentations and experiential learning, the following concepts will be addressed: definition of budgets, allocation of resources, consideration of ROI, earned value, management consideration of metrics accumulation and assessment, and control of scope creep.

ISTM 676 Information Systems Assurance and Security Management

Semester course; 3 lecture hours. 3 credits. Provides a fresh look at managing and protecting the information resources of a firm. While identifying issues, concerns and problems, the course takes students through various tools and techniques that are useful in interpreting information systems security concerns in organizations. In a final synthesis, principles and models are presented that help in proactively managing IS security.

ISTM 677 Structuring Information for Decision Making

Semester course; 3 lecture hours. 3 credits. Presents an overview of information systems methods that are used to structure information for decision making. Following a review of the basics of data management, the course examines various database management systems. The course then continues with an investigation of data warehousing, data mining, XML, knowledge management and business intelligence. Students successfully completing the course will understand the range of potential data management options used to present information for decision making and their various strengths and weaknesses.

ISTM 678 IS in the Digital Economy

Semester course; 3 lecture hours. 3 credits. Expounds on the innovative nature of the confluence of the Web and business. The notion of disruptive technologies is introduced and discussed. Further, the means by which the relative success and failure of IS in the digital economy can be assessed/measured are deliberated. A number of emergent issues related to the digital economy (viz. eTrust, eCRM, social responsibility, etc.) are discussed.

ISTM 679 Enterprise Information Systems

Semester course; 3 lecture hours. 3 credits. Over the past decade, organizations have been relying more and more on enterprise-wide deployment of software applications (ERP) to solve their integration problems. This course begins by describing the true size and magnitude of the enterprise integration challenge, then it examines the general form of problem solution offered by these ERP packages. Since implementation of ERPs continues to be a major challenge, the course fully examines both the track record and successful approaches to enterprise information systems implementation. Finally, new developments in this area are explored.

ISTM 691 Topics in IT Management

Semester course; 3 lecture hours. 3 credits. Study of current topics. Topics may vary from semester to semester.

Management(MGMT)

MGMT 121 The Business Environment

Semester course; 3 lecture hours. 3 credits. Not open to juniors and seniors in the School of Business. Concepts and issues in contemporary business.

MGMT 171 Mathematical Applications for Business

Semester course; 3 lecture hours. 3 credits. Prerequisites: basic spreadsheet knowledge and MATH 141 or equivalent. (Equivalency may be validated by a satisfactory score on the VCU Mathematics Placement Test.) Formulation and solution of problems using a spreadsheet and algebra, mathematics of finance, matrices, introductory linear programming, and basic probability. Instruction will include spreadsheet use as a calculation and graphing tool.

MGMT 212 Differential Calculus and Optimization for Business

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 171. Univariate and bivariate differential calculus and optimization of algebraic functions that model business phenomena. Students should take MGMT 212 immediately after completing MGMT 171.

MGMT 291 Topics in Management

Variable hours. Variable credit. Maximum of 3 credits per topic. Prerequisite: Permission of instructor. An in-depth study of selected business topics. Graded as pass/fail at the option of the department.

MGMT 301-302 Business Statistics

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MGMT 212. Statistical methods employed in the collection and analysis of business and economic data. First semester: statistical thinking, concepts of variability, process studies, data collection, descriptive measures, probability and introduction to statistical inference. Second semester: continuation of statistical inference, ANOVA, contingency tables, regression and correlation analysis with emphasis on problem formulation and interpretation of computational results. Students may not receive degree credit for both MGMT 301 and STAT 210, 212 or 312. Students should take MGMT 302 immediately after completing MGMT 301.

MGMT 319 Organizational Behavior

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. Introduction to the determinants and consequences of human behavior and task performance in an organizational setting. Topics include motivation, job design, group development, organizational design, communication, leadership and change.

MGMT 320 Production/Operations Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 301 and junior standing. Discipline of management and the management process within the operations of an organization. Planning and controlling of operations through decision analysis, forecasting, aggregate planning, inventory management and quality management.

MGMT 323 Legal Environment of Business

Semester course; 3 lecture hours. 3 credits. Prerequisite: junior standing. Basic legal concepts applicable to business, including the legal aspects of operating a business, contracts, employment relationships, sales, bailments and commercial paper, along with ethical considerations and social and political influences. Students may not receive degree credit for both MGMT 323 and MRBL/ACCT 481.

MGMT 325 Organizational Communication

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGL 101-200 and junior standing. A study of interpersonal, team and organizational communication practices in modern dynamic work and virtual environments. This writing-intensive course includes topics dealing with written business messages, report writing, job search techniques, nonverbal communication, oral presentations and intercultural communication. The focus will include both theoretical constructs and skill development.

MGMT 327/ENGL 327 Business and Technical Report Writing

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing; ENGL 200 and three credits in a 200-level literature course (or equivalent). Development of critical writing skills used in business, science, technology and government, including instructions, descriptions, process explanations, reports, manuals and proposals. The course will include such topics as communication theory, technical style, illustrations, formats for proposals, reports and manuals.

MGMT 329/INTL 327 Introduction to Intercultural Communication

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. An introduction to the basic concepts, principles and skills for improving verbal and nonverbal communication with persons from different cultures. Using a cultural general approach, topics discussed include the concept of culture, barriers to intercultural communication, verbal communication process and nonverbal communication aspects. Appropriate for business and non-business majors.

MGMT 331 Human Resource Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. Introduces students to the role of human resource management (HRM) in attracting and retaining a productive workforce. Includes human resource planning, recruitment and selection; employee diversity and development; performance appraisal and reward systems; labor and employee relations; and public policy related to HRM practices.

MGMT 334 Organization Design and Effectiveness

Semester course; 3 lecture hours. 3 credits. Prerequisites: junior standing. Applies macro-organization theory to the effective design of organizational structure and processes. Examines the role of factors such as technology, structure, strategy and environment; power, politics and culture in organizations; and organizational life cycles.

MGMT 339 Management Science

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 301 and junior standing. Concepts and techniques of management science as they apply to solving business problems, with a focus on applications. Includes linear programming, transportation method, PERT/CPM, queuing models and simulation.

MGMT 346 Technology and the Management Process

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. Study of the impact of information technology (IT) on the managerial process, workgroups and communication. Specific topics include IT applications for information workers, nontraditional work environments, environmental ergonomics, security and electronic monitoring of employees, identification and selection of end-user IT, and technology and organizational change.

MGMT 350 Introduction to Project Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. Introductory exposure to and practice with the concepts of project management, the activities and skills of project managers, the prevalence of projects in organizations and the value of project management skills for all managers. Students will employ project management terminology, participate in project work, and engage in the appropriate technical and interpersonal processes for managing successful projects.

MGMT 385 Production/Operations Management II

Semester course; 3 lecture hours. 3 credits. Pre- or corequisites: MGMT 320 or permission of the instructor, and junior standing. Analyzes operations in organizations through consideration of product and process design, location, layout, job design, work measurement, productivity, scheduling and maintenance.

MGMT 386 Supply Chain Management

Semester course; 3 lecture hours. 3 credits. Pre- or corequisites: MGMT 320 or permission of the instructor, and junior standing. Introduction to supply chains with emphasis on management, e-commerce and globalization. Topics covered include achievement of strategic fit among members of the chain; managing information system requirements; managing economies of scale, role of cycle inventory, impact of aggregation on risk and inventory; determining the optimal level of product availability, coordination and performance measurement.

MGMT 389 Managerial Skills Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 319 or permission of instructor. A practicum in the development of personal, interpersonal and team-management skills as applied to leadership and teamwork.

MGMT 418/INTL 418 International Management

3 lecture hours. 3 credits. Prerequisite: junior standing. The study of the environment of international business, ethics and social responsibility in international settings, culture and its effect on behavior and management practice, and the strategies and management practices of firms engaged in international activities. Aims to provide students with the knowledge, skills and sensitivities needed to be effective managers in the international business environment.

MGMT 419/INTL 419 Doing Business in Europe

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing and permission of instructor. Designed primarily as a core integrative course for students enrolled in the Certificate in International Management Studies, but other students are welcome. The course has three goals: a) integration of Foreign Languages, European Studies and International Management; b) infusion of other business areas relevant to doing business in Europe (such as international marketing, finance law and economics); and c) the development of cultural sensitivity and social responsibility. The course will be organized as a series of seminars with faculty and other speakers from the above disciplines.

MGMT 420 Seminar in Industrial Relations

3 lecture hours. 3 credits. Prerequisites: MGMT 331 or permission of instructor, and junior standing. Managerial decision making in labor management relationships; the collective bargaining process and the administration of labor agreements; the impact of public policy and labor legislation.

MGMT 421 Introduction to Entrepreneurship

Semester course; 3 lecture hours. 3 credits. The importance, problems and requirements of small businesses; establishing policies for prices, promotion, control and credit; regulations as well as specific strategies and opportunities related to e-business.

MGMT 422 Managing the Family Firm

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 421 or permission of instructor, and junior standing. Students are expected to develop specific strategies and approaches to enhance the effectiveness of the family firm. Designed for members of family firms as well as those who will be working in or providing goods or services for family enterprises. Topics include succession strategies; management and strategic planning; ownership issues; taxes-transfer, gift and estate; professionalizing the family firm; boards of directors in the family firm, family business growth, psychological issues, change and conflict in the family business; family relations; women in the family firm; the younger generation; consulting and education for family business; family business in society; global and ethnicity issues in family business; culture and values.

MGMT 427 Employment Law

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 323 or 331 or permission of instructor. A survey of legislation and court and administrative-body decisions affecting the employer/employee relationship.

MGMT 433 Compensation Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 331. The design and implementation of compensation and reward systems that both support an organization's strategy and enhance organizational effectiveness.

MGMT 434 Strategic Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: senior standing in a School of Business major and completion of all School of Business core courses. Integrative course to analyze policy issues at the overall management-level involving functional areas such as production, finance and marketing, in context with the economic, political and social environment.

MGMT 435 Strategic Human Resource Management

3 lecture hours. 3 credits. Prerequisites: MGMT 331 or permission of instructor, and junior standing. A critical study of selected problems in human resource management.

MGMT 436 New Venture Initiation

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 421 or permission of instructor, and junior standing. Students engage in the development of a comprehensive business plan. Various strategies for success are explored and factors in entrepreneurial competency are discussed.

MGMT 439 Quality I

Semester course; 3 lecture hours. 3 credits. Prerequisites: junior standing, and MGMT 301 or STAT 212 and permission of instructor. Quality concepts and tools with a focus on the use of statistical thinking in leading organizations; collection and use of data to direct actions for improvement; introduction to analytic studies; the role of process stability; statistical tools for assessing stability and improving processes.

MGMT 440 Forecasting Methods and Process

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 302 or equivalent, and junior standing. An application-oriented presentation of forecasting process and forecasting methods to support planning and decision making. Statistical forecasting methods are emphasized, including exponential smoothing, decomposition and regression. Also includes experience with computer software.

MGMT 444/FIRE 444 Occupational Safety, Health and Security

Semester course; 3 lecture hours. 3 credits. Covers the principles and practices, and regulatory dimensions of occupational safety, health and security. Causes of workplace health hazard exposures, accidents and domestic and international industrial violence are studied with an emphasis on prevention. Characteristics of effective occupational safety, health and workplace security programs are studied to facilitate understanding and application in the workplace.

MGMT 446/INTL 446 International Human Resource Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 331 or MGMT/INTL 418 or permission of instructor. Covers the application of human resource management activities in an international context. Highlights similarities and differences with domestic methods; current practices in the selection, development, compensation and maintenance of parent-country, host-country and third-country nationals; and the impact of regulatory and cultural differences between countries.

MGMT 447 Human Resource Information Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 331 and INFO 360, or permission of instructor. Covers contemporary human resource information software used in the primary activities of human resource management involving recruitment, selection, performance appraisal, employee benefits, pay administration, safety and health, human resource development, job analysis, human resource planning and job structuring. Emphasis is on introducing the software and practical application through hands-on experience in the computer laboratory.

MGMT 491 Topics in Management

Semester course; variable hours. Variable credit. Maximum of 3 credits per course; maximum total of 6 credits for all topic courses. Prerequisite: Junior standing. An in-depth study of a selected business topic, to be announced in advance.

MGMT 492 Independent Study in Management

Semester course; 1-3 credits. Maximum total of 3 credits. Prerequisites: junior or senior standing as a major in a business curriculum and approval of adviser and department chair prior to course registration. Intensive study under supervision of a faculty member in an area not covered in-depth or contained in the regular curriculum.

MGMT 493 Internship in Management

Semester course; 3 credits. Prerequisites: senior standing in the major offering the internship and permission of the department chair. Intention to enroll must be indicated to the instructor prior to or during advance registration for semester of credit. Involves students in a meaningful experience in a setting appropriate to the major. Graded as pass/fail at the option of the department.

MGMT 500 Quantitative Foundation for Decision Making

Semester course; 3 lecture hours. 3 credits. Prerequisite: Basic course in algebra. Students without an adequate background in algebra should take MGMT 171. A review of basic algebra with emphasis on differential and integral calculus and their application in solving business problems. These topics also provide the necessary foundation for using and understanding more advanced quantitative procedures. May not be included in the 30 semester credits of advanced work required for any of the master's degrees offered by the School of Business.

MGMT 524 Statistical Elements of Quantitative Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 500 or equivalent. Develops an ability to interpret and analyze business data in a managerial decision-making context. Managerial applications are stressed in a coverage of descriptive statistics, probability, sampling, estimation, hypothesis testing, and simple regression and correlation analysis. This is a foundation course.

MGMT 540 Management Theory and Practice

Semester course; 3 lecture hours. 3 credits. Theories, principles, and fundamentals applicable to contemporary management thought and productive activities. This is a foundation course.

MGMT 632 Statistical Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. A business application-oriented coverage of statistical inference, analysis of variance, multiple regression and correlation, basic forecasting techniques, nonparametric tests, and other related procedures. Use of a computer statistical package will be included for most topics.

MGMT 633 Issues in Labor Relations

Semester course; 3 lecture hours. 3 credits. The conceptual framework of labor relations; the interconnection between labor-management relations and the sociopolitical environment.

MGMT 634 Collective Bargaining and Labor Arbitration

Semester course; 3 lecture hours. 3 credits. The negotiation and administration of collective bargaining contracts; the handling of grievances.

MGMT 637 Advanced Human Resource Management

Semester course; 3 lecture hours. 3 credits. A critical analysis of the functions and problem areas related to human resource management in a large organization; philosophy of human resource management; employee recruiting, testing, and wage and salary administration and supplemental compensation systems; manpower, training, and development; employee services; the legal environment of human resource management.

MGMT 641 Organizational Leadership and Project Team Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: Completion of all M.B.A. foundation courses or equivalent, or permission from the Graduate Studies in Business Office. This course is restricted to M.B.A. students and must be taken concurrently with INFO 661. An advanced course in management, involving theories and models aimed at developing the managerial competencies needed to analyze, understand, predict and guide individual, group, and organizational behavior.

MGMT 642 Business Policy

Semester course; 3 lecture hours. 3 credits. Prerequisite: Must be taken after completion of all foundation courses plus 15 credits of advanced courses. Integration of principles and policies of business management from the fields of accounting, economics, marketing, finance, statistics, and management in the solution of broad company problems and in the establishment of company policy. Emphasis on interaction of disciplines in efficient administration of a business. Course employs case analysis approach.

MGMT 643 Applied Multivariate Methods

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 632 or equivalent. Study of multivariate statistical methods frequently used in business and administrative problems including principal components, factor analysis, discriminant analysis, MANOVA, and cluster analysis. The focus is on applying these techniques through the use of a computer package.

MGMT 644 International Business Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Completion of foundation courses. Survey course for students interested in international and multinational management. Review of historical, governmental, monetary, and cultural issues affecting the transfer of resources and management knowledge across national boundaries; multinational business and management strategies; study of management practices in selected countries.

MGMT 645 Operations Research

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. Business problems in production, inventory, finance, marketing, and transportation translated into mathematical models: strengths and weaknesses of such translations. Solution procedures and their limitations.

MGMT 648 Managerial Decision Making

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. Formal analytical techniques used by organizations in reaching decisions. The concepts of both classical and Bayesian decision methods will be examined. The emphasis is on the application of a decision-theoretic approach to solving problems in contemporary organizations.

MGMT 649 Compensation Policy and Administration

Semester course; 3 lecture hours. 3 credits. Analysis of the concepts and processes involved in compensation systems. Includes evaluation of the internal and external dimensions of compensation, policy issues involved, concepts, and forms of compensation, administration of compensation systems, and current and future issues.

MGMT 651 Organizational Communication

Semester course; 3 lecture hours. 3 credits. Study of theoretical constructs of the communication process in organizations. Application of communication principles to managerial functions, training, telecommunications, and other organizational situations.

MGMT 652 Advanced Business Communication

Semester course; 3 lecture hours. 3 credits. Development of skill in planning and writing business reports and other shorter written communications, conducting business research, delivering oral presentation, and using business communication media.

MGMT 655 Entrepreneurship

Semester course; 3 lecture hours. 3 credits. Individual and corporate entrepreneurship in high and low technology enterprises. Develops an understanding of the role of entrepreneurship in management theories and practices. Students will develop comprehensive venture analysis plans for presentation.

MGMT 669 Forecasting Methods for Business

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent that includes simple regression. A presentation of forecasting methods and applications for managerial decision making in business and other organizations. Coverage includes selection of appropriate methods and issues involved in developing and implementing forecasting models. Techniques covered include smoothing, seasonal adjustment, time series (Box-Jenkins) and judgmental methods.

MGMT 674 Cases in Operations Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: ACCT 608, MGMT 645, and completion of foundation courses or equivalent. Integrates and applies prior instruction in operations research. Provides experience in the use of operations research techniques for solving organizational problems through the analyses of cases and management simulations. Use of computer packages will be emphasized.

MGMT 675 Operations Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 641 and INFO 661. This course is restricted to M.B.A. students and must be taken concurrently with INFO 664. A systematic investigation of the concepts and issues in designing, operating and controlling productive systems in both manufacturing and services.

MGMT 677 Quality

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. Provides a foundation in current concepts of quality management and the tools/techniques used in a quality improvement process. Philosophies of quality management and statistical tools/techniques for continuous improvement are presented. Applications for manufacturing and service industries included.

MGMT 680 Health, Safety and Security Administration

Semester course; 3 lecture hours. 3 credits. Study of design and development of an effective safety or risk-control program. Topics include organizational needs and assessment, program evaluation, design/implementation of critical program components, training, accident cost-accounting, cost containment. Also addresses management strategies, communication techniques, motivation and incentive programs and other special topics.

MGMT 682 Human Resource Staffing

Semester course; 3 lecture hours. 3 credits. Addresses the activities and processes that affect the staffing function. Subjects include attracting, selecting, and retaining people who will facilitate the accomplishment of organizational goals. Designed for the future human resource professional who will be involved with designing, administering, revising, and evaluating selection programs and procedures.

MGMT 684 Issues in International Human Resource Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 637 or permission of instructor. Focuses on issues affecting the application of human resource management practices in an international environment. Examines current challenges in the selection, appraisal, development, compensation, and maintenance of expatriates, repatriates, host country nationals, and third-country nationals. Includes contextual factors of industrial relations systems, legal environment, demographics, and culture.

MGMT 690 Research Seminar in Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by the director of graduate programs. This course is designed to provide research experience for candidates not following the MGMT 798-799 program.

MGMT 691 Topics in Management

Semester course; 1-3 lecture hours. 1, 2 or 3 credits. Study of current topics. Topics may vary from semester to semester.

MGMT 693 Field Project in Management

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

MGMT 697 Guided Study in Management

Semester course; 3 lecture hours. 1, 2 or 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

MGMT 701 Research Methods in Business

Semester course; 3 lecture hours. 3 credits. Prerequisite: Acceptance in the doctoral program. Study of the scientific method as currently applied in business and organizational research, with emphasis on philosophy, design, execution, and presentation of empirically based knowledge.

MGMT 702/PSYC 702 Causal Analysis for Organizational Studies

Semester course; 3 lecture hours. 3 credits. Prerequisites: two graduate courses in statistics or permission of instructor. Focuses on conceptual and statistical issues involved with causal analysis with nonexperimental and experimental data. Course covers basic and advanced confirmatory factor analysis and structural equation techniques, with an emphasis on organizational and psychological applications.

MGMT 703 Advanced Topics in Research Methods for Organizational Studies

Continuous course; 3 lecture hours. 3 credits. Prerequisities: MGMT 632 or equivalent and permission of instructor. Students must enroll for two semesters. Extensive coverage of applications of methodological and statistical analyses to an array of disciplines related to organizational studies. Emphasizes the skills essential in designing, conducting and interpreting research. Course contact hours spread over fall, intersession and spring semesters. Credits alloted one in fall and two in spring. May be repeated once for credit as topics change each year.

MGMT 737 Seminar in Human Resources

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 637 or equivalent, or permission of intructor. Provides broad exposure to theory and research in the field of human resource management. Topics include strategic and operational human resource planning and staffing; employee relations, development and performance management; external factors such as legal and international environments; and compensation policy and practices.

MGMT 743 Organizing Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent, or permission of instructor. Surveys the foundations of management theory as well as more recent research and theory on the leadership through which work is organized and directed.

MGMT 745 Advanced Operations Research

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 645 or equivalent. Advanced discussion of topics in mathematical programming and network analysis as applied to organizational decision making. Includes network flows, integer, nonlinear, and dynamic programming, and multicriteria optimization. Emphasis on applications and the use of the computer for problem solving.

MGMT 746 Cognitive and Emotional Processes in Organizations

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. This course examines organizational life in terms of cognitive and emotional processes at the individual, group, and organizational level. Special attention will be given to how people perceive and evaluate each other.

MGMT 749 History of Management Thought

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 540. Traces the history of management from its beginnings to current approaches and theories.

MGMT 750 Motivational Theories and Applications

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 524 or equivalent. Critical examination of significant theoretical and applied research on motivational concepts in the organization context.

MGMT 757 Corporate Strategy and Long-range Planning

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 642 or equivalent. Analysis and evaluation of current methods and research in the areas of corporate strategy and long-range planning.

MGMT 798-799 Thesis in Management

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

MGMT 898 Dissertation Research in Management

1-12 credits. Limited to Ph.D. in business candidates.

Marketing and Business Law(MRBL)

MRBL 308 Introduction to Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211 (or ECON 203 for non-business majors) and junior standing. An introduction to the activities involving the exchange of goods, services and ideas for the satisfaction of human wants. Marketing is examined as it relates to the other functions of the organization, to consumers and to society.

MRBL 310 Information for Marketing Decisions

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 301, MRBL 308 and junior standing. Students receive an overview of the marketing research process. The course includes coverage of primary research, secondary data sources and marketing information systems. Students learn to apply research findings to marketing decisions.

MRBL 326/FIRE 326 Real Estate Law

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 323 or equivalent, and junior standing or permission of instructor. Legal fundamentals of real estate including contracts, concepts of title, title examination, casements, conveyances, liens and recording statutes.

MRBL 350 Tort Law

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing. Basic concepts of tort law with emphasis on intentional torts, negligence, causation, proximate cause, strict liability, nuisance, tortious interference with contract rights, misrepresentation, defamation and privacy.

MRBL 371 Integrated Marketing Communications

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 308 or permission of department chair, and junior standing. Overviews the various steps in the development of an integrated marketing communications program, including advertising, public relations, sales promotion, personal selling and direct marketing. Special emphasis is placed on the role of new technologies and interactive media in this context.

MRBL 372 Product Development and Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: ECON 210-211, MRBL 308 and junior standing. Study of price theory and policy relevant to goods and services. Introduction to basic product strategy, focusing on new product development, management of existing products, and elimination of marginal offerings. Various concepts will be addressed including product differentiation, the product life cycle, product design packaging, branding, positioning and related concepts.

MRBL 373 Buyer Behavior

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 308 and junior standing; PSYC 101 and SOCY 101 recommended. Study of the relevant psychological, sociological and anthropological variables that shape buyers' activities and motivations in household and organizational decision making. Throughout the course, students consider the issue of why consumers behave as they do in the marketplace and the nature of their choices as individual, family and institutional buyers.

MRBL 376 Dynamics of Retail Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 308 and junior standing. A comprehensive view of retailing and an application of marketing concepts in a practical retail managerial environment. Students learn to evaluate retail firms and to identify their strengths and weaknesses.

MRBL 378/INTL 378 International Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 308 or permission of department chair, and junior standing. This course is designed to orient students toward global marketing and to develop an understanding of the differences among foreign marketing environments. Subject areas emphasized are the differences and similarities between domestic and international marketing and changes in the international marketing environment. This course also introduces students to international marketing policies.

MRBL 474 Personal Selling and Sales Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MRBL 308. Restricted to senior-level business majors or to students having permission of the department chair. Examines the fundamental nature of personal selling in the promotion mix, including the sales process and the techniques used in performing the selling function. Explains the diverse decisions and the activities necessary to manage the outside sales force efficiently and effectively to achieve the organization's overall goals.

MRBL 475 Services Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 308 or permission of the instructor, and junior standing. Students develop both a theoretical and practical understanding of "the service product," including the role of customer service in retail and industrial settings. Students learn techniques for analyzing and improving service system design. Students develop an understanding of "quality" as it relates to service products, and they exercise a number of approaches for assessing and improving perceived service quality.

MRBL 476 Marketing Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Restricted to senior-level marketing majors who have completed a minimum of 15 credits of marketing courses (in addition to MRBL 308). A case course requiring the senior marketing student to apply his or her knowledge to the solving of marketing managerial problems.

MRBL 478/INTL 478 Global Internet Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 308 and MRBL 378, or permission of instructor. Course examines global Internet marketing as a necessary ingredient to successful global marketing strategy in the 21st century. Students engage in analyzing international markets — market evaluation, competitive analysis, market comparison and selection — using Web-based information and tools. Discussion includes comparison of e-business versus traditional business perspectives on marketing strategies and tactics.

MRBL 481-482/ACCT 481-482 Law for Accountants I and II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: Senior accounting major or permission of instructor. Provides detailed examination of laws that are of particular importance to accountants, along with ethical considerations and social and political influences. First semester: contracts, sales, agency, commercial paper, secured transactions and bankruptcy. Second semester: security regulations, antitrust, partnerships, corporations, suretyship, insurance, wills and trusts. Students may not receive degree credit for MRBL 481-482 and for MRBL 323, 324.

MRBL 491 Topics in Marketing and Business Law

Semester course; variable hours. Variable credit. Maximum of 3 credits per course; maximum total of 6 credits for all topic courses. Prerequisite: Junior standing. An in-depth study of a selected business topic, to be announced in advance. For students to receive credit toward a marketing major or minor, the topic must be a marketing topic.

MRBL 492 Independent Study in Marketing and Business Law

Semester course; 1-3 credits. Maximum total of 3 credits. Prerequisites: junior or senior standing as a major in a business curriculum and approval of adviser and department chair prior to course registration. Intensive study under supervision of a faculty member in an area not covered in-depth or contained in the regular curriculum. To receive credit toward a marketing major or minor, the student must focus on an area within the marketing discipline.

MRBL 493 Internship in Marketing and Business Law

Semester course; 3 credits. Prerequisites: senior standing in the major offering the internship and permission of the department chair. Intention to enroll must be indicated to the instructor prior to or during advance registration for semester of credit. Involves students in a meaningful experience in a setting appropriate to the major. Graded as pass/fail at the option of the department.

MRBL 530 Fundamentals of the Legal Environment of Business

Semester course; 3 lecture hours. 3 credits. The legal environment of business is examined in view of common law principles, statutory provisions and administrative regulations affecting various forms of business organizations and management obligations to the company, its owner, and the public. Role of ethics and key commercial law areas are examined including Uniform Commercial Code Provisions.

MRBL 570 Concepts and Issues in Marketing

Semester course; 3 lecture hours. 3 credits. Designed for graduate students with little or no undergraduate education in marketing. A study of the philosophy, environment, and practice of contemporary marketing. This is a foundation course.

MRBL 646 Advanced Labor and Employment Relations Law

Semester course; 3 lecture hours. 3 credits. This course examines the laws concerning human resources in organizations. Equal Employment Opportunity, wage and hours laws, Equal Pay Act, the Employee Retirement Income Security Act, the Occupational Safety and Health Act, and employee personal rights laws are emphasized.
Effective Spring 2007 MGMT 646 Legal Foundations of Employment
Semester course; 3 lecture hours. 3 credits. This course examines the laws concerning human resources in organizations. Equal Employment Opportunity, wage and hours laws, Equal Pay Act, the Employee Retirement Income Security Act, the Occupational Safety and Health Act, and employee personal rights laws are emphasized. Formerly MRBL 646.

MRBL 651 Direct Marketing Theory and Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 570 or equivalent, and permission of instructor or course administrator. Examines all processes in a direct marketing program. Introduces theories of buyer behavior as they relate to direct marketing practice. Examines marketing research concepts and techniques for research design and data collection used by direct marketing decision makers.

MRBL 652 Database and Direct Marketing Strategy

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 570 or equivalent, and permission of instructor or course administrator. Examines the process of building and implementing an effective marketing database. Introduces a framework for creative direct marketing strategy development and provides application exercises using both traditional media and the Internet.

MRBL 653 Concepts and Issues in Direct Marketing Management

Semester course; 3 lecture hours. 3 credits. Prerequisites: MRBL 570 or equivalent, and permission of instructor or course administrator. Focuses on specialized direct marketing issues, including legal, ethical, global and not-for-profit. Emphasizes problem solving for the leadership of a direct marketing operation using a "live" case study.

MRBL 656 International Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisite: MRBL 570 or equivalent. Orientation to the international market place. Formulation of international marketing strategies for firms participating in global trade. Emphasis on international environment, multinational economic blocs, international competition, and development of international marketing strategies.

MRBL 657 International Market Planning Project

Semester course; 3 lecture hours. 3 credits. Prerequisite: MRBL 570 and permission of instructor. This course is a comprehensive real-life, field-based research and strategic planning exercise. A team of graduate business students is matched with a Virginia business that is interested in initiating or expanding export sales. Under the supervision of the instructor, the student team develops an international market plan for the client company. The team functions as an international business consultant to its assigned company.

MRBL 659 Database Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisite: MRBL 570. Provides a theoretical foundation for the study of database marketing, rooted in relationship marketing and improving marketing productivity. Examines the various roles that a database marketing system can play within any business, and offers a framework for determining the database requirements of any organization, including a review of existing database marketing software packages in the marketplace. Examines real-world examples of database marketing via case studies, client projects, and presentations by practitioners. Includes computer laboratory exercises for students to gain knowledge and experience of analyzing marketing databases for the purpose of determining customer profitability, response to marketing communications, profiling customer segments and improving marketing decision making overall.

MRBL 671 Marketing Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MRBL 570 or equivalent. Detailed study of concepts and procedural alternatives in the delineation of the market target, the development and implementation of the marketing mix, and the control and analysis of the total marketing effort.

MRBL 672 Concepts in Consumer Behavior

Semester course; 3 lecture hours. 3 credits. Prerequisite: MRBL 570 or equivalent. A study of the pertinent psychological, sociological, and anthropological variables that influence consumer activity and motivation.

MRBL 673 Marketing Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: MGMT 524 and MRBL 570, or equivalents. A discussion of the techniques of marketing research. Special emphasis will be given to marketing problem definition, determination of information needs, and current methods of analysis of marketing data.

MRBL 674 Service Quality Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Student in good standing in VCU master's program. This course enables marketing students to develop a better understanding of service offerings from both a theoretical and practical perspective. Learning will focus on both private and public-sector service organizations. Students will learn how to analyze the design of service offerings, including operations, environment, and people, and make recommendations for improving the offerings. The importance of internal and external customer feedback and continually measuring customer satisfaction/dissatisfaction will be highlighted as an integral part of managing service quality.

MRBL 677/MASC 677 The Business of Advertising

Semester course; 3 lecture hours. 3 credits. Requires students to develop ideas ranging from strategic to tactical and from rational to emotional. Students will be called on to develop and examine ideas that differentiate brands, build sales and affect market share. The new business process will be considered and successful presentation techniques will be evaluated. Ethical considerations faced by industry practitioners will be explored.

MRBL 690 Research Seminar in Marketing and Business Law

Semester course; 3 lecture hours. 3 credits. Prerequisite: Approval of proposed work is required by the director of graduate programs. This course is designed to provide research experience for candidates not following the MRBL 798-799 program.

MRBL 691 Topics in Marketing and Business Law

Semester course; 1-3 lecture hours. 1, 2 or 3 credits. Study of current topics. Topics may vary from semester to semester.

MRBL 693 Field Project in Marketing and Business Law

Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the director of graduate programs. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

MRBL 697 Guided Study in Marketing and Business Law

Semester course; 3 lecture hours. 1, 2 or 3 credits. Approval of proposed work is required by the director of graduate programs. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

MRBL 798-799 Thesis in Marketing and Business Law

Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

School of Dentistry

Dental Hygiene(DENH)

DENH 301 Dental Hygiene Theory I

Semester course; 2 lecture and 6 laboratory/clinical hours. 5 credits. Prerequisites: BIOL 209 or equivalent and admission to the dental hygiene program. Designed to familiarize the student with the scope, role and responsibilities of the dental hygiene profession. Topics include an introduction to the educational and therapeutic services as well as the philosophy of preventive oral health and its relevance to the practice of dental hygiene. Also introduces the clinical knowledge and skills needed to perform fundamental clinical dental hygiene procedures, instrumentation and preventive services.

DENH 302 Dental Hygiene Theory II

Semester course; 2 lecture hours. 2 credits. Prerequisite: DENH 301. Continuation of DENH 301. Designed to provide the student with knowledge and skills necessary to provide patient care and includes instruction in some more advanced dental hygiene skills including application of topical medicaments and use of sonic and ultrasonic instrumentation.

DENH 312 Preventive Oral Health Education

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior standing in the dental hygiene program. Introduces preventive oral health strategies, methods, materials and principles of instruction in health education and communication. Emphasizes preventive oral health concepts as they relate to individual patients, community groups as well as professional peer group presentations. Current theories on topical issues, such as fluoridation, cardiology, dental products and devices, and alcohol/tobacco/illicit drug use will be presented.

DENH 327 Clinical Dental Hygiene I

Semester course; 1 seminar and 9 laboratory/clinical hours. 4 credits. Prerequisites: DENH 310, ANAT 301, GENP 311. This course has two segments. The initial segment reinforces the knowledge and clinical skills learned in DENH 301 Dental Hygiene Theory I. Additional laboratory experiences allow the student to re-assert technical skill proficiency prior to entry into the clinical education experience. The second segment introduces the clinical practicum and dental hygiene services as part of a comprehensive care model within the School of Dentistry. Students apply basic instrumentation and patient treatment skills in a clinical setting. Seminars provide opportunity for students to problem solve and critically discuss and assess clinical experiences.

DENH 342 Nutrition

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101 or equivalent and junior standing in the dental hygiene program. Designed to provide students with an overview of the chemistry of the major nutrients as well as provide a practical approach to the concepts of nutrition. Emphasis will be placed on developing positive personal dietary habits and providing nutritional education to dental patients in a clinical setting. The interrelationships of diet, nutrition and dental diseases will be discussed along with current food trends, consumer aspects of food choices and basic nutrition principles. A general review of herbal supplements also will be provided.

DENH 401 Dental Hygiene Theory III

Semester course; 2 lecture hours. 2 credits. Prerequisite: DENH 301 and DENH 302. DENH 401 is a continuation of DENH 301 and 302 with introduction of additional techniques and information for performance of advanced dental hygiene procedures. Dental specialty content is presented; concepts and techniques in specialty areas that will enable the dental hygienist to consider implications for dental hygiene treatment planning with relation to periodontics, orthodontics, endodontics, preventive and restorative dentistry, pain control, pediatric dentistry and implantology.

DENH 402 Dental Hygiene Theory IV

Semester course; 2 lecture hours. 2 credits. Prerequisite: DENH 401. This course is designed to present the principles of dental practice, including dental team management strategies, business office management, increasing use of computers in dentistry, OSHA and its impact on practice management, insurance coverage for dental care, and employment opportunities and career options.

DENH 411 Community Dental Health

Semester course; 2 lecture hours. 2 credits. Prerequisite: DENH 312. This course provides an introduction to the principles of dental public health, community dental health education and community program planning. Topics include oral epidemiology, prevention and control of oral diseases in a community, and community dental health services. Students become involved in the application of concepts such as program assessment, design, implementation and evaluation. This course will prepare the dental hygienist for the role of dental public health practitioner, educator, consultant and resource person in community settings. Information gained in DENH 411 will be applied to DENH 412 Community Dental Health Practicum.

DENH 412 Community Dental Health Practicum

Semester course; 1 lecture and 3 clinical/community project hours. 2 credits. Prerequisite: DENH 312 and DENH 411. Field experience designed to prepare students to function in a variety of community health settings. Emphasis on special populations of elementary school children, geriatric, institutionalized, hospitalized and individuals with mental and/or physical disabilities. Participation in planning, implementing and evaluating a community dental health project is required. Written progress and final reports of activities are required. Graded as pass/fail.

DENH 422 Current Issues, the Law and Ethics

Semester course; 2 lecture hours. 2 credits. Prerequisite: Completion of all required 300-level dental hygiene courses. This course is designed to explore the ethics, jurisprudence and principles of practice. Included is a study of ethical issues and dilemmas in dental hygiene and health care delivery. This course strives to provide students with the foundations of ethical practice and understanding of the legal and ethical aspects of oral health care.

DENH 437-447 Clinical Dental Hygiene II-III

Continuous courses; 1 seminar and 12-15 clinical/laboratory hours per semester. 5-6 credits. Prerequisites: DENH 327 and completion of all required 300-level dental hygiene courses. A continuation of the clinical practicum; seminars and clinical experiences continue to prepare students to provide oral health care services in the private and public sector. Students participate in comprehensive care clinical experiences within the School of Dentistry as well as the specialty clinics via scheduled and supervised extramural rotations. Advanced dental hygiene procedures are initiated and patient assessment and management skills are emphasized. Skill development in dental hygiene procedures continues; patient management skills as well as decision making and problem solving in relation to patient assessment, treatment planning and evaluation are emphasized. Course sequence provides the student with the opportunity to use and further enhance the knowledge and skills of dental hygiene practice and procedures in a clinical model that emphasizes comprehensive patient care and a foundation for transference of those skills to the work environment in the private and public sector. Grade of "PR" required in DENH 437 for continuation in DENH 447.

DENH 447 Clinical Dental Hygiene III

Semester course; 1 seminar and 12-15 clinical/laboratory hours. 6 credits. Prerequisite: DENH 437. This course is a continuation of the clinical practicum. Seminar and clinical experience continue to prepare the student to provide oral health care services in the private and public sector. Student's clinical experience includes rotation assignments in the clinics within the School of Dentistry as well as the specialty areas. Skill development in dental hygiene procedures continues, patient management skills as well as decision making and problem solving in relation to patient assessment, treatment planning and evaluation are emphasized. This course provides the student with the opportunity to use and further develop the knowledge and skills of dental hygiene practice and procedures in a clinical model that emphasizes comprehensive patient care and to provide a foundation for transference of those skills to the work environment in the private and public sector.

DENH 449 Clinics in Dental Hygiene

Semester course; 1-3 credits. Prerequisite: permission of department. Clinical/laboratory experiences offering the opportunity to use and further develop the knowledge and skills of dental hygiene practice.

DENH 450 Independent Study

Semester course; 1-5 credits. Prerequisite: permission of department. Independent study projects planned to meet the learning objectives of the student.

DENH 477 Special Topics in Dental Hygiene

Semester course; 1-3 credits. Prerequisite: permission of department. Designed around the interests of students, faculty expertise and availability of educational resources. Format may include intensive mini-courses or workshops.

Dental Special Topics(DENS)

DENS 550 Update in Practice Administration

Semester course; 15 seminar hours. 1 credit. Lectures and seminar discussion on the business aspects of contemporary specialty dental practice, with emphasis on entry into practice, associateship contracts, financing arrangements, risk management and employee relations.

DENS 580 Biostatistics and Research Design in Dentistry

Semester course; 30 seminar hours. 2 credits. Must be taken for two consecutive semesters. Provides the advanced education student in dentistry an appreciation for the need for and uses of fundamental biostatistical methods in dental applications. Appropriate research designs for answering research questions of importance in dentistry will be examined. An array of biostatistical methods that are commonly used in the dental literature and by agencies such as the FDA to evaluate new dental products and methodologies are discussed.

DENS 660 Interdisciplinary Care Conference

Semester course; 7 hours. 0.5 credit. Must be taken every semester of the program. Provides a forum for formal presentation and group discussion of the diagnosis, treatment planning, delivery and prognosis of interdisciplinary dental care.

DENS 699 Thesis Guidance

Semester course; 18-36 seminar hours. 1-2 credits. Must be taken every semester of the program. The graduate student selects a research project topic, conducts the necessary background literature review, develops a protocol, obtains the necessary materials, instruments and human/animal use approvals as necessary, collects and analyzes the data, presents the findings in the form of a master's thesis, and prepares a manuscript for publication.

DENS 700 Basic Sciences and Graduate Dentistry

First year; spring course; 45 hours. 3 credits. Advanced level survey of topic areas related to the principles and practices of dentistry including: oral pathology, biochemistry and physiology, infection and immunity, pharmacology, biomaterials and genetics.

Endodontics(ENDO)

ENDO 522 Introduction: Specialty of Endodontics

Semester course; 80 laboratory hours. 2.5 credits. Restricted to first-year students. Utilizes laboratory exercises to review basic concepts and introduce the more complex technical procedures required to practice the clinical specialty of endodontics.

ENDO 530 Advanced Oral Pathology

Semester course; 13 seminar hours. 1 credit. Provides through a series of seminars, an in-depth knowledge of those specific areas of oral pathology that apply to endodontics.

ENDO 532 Management of Medical Emergencies in the Dental Office

Semester course; 20 seminar hours. 1 credit. Provides through a series of seminars, an in-depth level of knowledge in the management of medical emergencies in the dental office.

ENDO 560 Endodontic Therapy Lectures

Semester course; 36 lecture hours. 2 credits. Restricted to first-year students. Presents a series of lectures on clinical endodontic topics in order to familiarize the students with clinical endodontic procedures either in conjunction with or prior to the "Endodontic Topic Literature Reviews" on these specific clinical topics.

ENDO 650 Endodontic Topic Literature Review

Semester course; 36 seminar hours. 2 credits. Must be taken every semester of the program. Reviews topic literature pertaining to the scientific basis for endodontic procedures and the materials and techniques utilized in the clinical practice of endodontics. Discusses content of the reviewed literature and critically evaluates by means of abstracts and study questions.

ENDO 652 Endodontic Clinical Seminars

Semester course; 28 seminar hours. 2 credits. Must be taken every semester of the program. Requires students to present a seminar once each month in which difficult diagnostic cases, patient management problems and complex treatment cases are critiqued and treatment options discussed.

ENDO 654 Endodontic Management of the Medically Compromised Patient

Semester course; 14 seminar hours. 1 credit. Must be taken for two consecutive semesters. Provides students, through a seminar series, with an in-depth level of knowledge in the endodontic management of the medically compromised patient.

ENDO 656 Endodontic Current Literature Review

Semester course; 18 seminar hours. 1 credit. Must be taken every semester of the program. Provides a review of current journal literature that pertains to the scientific basis for endodontic procedures, materials and techniques currently being used in the clinical practice of endodontics. Discusses and critically evaluates the content of the reviewed literature. Requires written abstracts of all reviewed articles.

ENDO 680 Clinical Endodontics

Semester course; 153 clinical sessions. 5 credits. Must be taken every semester of the program. Permits students to receive supervised training in every type of clinical endodontic procedure. Provides students with experience in the management and treatment of cases which are the same types of complex non-surgical and surgical cases treated in a specialty practice of endodontics.

General Practice(GENP)

GENP 302 Dental Materials

Semester course; 1 lecture and 3 laboratory hours. 2 credits. Pre- or corequisite: junior standing in dental hygiene program. The goal of this course is to provide the scientific foundation for understanding the factors guiding the use of biomaterials in dentistry as they relate to the practice of dental hygiene. Dental and material science concepts are defined and their relationships developed to establish an understanding of the influence of material properties and manipulation on the longevity and success of treatment. Dental materials are discussed in terms of their physical, mechanical, chemical, biological and esthetic properties. Factors that influence tooth sensitivity, caries prevention, tissue irritation, longevity of restoration, dental bonding, materials selection and allergic reactions are emphasized. The primary dental materials will be discussed in relation to their properties and manipulation with an approach to aid in patient education.

GENP 307 Research Methods and Study Designs

Semester course; 2 lecture hours. 2 credits. Prerequisites: STAT 210 or equivalent and senior standing in dental hygiene program or permission of instructor. Designed to guide students in becoming competent in the use of scientific literature as a part of lifelong learning and for the improvement of patient care. Covers foundational materials in biostatistics, including the development of testable hypotheses, data collection, data summary, and evaluation and interpretation of data found in scientific literature. Emphasis is placed on recognizing appropriate use of statistical analyses and research designs that can lead to answerable research questions. Students will participate in an online Collaborative Investigator Training Initiative as an education program for protecting human subjects in research. At the completion of selected CITI modules, students must satisfactorily complete associated module quizzes. Students will be introduced to different statistical software used in data analysis. Dental hygiene students must take class for letter grade. Non majors may elect pass/fail or letter grading.

GENP 311 Oral Anatomy and Occlusion

Short course; 2 lecture hours; 15-20 hours seminar/recitation and online discussion. 10 weeks. 3 credits. Pre- or corequisite: ANAT 301, ANAT 302, admission to the dental hygiene program. This course combines lecture with readings and research for online discussion and addresses the dental terminology and the crown and root morphology of the permanent dentition. Students become familiar with the basic principles of occlusion: how teeth occlude, the diverse occlusal classifications, the arrangement of teeth in the dental arches, and the relationship of the dental arches to one another with focus on review of the anatomy and function of masticatory muscles and the temporomandibular joints. The lecture portion of the course is devoted to the didactic aspects of learning tooth anatomy. The online portion of this course is devoted to the fundamentals of occlusion and making application of both course segments to the clinical environment.

Oral and Craniofacial Molecular Biology(OCMB)

OCMB 510 Evidence-based Dentistry

Semester course; 1.5 credits. Students work in small groups and analyze the research literature concerning an assigned topic related to preventative dentistry, arrive at a conclusion, then present their analyses and conclusions to the class by a PowerPoint presentation. Students will be provided with methods for accessing and evaluating dental research literature by means of an evidence-based approach.

Oral Pathology(ORPT)

ORPT 301 Dental Radiology

Semester course; 1 lecture hour. 1 credit. Prerequisite: junior standing in dental hygiene program. This is an introductory course that covers radiation physics, radiation biology and geometrical principles as applied to radiology and radiographic anatomy. Students will study the radiographic anatomy of the head and neck and exposure and processing techniques for diagnostic radiographic examinations of the head and neck. Areas are covered with the intent to link these principles to the knowledge needed in clinical practice.

ORPT 324 Oral Pathology

Semester course; 3 lecture hours. 3 credits. Prerequisite: MICR 365, ANAT 301, ANAT 302. This course is designed to provide the student with a body of basic information on general and organ specific pathology. The purpose of the course is to enable the student to better recognize and interpret symptoms, signs and pathologic characteristics of organ, systemic and oral disease that will be encountered in practice. Included is study relating to the etiology, pathogenesis, prognosis, prevention and treatment of oral disease. Students will study the development, reactive and neoplastic conditions of the oral cavity with emphasis placed on the more commonly occurring diseases.

Oral Surgery(ORSG)

ORSG 431 Management of the Medically Compromised Dental Patient and Medical Emergencies in the Dental Office

Semester course; 2 lecture and 3 clinical/laboratory hours. 3 credits. Prerequisites: ORPT 324 and PHTX 441. Provides students with the knowledge and skills to provide safe and effective care for medically compromised patients. The student will have didactic and clinical experience in obtaining, recording and interpreting the findings of physical examination, obtaining and interpreting results of appropriate clinical laboratory and radiological examination, and communicating with other health care professionals. Instruction in physical evaluation provides the student with sufficient knowledge, judgment and skill to recognize normal findings as well as significant deviations from the normal. Didactic material includes a study of disease processes that affect the major organ systems of the body. In addition, students will have the opportunity to recognize and manage medical emergencies that can occur during dental treatment. Care for individuals with physical and mental disabilities will be presented with emphasis on the management of this special population in the general dental office.

Orthodontics(ORTH)

ORTH 516 Introduction to Orthodontics for Non-orthodontic Postdoctoral Students

Semester course; 30 lecture/seminar hours. 2 credits. Introduces the basis for orthodontic treatment for non-orthodontic graduate students in dentistry. Discusses growth and development and the basis for orthodontic therapy.

ORTH 532 Biomechanics: Theoretical Basis for Tooth Movement

Semester course; 15 lecture/seminar hours. 1 credit. Introduces physical science of mechanics and engineering statics as applied to orthodontic force systems. Emphasizes equilibrium and the biological manifestation of force systems applied to the dentition and craniofacial skeleton.

ORTH 620 Orthodontic Clinic for Non-orthodontic Graduate Students

Semester course; 30 clinical sessions. 1 credit. Must be taken every semester of the program. Allows residents to diagnose and treat limited orthodontic problems with special emphasis on the primary and mixed dentitions. Includes, but is not limited to, anterior and posterior crossbites, space and tooth loss, transient or definitive crowding and tooth irregularities, oral habits, ectopic and other tooth eruption problems.

ORTH 630 Orthodontic-Periodontic Conference

Semester course; 7.5 seminar hours. 0.5 credit. Must be taken every semester of the program. Discusses treatment planning and analysis of patients requiring combined orthodontic and periodontic care. Presents topics of interest to orthodontists and periodontists.

ORTH 640 Orthodontic-AEGD Conference

Semester course; 7.5 seminar hours. 0.5 credit. Must be taken every semester of the program. Provides treatment planning and analysis of patients requiring combined orthodontic and restorative care. Encourages discussion of topics of interest to orthodontists and advanced general dentists.

ORTH 650 Literature Review

Semester course; 30 seminar hours. 2 credits. Must be taken every semester of the program. Reviews classical articles in areas of special orthodontic interest. Establishes the state-of-the-art and existing information base. Gives special attention to research methodology and conclusions reached.

ORTH 652 Growth and Development

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken every semester of the program. Discusses the increases in size and complexity that occur in the craniofacial region including variations in proportionality and related variations in facial form and dental occlusion. Provides special emphasis on compensations in skeletal and soft tissue structures. Examines the basis for prediction of change.

ORTH 654 Orthodontic Diagnosis and Treatment Planning

Semester course; 30 seminar hours. 2 credits. Must be taken every semester of the program. Considers and discusses available and theoretical options for clinical management of variations in facial form and dental occlusion.

ORTH 656 Current Literature

Semester course; 30 seminar hours. 2 credits. Must be taken every semester of the program. Presents in a journal-club-format evaluation of current information in orthodontics and related disciplines. Includes special emphasis on research methodology and the contributions of current research to advances in orthodontics.

ORTH 658 Analysis of Orthodontic Treatment

Semester course; 22.5 seminar hours. 1.5 credits. Must be taken every semester of the program. Analyzes cephalometric and other objective measures of the outcomes of orthodontic therapy. Reviews treatment objectives with respect to actual changes effected in patients. Delineates changes resulting from therapy from normal variations in craniofacial development.

ORTH 660 Orthognathic Conference

Semester course; 15 seminar hours. 1 credit. Must be taken every semester of the program. Presents patients requiring coordinated orthodontic and oral surgery care. Emphasizes long- and short-term biologic stability of alterations in the structure and function of the craniofacial skeleton with increased emphasis on facial form and dental occlusion.

ORTH 662 Craniofacial Anomalies

Semester course; 15 lecture/seminar hours. 1 credit. Must be taken every semester of the program. Discusses the etiology and embryologic basis of congenital and acquired deformities in the craniofacial structures. Emphasizes syndromes with craniofacial manifestations and the diagnosis and treatment planning for patients with facial clefts.

ORTH 664 Orthodontic Interactions with Generalists and Other Dental Specialties

Semester course; 30 clinic/lecture/seminar hours. 2 credits. Must be taken every semester of the program. Provides supervised clinical experiences in treatment planning and treatment with general dental students and patients appropriate for general dental practices.

ORTH 680 Orthodontic Clinic

Semester course; 195 clinic sessions. 6.5 credits. Must be taken every semester of the program. Involves supervised experiences in treatment of a complete spectrum of normally occurring orthodontic problems in an environment simulating private practice.

Pediatric Dentistry(PEDD)

PEDD 510 Pediatric Advanced Life Support

Semester course; 15 lecture/seminar hours. 1 credit. Increases the awareness of the risk factors that may lead to using life support measures in the infant, child and adolescent. Stresses early warning signs and what to do in a cardiopulmonary emergency. Requires students to know how to start an IV, perform endotracheal intubation, know essential and useful drugs, recognize ventricular fibrillation, defibrillation and dysrhythmias from the oscilloscope and paper recordings as well as drug therapy for dysrhythmias.

PEDD 511 General Anesthesia Rotation

Semester course; 40 clinical sessions. 1.5 credits. Teaches general anesthesia with special emphasis in pediatrics. Allows students to become knowledgeable in pre-operative evaluation, risk assessment, assessing the effects of pharmacologic agents, venipuncture techniques, airway management, general anesthetic induction and intubation, administration of anesthetic agents, patient monitoring, prevention and management of anesthetic emergencies, recovery room management, postoperative appraisal and follow-up.

PEDD 514 Introduction to Pediatric Dentistry

Semester course; 30 lecture hours. 2 credits. Introduces material in pediatric dentistry. Involves didactic, clinical and laboratory portions.

PEDD 572 Pediatric Dental Emergency Service

Semester course; 30 clinical sessions. 1 credit. Must be taken for two consecutive semesters. Graduate students are scheduled for emergency services on a weekly basis. Offers experience in the assessment and management of orofacial trauma, dental pain and infections.

PEDD 600 Oral Pathology Rotation

Semester course; 20 clinical sessions. 0.5 credit. Reviews approximately 250 slides of biopsy material daily for 10 days, which includes access to a consultation file containing approximately 1,500 cases. Encourages students to participate in numerous clinical consultations within the School of Dentistry and to learn how to do biopsies.

PEDD 612 Seminar Series: Pediatric Dentistry and Medicine

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken every semester of the program. Provides an arena for students to present seminars in either a clinical area or medical conditions of interest to pediatric dentists. Gives students practical experience in giving formal presentations and provides him/her with information related to clinical subject area(s) with medical conditions about which pediatric dentists should be knowledgeable.

PEDD 620 Pediatric Medicine Rotation

Semester course; 40 clinical sessions. 1.5 credits. Requires students to obtain and evaluate medical histories, parental interviews, system-oriented physical examinations, clinical assessments of healthy and ill patients, selection of laboratory tests and evaluation of data, evaluation of physical, motor and sensory development, genetic implications of childhood diseases, the use of drug therapy in the management of diseases and parental management through discussions and explanations.

PEDD 640 Clinical Teaching

Semester course; 30 clinical sessions. 1 credit. Must be taken every semester of the program. Lectures and clinical instruction involving contact with third and forth-year dental students. Provides teaching experience in diagnosis and treatment planning, restorative preparations and management of children's behavior.

PEDD 650 Literature Review

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken every semester of the program. Reviews literature related to all aspects of the pediatric patient. Emphasizes the ability students to discuss the content of the articles and to critically evaluate it. Stresses the integration of new material with previously discussed literature and collateral material. Uses the reading list from the American Board of Pediatric Dentistry.

PEDD 654 Treatment Planning Seminar

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken every semester of the program. Provides diagnosis and treatment planning of the child, adolescent and special patient. Follows up on records on completed cases, which also are presented and evaluated. Discusses the techniques employed and the justification of the treatment.

PEDD 656 Current Literature Review

Semester course; 6 lecture/seminar hours. 0.5 credit. Must be taken every semester of the program. Discusses articles from recent publications relating to all aspects of pediatric dentistry. Requires students to review "Practical Reviews in Pediatric Dentistry," a continuing education program sponsored by the American Academy of Pediatric Dentistry. Includes a review of cassettes on current pediatric dentistry by students every other month.

PEDD 680 Pediatric Dental Clinic

Semester course; 120 clinical sessions. 4 credits. Must be taken every semester of the program. Provides for the clinical management of pediatric dental patients. Provides experiences in the treatment of infants, preschool children, adolescent and special patients. Stresses pharmacological and non-pharmacological techniques and behavior management.

Periodontics(PERI)

PERI 326 Periodontics I

2 lecture and 15 recitation/seminar hours. 2.5 credits. Pre or corequisite: ANAT 302, BIOL 209 or equivalent, MICR 365. This course introduces the fundamental concepts of periodontal disease necessary for proper patient assessment, diagnosis, prognosis and treatment planning. This course stresses the rationale and technical aspects of examination and initial treatment of the periodontal patient. Emphasis will be placed on the etiology of periodontal diseases, rationale and outcomes of treatment. This course features small group seminars, patient-based computer simulation and clinical instruction.

PERI 329 Periodontics II

Semester course; 3 lecture hours. 3 credits. Prerequisite: PERI 326. This course covers the normal anatomy and physiology of the periodontium; provides the scientific basis to understand the pathology of the periodontal diseases; discusses the epidemiology of periodontal disease and the etiological factors that cause or contribute to periodontal disease. Students are prepared to assess patients; periodontal status and to plan initial clinical periodontal management. Examination, diagnosis, prognosis and treatment planning procedures are covered.

PERI 508 Physical Diagnosis

Semester course; 30 lecture hours. 2 credits. Provides lectures and hands on experience in physical diagnosis, history taking, general physical examination and review of major organ systems.

PERI 511 Anesthesiology Rotation

Semester course; 45 clinical sessions. 1.5 credits. Provides students with experience in general anesthesia under the direction of the dental anesthesiologist. Emphasizes operating room procedures, airway management, intravenous technique, anesthetics and resuscitative procedures. Includes clinical management of conscious sedation cases.

PERI 512 Conscious Sedation

Semester course; 30 lecture/seminar hours. 2 credits. Reviews concepts of parental conscious sedation techniques to include anatomy and physiology of the respiratory, cardiovascular and central nervous system, drug pharmacology, intravenous technique, prevention, recognition and management of complications, management of emergencies, physiologic monitoring and equipment, basic life support and advanced cardiac life support.

PERI 514 Introduction to Periodontics

Semester course; 90 lecture/seminar hours. 3 credits. Provides students with an introduction to the clinical practice of periodontics. Emphasizes diagnosis, etiology, prognosis, treatment planning, initial therapy, therapeutic approaches, suturing techniques, oral hygiene and dental photography.

PERI 515 Internal Medicine Rotation

Semester course; 45 clinic sessions. 1.5 credits. Provides students with experience in internal medicine under the direct supervision of the Department of Internal Medicine. Emphasizes hospital procedures and management of the medically-compromised patient.

PERI 520 Principles of Periodontics

Semester course; 30 lecture/seminar hours. 2 credits. Must be taken for two consecutive semesters. Reviews the principles of the basic science of periodontology, including anatomy of the periodontium, classification, etiology, diagnosis, scaling and root planning, and treatment planning. Reviews the indications and contraindications for management of complex periodontal problems. Reviews the principles of non-surgical and surgical techniques.

PERI 522 Implantology

Semester course; 16 lecture/seminar hours. 1 credit. Covers the historical review of dental implants, including biologic principles, techniques and systems; diagnosis, interdisciplinary considerations, treatment planning and indications and contraindications for implants; wound healing for implants, including osseointegration, surgical techniques and implant maintenance. Provides a hands-on technique laboratory.

PERI 619 Clinical Pathology Rotation

Semester course; 21 clinic sessions. 0.5 credit. Provides instruction in patient assessment, biopsy technique, assessment of tissue preparations and review of oral histologic slide materials.

PERI 630 Medicine: Oral Medicine Seminar

Semester course; 26 seminar hours. 1 credit. Must be taken every semester of the program. Emphasizes diagnosis, pathogenesis, oral manifestations and management of systemic diseases. Reviews the management of the medically-compromised patient, including laboratory procedures, pharmacology, hematology and reviews of the cardiovascular, respiratory, endocrine and neurologic systems. Discusses and critically evaluates medical and oral medicine topics relative to management of the periodontal patient.

PERI 650 Periodontal Literature Review

Semester course; 48 seminar hours. 3 credits. Must be taken every semester of the program. Reviews the periodontal literature from early classic articles to current publications pertaining to the scientific basis for periodontal procedures. Reviews the concepts of diagnosis, etiology, epidemiology, pathogenesis, therapy, maintenance of periodontal diseases and implantology. Discusses content of the literature by means of abstracts and study questions.

PERI 654 Treatment Plan: Case Presentations

Semester course; 12 seminar hours. 1 credit. Must be taken every semester of the program. Emphasizes the interpretation the medical and dental histories, radiographic and clinical findings, diagnosis, etiology, prognosis, treatment planning, therapy and supportive periodontal care. Discusses the content of reviewed cases by written and oral presentations. Requires the student to assimilate and interpret clinical findings.

PERI 656 Current Literature Review

Semester course; 36 seminar hours. 2 credits. Must be taken every semester of the program. Provides an in-depth review of contemporary periodontal literature. Discusses content of the reviewed literature by means of abstracts and discussion.

PERI 680 Clinical Periodontics

Semester course; 160 clinic sessions. 5 credits. Must be taken every semester of the program. Provides supervised training in periodontics. Provides the student with the experience in the treatment and management of patients with various types and severities of periodontal diseases. Emphasizes diagnosis, treatment planning, prognosis, scaling and root planning, non-surgical and surgical techniques. Provides experience in the treatment of advanced periodontal cases and more complex surgical techniques including preprosthetic, orthodontic, periodontal plastic and mucogingival procedures, guided tissue regeneration, guided bone regeneration and implant surgical techniques.

PERI 719 Specialty Practice Management

Semester course; 22 seminar hours. 0.5 credit. Must be taken for two consecutive semesters. Provides the student with experience in office management. Requires visits to specialty offices to familiarize the student with contemporary modes of practice administration and patient management.

School of Education

Adult Education(ADLT)

ADLT 402 How Adults Learn

Semester course; 3 lecture hours. 3 credits. Overview of the adult as a learner. Topics include how and what adults learn, why adults participate in learning and major barriers to learning for adults. Implications for teachers/trainers of adults are explored.

ADLT 403 Human Resource Development

Semester course; 3 lecture hours. 3 credits. Course designed to improve qualifications of those seeking employment in the human resources field. Focuses on human resource development, organization development and their relationship to human resource management (HRM).

ADLT 600 Adult Education Perspective

Semester course; 3 lecture hours. 3 credits. Provides a basic perspective on adult education. Presents a survey of the philosophical underpinnings of the field, including schools of thought and associated theorists, roles and functions of adult educators, agencies and organizations that sponso adult education programs. Examines selected processes and procedures used by adult educators and current issues impacting adult education.

ADLT 601 The Adult Learner

Semester course; 3 lecture hours. 3 credits. An examination of the research findings from the applied behavioral sciences that affect adult learning throughout the lifespan, including psychological, social and physical attributes of adults as learners. Explores the philosophical and theoretical foundations of the field, including schools of thought and associated theorists. Emphasis on the effects of age on learning, the importance of self-image and factors affecting adult motivation for learning. Addresses different learning styles, appication of adult learning theories to practice and the relationship of adult learning to adult development.

ADLT 602 Adult Program Planning, Management and Evaluation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADLT 601 or permission of instructor. Introduces models of program planning, management and evaluation appropriate for a variety of adult learners, including those requiring accommodations for disability, literacy, non-native English-speaking ability and multicultural backgrounds. Focuses on developing practitioner skills in assessing needs, negotiating program content and logistics, using technology appropriately and evaluating program effectiveness in a variety of settings. Students gain practical experience by creating a design, management and evaluation strategy for an adult learning population.

ADLT 603 Learning Strategies for Adults

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADLT 601 or permission of instructor. Introduces a variety of learning strategies and models for teaching adults, including those requiring accommodations for disability, literacy, non-native English-speaking ability and multicultural backgrounds. Emphasis on experiential learning, application of learning technologies and approaches to instructional design for a variety of learner populations. Specific skills gained include a systems approach to course and workshop development; writing instructional and performance objectives; sequencing and selecting appropriate learning strategies, delivery methods and materials; and the use of technology in course design and delivery. Students gain hand-on experience designing an instructional learning course or workshop as part of an adult learning program.

ADLT 605 Learning Technologies for Adults

Semester course; 3 lecture hours. 3 credits. Surveys current and future mediated learning technologies employed by corporate and public HRD and training organizations to design, deliver and evaluate learning for adults. Topics will include: online mediated learning modules; technology products employed domestically and globally; basic decision-making strategies used in choosing technology-enabled learning solutions; a critique of available instructional technology resources; critique of the multicultural implications for using mediated learning technologies domestically and globally.

ADLT 610 Consulting Skills In Adult Learning Environments

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADLT 601 or permission of instructor. An introduction to the consultation skills necessary to effect change when the educator is in a position of influence, rather than direct control or management responsibility. Presents historical and theoretical models of change, facilitation skills necessary for introducing and sustaining change, strategies for dealing with resistance, and ethical issues involved in consultation. Students gain practical experience by conducting an intervention as the major project assignment in the course.

ADLT 612 Learning in Groups and Teams

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADLT 601 or permission of instructor. Explores fundamentals of learning in groups and teams, including effects of leadership, group member roles and processes, performance, development, goals, and culture. Examines group theory, models and practices of collective learning. Addresses the situated nature of learning, effects of social context and the concepts inherent in sustaining communities of practice.

ADLT 620 Human Resource Development Overview

Semester course; 3 lecture hours. 3 credits. Provides an overview of the HRD field, to include theories, practices and emerging concepts. Emphasis is on roles, functions and responsibilities of the HRD practitioner in supporting the strategies, mission and goals of the enterprise, whether public, private or nonprofit.

ADLT 621 Skills Development for Human Resource Development

Semester course; 3 lecture hours. 3 credits. Develops skills and understandings critical to success as an HRD practitioner. Exposes students to techniques of instruction and survey instruments to gauge organizational climate and learning style differences. Emphasizes practical experience and issue analysis in gaining HRD skills that can be immediately employed.

ADLT 622 Human Resource Development Strategies and Interventions

Semester course; 3 lecture hours. 3 credits. Examines organizational development, nature of interventions, when to use them (and not use them), and a variety of models for aligning human resources capabilities with organizational needs. Focuses on introduction of change and transformation of organizational culture.

ADLT 623 Organizational Learning

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADLT 620 or permission of instructor. Examines the theoretical basis for organizational learning and the practices inherent in developing a learning organization. Examines organizational culture and socialization; systems thinking; organizations as interpretative systems; the leader's role in creating, sustaining and changing culture; strategies for enhancing collective learning; distributed cognition; and strategies for knowledge management.

ADLT 625 Change Strategies for HRD Practitioners

Semester course; 3 lecture hours. 3 credits. Prerequisites: ADLT 620 and 623 or permission of instructor. Develops skills in change intervention strategies by employing the theoretical frameworks of organization development and organization transformation to address critical organizational issues and problems. Explores the HRD practitioner's role in facilitating organizational change through action research, action science, action learning and large-scale, whole-system interventions. Examines the differing roles and ethical issues for improving orgainizational effectiveness with special attention to organizational culture and a systems perspective of change.

ADLT 631/EDUS 631 American College and University

3 credits. Examines historical and contemporary foundations of American higher education through the study of leading developments and of contemporary issues relating to the curriculum, aims and objectives and current directions of American colleges, universities and other institutional settings of higher education.

ADLT 632/EDUS 632 The Changing Face of Higher Education

3 credits. Examines how higher education is changing and explores the reasons for these changes, studies how the academy is responding to social pressures and explores scenarios for future change.

ADLT 633/EDUS 633 Academic Leadership in Higher Education

3 credits. Analyzes how leadership in higher education is similar to and different from leadership in other organizational settings, explores challenges for leadership (such as access, cost and social responsiveness) and examines emerging leadership roles at various levels of the academic organization.

ADLT 636 Capstone Seminar in Action Learning

Semester course; 3 lecture hours. 3 credits. Prerequisites: Restricted to students who have completed all other foundation and core courses or are taking this course in conjunction with the final specialty track courses in the M.Ed. in Adult Learning program; permission of adviser required. An integrative end-of-program course that utlizes skills and knowledge gained in all earlier courses, including philosophical and theoretical assumptions of adult learning and strategies for creating effective individual and collective learning environments. Students consult with a community-based, educational, nonprofit or for-profit organization using action learning methods of inquiry to solve a real organizational problem. Requires synthesis of knowledge and expertise in all aspects of adult learning and demonstrated proficiency in research and evaluation skills appropriate for the master's degree level. An end-of-semester presentation and consulting report are provided to the organization's leaders.

ADLT 700 Technologically Mediated Adult Learning Systems

Semester course; 3 lecture hours. 3 credits. A survey of the current technologically mediated adult learning systems used in corporate, private, public, military and post-secondary educational environments. Critiques the underlying philosophical and psychological theories upon which such systems are based. Examines these mediated delivery systems in light of contemporary adult learning theories and four adult education/HRD perspectives: Technology as Curriculum, Technology as a Delivery Mechanism, Technology as a Complement to Instruction and Technology as an Instructional Tool. Identifies future trends and issues in adult mediated learning systems.

ADLT 701 Advanced Program Planning in Adult Education and Human Resource Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: ADLT 602 Adult Program Planning, Management and Evaluation or permission of the instructor. Analyzes current approaches to program planning in adult education and human resource development. Explores specific aspects of program planning, including needs analysis, managing large-scale program operations and interorganizational relationships.

ADLT 702 Seminar in Adult Learning Theories

Semester course; 3 lecture hours. 3 credits. Provides an opportunity to examine adult learning theories from a variety of epistemologies. Course is cross-disciplinary in scope, capitalizes on a wide research base, and features interaction between students and lead theorists.

ADLT 703 The Adult Education and Human Resource Development Consultant

Semester course; 3 lecture hours. 3 credits. Appropriate prerequisites required or permission of the instructor. Emphasizes the roles, responsibilities and skills of internal and external consultants working with adult education and/or human resource development organizations. Analyzes change, intervention and stabilization processes, the roles and functions of consultants, phases of the consulting process, adoption and diffusion of consultant innovations and diagnostic skills of consultants. Critiques current consultant intervention models and strategies.

ADLT 704 Groups, Teams and Organizational Learning

Semester course; 3 lecture hours. 3 credits. A critical analysis and evaluation of how human resource development draws on group dynamics, team related methodologies and organizational learning to create learning environments, analyze problems, build organizational capabilities and refine group processes.

ADLT 705 Global Human Resource Development

Semester course; 3 lecture hours. 3 credits. Provides an in-depth awareness of how HRD practices must be modified when dealing with a global workforce. Probes a variety of multicultural dimensions in elevating cultural awareness and sensitivity. Emphasizes building effective HRD programs in cross-cultural contexts.

Administration and Supervision(ADMS)

ADMS 500 Workshops in Education

Semester course; 1-3 credits, repeatable for maximum of six credits. Designed to focus on a single topic within a curriculum area, the workshop offers graduate students exposure to new information strategies and materials in the context of a flexible instructional framework. Activities emphasize a hands-on approach with direct application to the educational setting.

ADMS 600 Public School Administration

Semester course; 3 lecture hours. 3 credits. An overview of the theory and practice of public school administration. Emphasis on the governance of education and leadership roles of school boards, superintendents, principals and supervisors. Leadership theories and characteristics of effective management systems related to student discipline and academic performance, school safety, internal and external communications, and coordination with outside agencies. Appropriate field-based project relating theory to practice will be required.

ADMS 601 Processes of Instructional Leadership

Semester course; 3 lecture hours. 3 credits. Examines processes of instructional leadership in schools. Primary focus on developing school leadership skills necessary to provide a positive working environment through collaboration and team-building, as well as professional opportunities including supervision and evaluation of instruction. Focus will be on best practices that lead to school cultures that build communities of learning. Appropriate field-based project relating theory to practice will be required.

ADMS 602 Seminar in Elementary School Administration

Semester course; 3 lecture hours. 3 credits. Problems and issues in elementary school leadership. Major responsibilities of the elementary school principal. Enrollment limited to specialists in administration.

ADMS 603 Seminar in Secondary School Administration

Semester course; 3 lecture hours. 3 credits. Problems and issues in secondary school leadership. Major responsibilities of the secondary school principal. Enrollment limited to specialists in administration.

ADMS 605 Organizational Theory, Structure and Culture in Educational Settings

Semester course; 3 lecture hours. 3 credits. A study of organizational theory, structure, and culture relating to schools. Emphasis on conceptual understandings needed for practical implementation.

ADMS 606 Organizational Behavior and Change in Educational Settings

Semester course; 3 lecture hours. 3 credits. A study of organizational concepts and practices in educational contexts. Emphasis on both conceptual understandings and specific professional skills relating to diagnosis and development.

ADMS 607 Principles of Educational Leadership

Semester course; 3 lecture hours. 3 credits. Develop understandings for school leaders of effective leadership in organizations, personal leadership styles, and modifying leadership styles. Leadership with respect to vision building, organizational communications, motivating others, and group problem solving will serve as major areas of study. Lecture, individual study, group work and fieldwork will serve as major means of course delivery.

ADMS 610 School and Community Relations

Semester course; 3 lecture hours. 3 credits. Provides a conceptual and philosophical framework for evaluation and development of practices invovled in implementing desirable school and community relations programs that focus on unique needs of communities. Special emphasis given to skills necessary to identify significant issues, assess current practice and engage in the processes involved in building and maintaining exemplary school-community programs. Appropriate field-based project relating threory to practice will be required.

ADMS 611 School Law

Semester course; 3 lecture hours. 3 credits. Legal aspects of school administration that include constitutional and statutory provisions and court decisions. Relationship of legal aspects to governance of schools in Virginia will be emphasized. Appropriate field-based project relating theory to practice will be required.

ADMS 620 Improving School Programs and Performance

Semester course; 3 lecture hours. 3 credits. Introduction to principles of leadership for the improvement of school programs and performance. Participants discuss current literature and models of school improvement with an emphasis on identification, selection and measurement of appropriate student and school performance indicators. An understanding of school culture and change, the importance of planning for change, and the role of data in the process of change are topics included. Appropriate field-based project relating theory to practice will be required.

ADMS 621 Management of School Operations and Support Programs

Semester course; 3 lecture hours. 3 credits. Developing understanding and practices of the school principal with respect to key elements of managing school operations and support programs. Special attention will be given to goal setting for programs, securing, organizing and managing human, material and financial resources. Attention will be given to cost/time-effective practices and accountability.

ADMS 632 Administration and Supervision of Special Education

Semester course; 3 lecture hours. 3 credits. Examination of instructional practices and legal issues related to providing school programs for students with special needs. Appropriate field-based project relating theory to practice will be required.

ADMS 640 Human Resource and Fiscal Management

Semester course; 3 lecture hours. 3 credits. A study of theories and policies related to resource projection and management in schools and school divisions. Finance topics include budget, purchasing and accounting, and procedures for obtaining equipment and materials. Human resource topics include staffing requirements, hiring, evaluation and dismissal procedures, and staff-personnel relationships. Appropriate field-based project relating theory to practice will be required.

ADMS 641 School Personnel Administration

Semester course; 3 lecture hours. 3 credits. A study of the personnel function in educational organizations. Designed to explore techniques and problems of staff-personnel relationships in contemporary education.

ADMS 643 The Community School

Semester course; 3 lecture hours. 3 credits. The development and utilization of the community school concept will be examined. Community-wide use of school facilities and the involvement of the total community in the learning process will be studied. Emphasis will be placed on the physical plant design, organizational structure, staffing and curriculum of the community school. The utilization of the community school to implement "lifelong learning" will be stressed.

ADMS 651 Topics in Education

Semester course; 1-3 credits, repeatable for maximum of nine credits. Prerequisite: Check with department for specific prerequisites. A course for examination of specialized issues, topics, readings or problems in education.

ADMS 672 Principalship Seminar and Internship

Semester course; 3 lecture hours. 3 credits. A culminating experience taken at the end of program designed for students to have opportunities to synthesize the essential knowledge and skills necessary to be a school leader. Reflection and refinement of skills and knowledge will be part of student-developed professional portfolio that could be used in securing a leadership position in a school system. Integration of theory and practice will take place in internship of at least 110 hours in a school/school district setting supervised by an approved professional and university instructor. Course will include seminars, selected readings, projects, discussion and other culminating activities.

ADMS 700 Externship

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

ADMS 701 Development and Implementation of Administrative Policies in Education

Semester course; 3 lecture hours. 3 credits. Examines processes involved in developing and implementing educational policy from the perspective of the school administrator. Emphasis is given to the roles of federal and state governments in policy-making with attention to problems encountered in implementing educational policies.

ADMS 702 Educational Administration: Contemporary Theory and Practice

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADMS 600 or equivalent. Study of recent developments in administrative theory and the application of these theories to contemporary and future educational issues and problems.

ADMS 704 School Business Administration

Semester course; 3 lecture hours. 3 credits. Study of theories, principles and practices of school business administration as they apply at the school district and school building levels.

ADMS 705 Planning Educational Facilities

Semester course; 3 lecture hours. 3 credits. Study of the theory, principles, criteria, procedures and practices of planning educational facilities and the modernization, maintenance and operation of existing facilities.

ADMS 706 Advanced Supervision of Instruction

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADMS 601 or equivalent. Examines the development of the curriculum and management of instruction in schools; particular attention to organizational processes in schools and their relationship to instruction.

ADMS 707 Advanced Educational Law

Semester course; 3 lecture hours. 3 credits. Prerequisite: ADMS 611 or equivalent. Study of the legal aspects of curricular decision making; the legal prerogatives and liabilities of school officials; and the legal responsibilities, rights, and liabilities of school personnel, school students and parents of students.

Counselor Education(CLED)

CLED 600 Introduction to Guidance and Counseling

Semester course; 3 lecture hours. 3 credits. An introductory course for all students in counselor education that provides an overview of the counseling profession and the foundation for other courses in the program.

CLED 601 Theories of Counseling

Semester course; 3 lecture hours. 3 credits. Selected theories upon which counseling is based, with particular attention placed on the research underlying the theories. Primary focus on providing students with a theoretical foundation upon which to base their personal counseling approaches.

CLED 602 Techniques of Counseling

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLED 600 and 601 or permission of instructor. Theory and practice of counseling with emphasis on skill development.

CLED 603 Group Procedures in Counseling

Semester course; 3 lecture hours. 3 credits. Pre- or corequisites: CLED 600 and 601. Analyzes the theories and practice of group work, the relationship of group activities to counseling, and specfic skills in group techniques.

CLED 604 Practicum: School Counseling

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLED 602 and 603. Seminar and supervised field experience in indivudual and group counseling and classroom group guidance.

CLED 605 Career Information and Exploration

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLED 600 and 601. Designed to provide the potential counselor with an understanding of theoretical approaches to career development in grades K-adult. Emphasis will be given to the relationship between counselor and student(s) in the career development process. A review of occupational, educational and personal/social information resources will be made.

CLED 606 Assessment Techniques for Counselors

Semester course; 3 lecture hours. 3 credits. Principles and techniques involved in selecting, scoring and interpreting standardized and nonstandardized assessment instruments used by counselors.

CLED 610 Counseling in Elementary and Middle Schools

Semester course; 3 lecture hours. 3 credits. An intensive study of school counseling programs for children and young adolescents. Emphasizes the role of elementary and middle school counselors in developmental guidance. Methods for classroom guidance will be discussed.

CLED 620 Student Development Services in Higher Education

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An overview of the organization and management of student services in postsecondary institutions. Areas such as admissions, career services, academic advising, residential life, financial aid, student development services, student union programming and management, and student activities are reviewed.

CLED 621 Secondary School Counseling Seminar

Semester course; 3 lecture hours. 3 credits. An advanced course designed to provide a means for intensive study of secondary school counseling. The approach will be to integrate professional knowledge and skills from various disciplines as they relate to the work of the secondary school counselor.

CLED 642 Organization and Administration of Guidance Services

Semester course; 3 lecture hours. 3 credits. A study of organizational principles and procedures necessary for the effective administration of guidance services. Consideration is given to procedures used in establishing guidance programs or modifying existing ones (or both), including the study of various community resources that can contribute to more efficient guidance services.

CLED 672 Internship: K-12 School Counseling

Semester course. 6 credits. Prerequisite: Permission of Department. Seminar and supervised field experience for counselors K-12 designed to extend professional competencies. Under supervision of an approved licensed professional school counselor.
Effective Spring 2007 < p > < b > CLED 672 Internship: K-12 School Counseling < /b > < br >
Semester course. 3 or 6 credit hours. May be repeated for a total of six credit hours. Prerequisite: Completion of all other CLED courses. Seminar and supervised field instruction experience for counselors in K-12 settings designed to extend professional competencies under supervision of an approved licensed professional school counselor. A total of 600 clock hours is required. < /p >

Early Childhood Special Education(ECSE)

ECSE 601 Assessment of Infants and Young Children with Disabilities

Semester course; 3 lecture hours. 3 credits. Provides knowledge and practical applications for the identification, placement and assessment for program planning and evaluation of children with disabilities ages birth through five.

ECSE 602 Instructional Programming for Infants and Young Children with Disabilities

Semester course; 3 lecture hours. 3 credits. Advanced study of intervention strategies for infants and preschool-aged children with disabilities. Emphasis on program planning, curriculum, classroom management, developmentally appropriate practice and effective intervention strategies.

ECSE 603 Integrated Early Childhood Programs

Semester course; 3 lecture hours. 3 credits. Examines the needs, opportunities, resources and barriers to early intervention and inclusive early childhood programs in Virginia and local communities. State and federal laws and policies, reseaarch-based practices and local models will be studied to understand the context for systems change. A planning process that includes funding mechanisms, staffing patterns, curricula service models, family participation options, resource cooridination and program evaluation procedures will be emphasized.

ECSE 604 Early Literacy and Augmentative Communication

Semester course; 3 lecture hours. 3 credits. Designed to increase the professional knowledge and skills of early childhood special educators to meet the literacy needs of young children with disabililites through the use of technology.

ECSE 672 Internship in Early Development and Intervention

Semester course; 1 or 2 lecture hours. 1 or 2 credits. May be repeated. Designed to provide practical experience in different community programs that serve young chlidren (birth to 5) from various cultural and linguistic backgrounds, who are at risk for or have developmental disabilities, and their families. These observation, participation and service-learning experiences are distributed across the graduate program, linked to other core content courses documented via portfolios and aligned with professional standards.

ECSE 700 Externship

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

Educational Studies(EDUS)

EDUS 200 Education in American Society

Semester course; 3 lecture hours. 3 credits. An elective course for non-education majors, including those who may be exploring careers in education. An examination of the complex nature of our American educational system and various societal influences on that system. The course will include an exploration of some critical issues affecting the future of American education, on-site visits to educational institutions, and other field experiences in settings that will permit exploration of career options.

EDUS 300 Foundations of Education

Semester course; 3 lecture hours. 3 credits. The historical, sociological and philosophical backgrounds of educational theories and practices. The aim of the course is to help the student develop a basic understanding of education in the modern world.

EDUS 301 Human Development and Learning

Semester course; 3 lecture hours. 3 credits. A study of human development through the life span with special emphasis on child and adolescent psychology, the nature of learning, and basic concepts of learning theories.

EDUS 305/PSYC 305 Educational Psychology

Semester course; 3 lecture hours. 3 credits. The application of psychological principles to the teaching-learning process, with special emphasis on theories of learning and development.

EDUS 400 Independent Study

Semester course; 1-6 hours. 1-6 credits. Opportunities are provided for supervised research and independent study in selected areas. Designed for advanced students. All work offered on an individual basis with the approval of instructor and departmental chair.

EDUS 401 Pupil Evaluation

Semester course; 3 lecture hours. 3 credits. Principles and procedures of evaluation of pupil growth in cognitive, affective, and psychomotor domains for a prospective classroom teacher; construction and analysis of teacher-made tests and other formal and informal assessment procedures; interpretation and use of criterion-referenced and norm-referenced standardized tests in measuring group and individual achievement.

EDUS 476 Methods for Residence Hall Assistants

Semester course; 3 lecture hours. 3 credits. Prerequisite: Serve in VCU residence halls or permission of instructor. Course designed primarily to present resident assistants and others with student development concepts, peer assistance and helping skills, and group techniques. Residence halls will be used as primary learning laboratories.

EDUS 494 Topical Seminar in Education

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. A seminar intended for group study by personnel interested in examining topics, issues or problems related to the teaching, learning and development of students.

EDUS 500 Workshop in Education

Semester course; 1-3 credits. Repeatable to 6 credits. Designed to focus on a single topic within a curriculum area, the workshop offers graduate students exposure to new information strategies and materials in the context of a flexible instructional framework. Activities emphasize a hands-on approach with direct application to the educational setting.

EDUS 514 Parent-child Relations

Semester course; 3 lecture hours. 3 credits. A methods course in parent-child communications and problem solving. Designed to enable parents and professionals to understand and relate more effectively with children.

EDUS 594 Topical Seminar

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. A seminar intended for group study by students interested in examining topics, issues or problems related to teaching and learning.

EDUS 601 Philosophy of Education

Semester course; 3 lecture hours. 3 credits. A study of basic philosophies that have contributed to the present-day educational system. Attention will be given to contemporary philosophies and their impact on educational aims and methods.

EDUS 602 Adolescent Growth and Development

Semester course; 3 lecture hours. 3 credits. Contemporary learning theories and their implications for teaching the adolescent learner. Emphasis will be placed on specific problems of adolescent growth and development as they relate to the learning situation.

EDUS 603 Seminar in Child Growth and Development

Semester course; 3 lecture hours. 3 credits. Intensive study of child growth and development and application of this knowledge. Emphasis on current research.

EDUS 604 Adult Development

Semester course; 3 lecture hours. 3 credits. An introductory study of adult development from the life cycle perspective with implications for educators working with adults. Emphasis will be placed on major physiological, psychological, sociological, and anthropological factors that make adults distinct from earlier developmental levels.

EDUS 605 Child and Adolescent Development

Semester course; 3 lecture hours. 3 credits. Examines theory and practical applications of the research about the cognitive, social and physical development of children and adolescents. Emphasizes issues that affect students in school environments.

EDUS 606 Review of Research

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 9 credits. Application of research findings to a specific educational area of study. Emphasis is on the consumption and utilization of research findings rather than the production of research evidence.

EDUS 607/PSYC 607 Advanced Educational Psychology

Semester course; 3 lecture hours. 3 credits. Application of the principles of psychology to the teaching-learning process. Discussion will focus on the comprehensive development of individual learning experiences and educational programs from the point of view of the educator and the administrator.

EDUS 608 History of Western Education

Semester course; 3 lecture hours. 3 credits. This course will explore the development of educational thought and practice from ancient times to the present, with special attention being given to the major issues confronting American education since its beginning.

EDUS 609 Learning Theories in Education

Semester course; 3 lecture hours. 3 credits. A study of general learning theories applicable to education including the concepts and issues related to the teaching-learning process. Instruction and curriculum will be discussed to illustrate psychological principles of learning.

EDUS 610 Social Foundations of Education

Semester course; 3 lecture hours. 3 credits. A study of significant social issues involved in the development and operation of schools and other educational institutions and processes.

EDUS 612 Education and the World's Future

Semester course; 3 lecture hours. 3 credits. An examination of education as it relates to future changes in other areas: population, energy, transportation, family, etc. The course will consist of readings dealing with educational change as well as a series of modules where students will engage in future exercises, games and projects.

EDUS 613 Educational Change

Semester course; 3 lecture hours. 3 credits. Developing the skills for planned program change through the use of systematic inquiry, systems analysis and systems approaches through systems concepts. Provides opportunities for students to develop "mini (classroom) changes" or "macro (school district) changes" through the use of systems.

EDUS 614 Contemporary Educational Thought

Semester course; 3 lecture hours. 3 credits. This course will be devoted to a critical examination of educational ideas and programs emanating from contemporary writings on education. Students will be encouraged to develop critical skills of analysis in examining such writings utilizing historical and philosophical perspectives.

EDUS 631/ADLT 631 American College and University

3 credits. Examines historical and contemporary foundations of American higher education through the study of leading developments and of contemporary issues relating to the curriculum, aims and objectives and current directions of American colleges, universities and other institutional settings of higher education.

EDUS 632/ADLT 632 The Changing Face of Higher Education

3 credits. Examines how higher education is changing and explores the reasons for these changes; studies how the academy is responding to social pressures and explores scenarios for future change.

EDUS 633/ADLT 633 Academic Leadership in Higher Education

3 credits. Analyzes how leadership in higher education is similar to and different from leadership in other organizational settings; explores challenges for leadership (such as access, cost and social responsiveness) and examines emerging leadership roles at various levels of the academic organization.

EDUS 641 Independent Study

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Determination of the amount of credit and permission of the instructor and department chair must be procured prior to registration. Cannot be used in place of existing courses. An individual study of a specialized issue or problem in education.

EDUS 651 Topics in Education

Semester course; 1-3 credits. May be repeated for 9 credits. Check with department for specific prerequisites. A course for the examination of specialized issues, topics, readings or problems in education.

EDUS 660 Research Methods in Education

Semester course; 3 lecture hours. 3 credits. Designed to provide an introductory understanding of educational research and evaluation studies. Emphasizes fundamental concepts, procedures and processes appropriate for use in basic, applied and developmental research. Includes developing skills in critical analysis of research studies. Analyzes the assumptions, uses and limitations of different research designs. Explores methodological and ethical issues of educational research. Students either conduct or design a study in their area of educational specialization.

EDUS 661 Educational Evaluation: Models and Designs

Semester course; 3 lecture hours. 3 credits. Prerequisite: EDUS 660 or permission of instructor. A comprehensive review of the major evaluation theories and models including their focus, assumptions, designs, methodologies and audiences in educational policy making and program development. Designed for students to gain an understanding of alternative procedures of educational evaluation, an in-depth knowledge of at least one theoretical approach to evaluation and skills in interpretation of evaluation studies for policy and in developing an evaluation design for their area of specialization.

EDUS 662 Educational Measurement and Evaluation

Semester course; 3 lecture hours. 3 credits. Provides an understanding of basic concepts of educational measurement and evaluation. Includes development, interpretation and use of norm-referenced and criterion-referenced measures, standardized instruments and qualitative assessments applicable to a wide variety of educational programs and settings. Students study in-depth measurement and/or evaluation procedures in their specialization.

EDUS 672 Internship

Semester course; 1-6 credits. May be repeated for a maximum of 12 credits. Prerequisite: Permission of adviser. Study and integration of theory with practice in clinical or off-campus settings supervised by an approved professional and university faculty. May include seminars, selected readings, projects and other activities designed and evaluated by supervising faculty.

EDUS 673 Seminar on Educational Issues, Ethics and Policy

Semester course; 3 lecture hours. 3 credits. An analysis of the ethical dimensions of educational policies and practices. Examines aspects of selected educational policies and practices, drawn in part from practical issues encountered in clinical settings. Investigates how educational policies and practices reflect ethical values and how those values are grounded.

EDUS 700 Externship

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

EDUS 701 Urban Education

Semester course; 3 lecture hours. 3 credits. A study of urban education from historical and contemporary perspectives. This course includes study of the educative effect of urban environments; the development of public and private urban educational systems; the influence of social, political, and economic factors on urban educational programs; and the impact of theories, proposals, and practices on alternative futures.

EDUS 710 Educational Research Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: graduate-level statistics course, and EDUS 660 or equivalent, or permission of instructor. An examination of research designs and concepts commonly utilized in conducting research in applied educational settings. Fundamental principles of research are extended to cover such topics as quasi-experimental, multivariate and qualitative research design.

EDUS 711 Qualitative Methods and Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: graduate-level statistics course, and EDUS 660 or equivalent, or permission of instructor. Examines qualitative research designs and inductive analysis, including research traditions, problems formulation in fieldwork, purposeful sampling, interactive data collection strategies, research reliability and validity. An interdisciplinary approach is used. Students conduct a small field study in their specialization.

EDUS 790 Educational Research Seminar

Semester course; 3 lecture hours. 3 credits. Provides doctoral students with opportunities to investigate research areas related to their doctoral studies. Students and instructor will critique student conducted literature reviews and preliminary research proposals.

EDUS 795 Professional Seminar in Educational Issues

Semester course; 3 lecture hours. 3 credits. Limited to students in Ph.D. in Education program. Interactive seminar discusses contemporary educational issues based on research in the historical, philosophical, psychological, sociological, political and economic foundations of education. Includes active participation by students as well as guest lectures by scholars from various academic disciplines.

EDUS 798 Thesis

Semester course; 1-6 credits. May be repeated for a maximum of 6 credits. A research study of a topic or problem approved by the student's supervisory committee and completed in accordance with acceptable standards for thesis writing.

EDUS 890 Dissertation Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of adviser or dissertation chair. Designed to develop and refine the skills applicable to the preparation of an acceptable draft of a dissertation prospectus.

EDUS 899 Dissertation Research

Semester course; variable hours. Variable credit. May be repeated. A minimum of 12 semester hours required. Prerequisite: Successful completion of comprehensive examinations and approval of student's doctoral prospectus. Dissertation work under direction of dissertation committee.

Emotional Disturbance(EMOD)

EMOD 400 Characteristics of Children/Adolescents with Emotional Disturbances

Semester course; 3 lecture hours. 3 credits. Surveys the nature of children and adolescents with emotional disturbances and behavior disorders with emphasis on the psychological, biophysical, sociological and ecological factors that related to their educational needs. Related topics include definitions, classification, school identification, assessment procedures and intervention approaches.

EMOD 500 Characteristics of Students with Emotional Disturbance

Semester course; 3 lecture hours. 3 credits. Focuses on the nature of children and youth with behavior disorders and emotional disturbances with emphasis on psychological, biophysical, sociological and ecological factors that relate to their educational needs. Related topics include definitions and classification of disorders, school identification and assessment procedures and intervention approaches.

EMOD 501 Teaching Students with Emotional Disturbance

Semester course; 3 lecture hours. 3 credits. Prerequisite: EMOD 500. Provides an in-depth study of instructional strategies and organization of activities for children and youth with behavior disorders and emotional disturbances children including curriculum, media, materials and physical environment. Develops skills to plan and deliver instruction in a variety of educational settings including regular classes, resource rooms, self-contained classes and residential programs.

EMOD 603 Interactive Strategies in Teaching Students with Special Needs

Semester course; 3 lecture hours. 3 credits. Strengthens teaching skills in affective education, social skills development and life space interviewing techniques as methods of promoting human interaction skills among students with special needs in schools. Focuses on professional skills in interpersonal relationships, communication, consultation and teamwork.

EMOD 700 Externship

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

English/English Education(ENED)

ENED 532/ENGL 532 Applied English Linguistics

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: ENGL 449 or equivalent course in linguistics or permission of instructor. Application of linguistic theories and methods to selected teaching problems, such as teaching English grammar and usage, teaching English as a second or foreign language, or teaching standard English to students who speak different dialects.

ENED 601/ENGL 601 Young Adult Literature

Semester course; 3 lecture hours. 3 credits. Examination of literature written for young adults, literature appropriate for young people in middle schools and high schools. Focuses on the content, characteristics and teaching of such literature.

ENED 636/ENGL 636 Teaching Writing

Semester course; 3 lecture hours. 3 credits. Examines theories and practices of teaching writing, with emphasis on the connections between theory and practice.

ENED 643/ENGL 643 Teaching Basic Writing Skills

Semester course; 3 lecture hours. 3 credits. The emphasis of this course will be on developing the student's ability to teach fundamental writing skills. It will include such topics as diagnosis of writing problems, strategies for correcting problems and methods for evaluating progress.

Health and Movement Sciences(HEMS)

HEMS 500 Motor Development of Young Children

Semester course; 3 lecture hours. 3 credits. Explores the development of small children, preschool, kindergarten and first-grade children through physical education. Emphasis will be on the construction of a program of motor development for each of these three groups. The programs will be based on the research findings in such areas as perceptual-motor development, motor learning, educational psychology and others. Those students and teachers in the fields of physical education, special education and elementary education should find this course useful in developing programs of motor development for their students.

HEMS 505 Contemporary Issues in Health

Semester course; 3 lecture hours. 3 credits. Focuses on contemporary issues related to lifestyle and health behavior. Emphasizes the factors that influence health and the lifestyle changes that promote and maintain optimal health. Issues may include sexuality, nutrition, chronic and communicable diseases, aging, environmental health, policy, and health care systems.

HEMS 507 Teaching Health in Schools

Semester course; 3 lecture hours. 3 credits. Examines health issues, family influences, teenage attitudes and signs of progress in health behavior. School health programs, including remedial, classroom instruction and environmental aspects of school life also are considered.

HEMS 514 Physical Activity for Special Populations

Semester course; 3 lecture hours. 3 credits. Provides fundamental information to students at the graduate level on physical activity programming for children with disabilities. Course content focuses on programming techniques and methods that are most effective in meeting the specific physical activity needs of the individual child. Emphasis is on Public Law 94-142 provisions currently affecting physical education programming for special populations; in particular, the development of specially designed physical education programs, individualized education programs and programming in the least restrictive environment.

HEMS 521 Pathomechanics of Sport Injuries

Semester course; 3 lecture hours. 3 credits. Addresses musculoskeletal and sports injury mechanisms from a pathomechanical and pathophysiological perspective. Focuses on acute trauma and repetitive stress injuries to the musculoskeletal system. Emphasizes evaluation and diagnostic procedures and the pathophysiology and evaluation of mild head injuries commonly acquired as part of physical activity.

HEMS 540/REMS 540 Cardiovascular Pathophysiology and Pharmacology

Semester course; 3 lecture hours. 3 credits. Prerequisites: HPEX 375 and HPEX 440 or equivalents. Presents theoretical principles of electrocardiography and the effects of pharmacological intervention in the treatment of cardiovascular disease. Specific emphasis placed on myocardial ischemia, myocardial infarction and their treatment through exercise rehabilitation protocols. The impact of pharmacological agents on the ECG and on exercise are explored.

HEMS 550 Exercise, Nutrition and Weight Management

Semester course; 3 lecture hours. 3 credits. Provides an in-depth analysis of the scientific principles associated with weight management strategies. Emphasizes the separate and combined effects of exercise, nutrition and behavioral interventions relative to weight loss, weight gain and weight maintenance. Includes life cycle nutrition, childhood obesity, adult obesity and chronic disease, weight management intervention strategies, eating disordered behavior and the female athlete triad.

HEMS 591/SPTL 591 Topical Seminar

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. A seminar intended for group study by students interested in examining topics, issues or problems related to health, physical education, exercise science, recreation and sport.

HEMS 600 Introduction to Research Design in Health and Movement Sciences

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the basic knowledge and methodology of research in health and movement sciences. Develops the ability to critically read and evaluate research, acquire a conceptual understanding of statistics and develop an empirical study related to healthy and diseased populations.

HEMS 601/REMS 601 Movement Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 375 or equivalent. Investigates the physiological processes in relation to bodily exercises in everyday life and sports activities. Physiological changes in the human organism due to movement. Investigation and application of research to health and movement sciences. Students must design, conduct and write a pilot study.

HEMS 602 Statistical Applications in Health and Movement Sciences

Semester course; 3 lecture hours. 3 credits. Presents theory and techniques involved in the analysis and interpretation of data pertinent to research in health and movement sciences. Includes statistics applied to data encountered in published health and movement sciences research.

HEMS 603 Applied Fitness and Nutrition for Health and Movement Science Professionals

Semester course; 3 lecture hours. 3 credits. An in-depth study of applied fitness and nutrition principles and practices. Emphasizes the application of knowledge and fundamental fitness and nutrition principles.

HEMS 604 Nutrition for Health and Physical Activity

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 350 or equivalent. Provides an in-depth examination of the basic nutrients and their effects on health, fitness and sport performance. Emphasizes an understanding of the biochemistry of metabolism and knowledge of the current research related to nutrition, health and exercise performance.

HEMS 605 Psychology of Physical Activity

Semester course; 3 lecture hours. 3 credits. Prerequisite: Introductory psychology, personal health or equivalent. Examines psychological issues related to exercise and physical activity. Includes individual and group motivation theory and techniques, leadership effectiveness, mental health, mental skills training, injury rehabilitation, eating disorders, exercise adherence, addiction, over training and use of ergogenic aids. Emphasizes examining current research and applications of psychological principles and knowledge in a physical activity setting.

HEMS 606 Psychosocial Aspects of Sport and Physical Activity

Semester course; 3 lecture hours. 3 credits. Examines social and psychological issues in sport and physical activity, with emphasis on socialization and motivation for sport and physical activity; patterns of participation and opportunities related to race, gender and social class; mental skills training for performance enhancement; aggression and violence in sport and society; and the role of sport and physical activity in the educational system. Emphasizes examining current research and applied methods in addressing these issues.

HEMS 610 Laboratory Techniques in Rehabilitation Science

Semester course; 3 hours. 3 credits. Prerequisite: HPEX 375 or equivalent. Laboratory-based course examining the various procedures related to measurement and experimentation in human performance. Includes examination of instruments designed to assess cardiovascular, musculoskeletal and pulmonary performance. Emphasis is given to application of instrumentation to physical training in healthy and diseased populations and to treatment and rehabilitation in a clinical setting.

HEMS 611 Biomechanics of Human Motion

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: BIOL 205 or equivalent. Recommended: PHYS 201, or HPEX 374 or 373, or equivalents. Application of the knowledge and methods of mechanics in the study of the structure and function of the human body as applied to sport, physical activity and rehabilitation. Topics include kinematics, kinetics and methods of biomechanical analysis.

HEMS 612 Administration and Supervision of Physical Education

Semester course; 3 lecture hours. 3 credits. Gives guidelines for administrative and supervisory policies and problems in physical education and explores observation techniques, standards for judging instruction, the supervisory conference and cooperative supervision. Emphasis is placed upon the common problems met by administrators and supervisors.

HEMS 613 General Motor Ability Evaluation

Semester course; 3 lecture hours. 3 credits. Investigates the theory of the construction of evaluative instruments in physical education with emphasis on a critical examination of existing measurement devices. Emphasis on the use of measurement as a tool for improving physical education programs.

HEMS 614 Motor Assessment for Special Populations

Semester course; 3 lecture hours. 3 credits. Prerequisite: HEMS 514 or permission of instructor. Provides the student with basic information regarding motor tests and observational instruments that assess and evaluate special populations. Focuses on the analysis of these tests as to their 1) main components and items purporting to measure these components; 2) administration, i.e., time, administrator's experience, group size, validity and reliability and standardization; and 3) use in establishing and monitoring annual goals and short-term objectives for an individualized education program.

HEMS 615 Orthopaedics and Therapeutics in Sports Medicine

Semester course; 3 lecture hours. 3 credits. Provides in-depth exposure to procedures used in orthopaedics and physical medicine. Includes lectures and presentations by physicians, surgeons and other health care personnel. Focuses on linking diagnostic and surgical techniques used in orthopaedics and physical medicine to the rehabilitative treatment plan. Emphasizes the diagnosis and treatment of neuromuscular diseases and adaptive technologies for disabled populations.

HEMS 620 Motor Learning and Performance

Semester course; 3 lecture hours. 3 credits. Analysis of early patterns of behavior and the development of physical skills in childhood, adolescence, and adulthood. Consideration of differences in motor proficiency and factors affecting the acquisition of motor skills and concepts of motor learning with reference to the improvement of instructional practices.

HEMS 621 Sports Medicine

Semester course; 3 lecture hours. 3 credits. Prerequisite: HEMS 521 or permission of instructor. Designed to give the student knowledge in the advanced principles of prevention and treatment of athletic injuries. The course includes advanced first aid techniques and the more sophisticated means of athletic care and prevention. Students are exposed to such modalities as mechanical therapies, thermal therapy, cryotherapy, hydrotherapy and electrotherapy. One major component of the course deals with therapeutic exercise and its use in the rehabilitation of the injured athlete.

HEMS 660/REMS 660 Neuromuscular Performance

Semester course; 3 lecture hours. 3 credits. Prerequisites: HEMS 601 and HEMS 611. Examines the interrelationships between the musculoskeletal and neuromuscular systems. Includes examination of normal and abnormal biomechanics of the musculoskeletal system, biomechanical factors related to human performance, as well as acute and chronic adaptations of the neuromuscular system. Emphasizes how these principles can be applied to physical training in healthy and diseased populations and treatment and rehabilitation in the sports medicine setting.

HEMS 675 Clinical Exercise Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Examines theoretical and functional techniques of graded exercise testing for functional and/or diagnostic assessment. Topics include pulmonary, cardiovascular, respiratory and myocardial physiology, and the principles and skills of exercise prescription based on metabolic calculations.

HEMS 690 Research Seminar in Health and Movement Sciences

Semester course; 1-3 credits. May be repeated for a maximum of 3 credits. Provides opportunities for presentation and discussion of current research and topics of interest in health and movement sciences. Presents relevant research for discussion delivered by guest researchers, faculty and students.

HEMS 691 Topics in Health and Movement Sciences

Semester course; 1-3 credits. May be repeated for 9 credits. Check with division head for specific prerequisites. Examines specialized issues, topics, readings or problems in health and movement sciences.

HEMS 692/REMS 692 Independent Study

Semester course; 1-3 credits. May be repeated for 6 credits. Determination of the amount of credit and permission of the instructor and division head must be procured prior to registration. Cannot be used in place of existing courses. An individual study of a specialized issue or problem in health or movement sciences.

HEMS 695 Externship

Semester course; 1-6 credits. May be repeated for 6 credits. Prerequisite: Permission of division head. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies in health and movement sciences. Directed by university faculty in cooperation with clinical on-site supervisors.

HEMS 797 Directed Research Study

Semester course; 1-3 credits. May be repeated for a maximum of 6 credits. A research study of a topic or problem approved by the student's adviser and completed in accordance with division policy regarding the directed research study.

HEMS 798 Thesis

Semester course; 1-6 credits. May be repeated for a maximum of 6 credits. A research study of a topic or problem approved by the student's supervisory committee and completed in accordance with acceptable standards for thesis writing.

Health, Physical Education and Exercise Science(HPEX)

HPEX 107 Badminton

1 credit.

HPEX 121 Self Defense: Karate or Judo

1 credit.

HPEX 200 Strength, Endurance and Flexibility Training

Semester course; 3 lecture hours. 3 credits. Presents the knowledge-base and pedagogical principles of strength, flexibility, aerobic and anaerobic training programs; enables students to develop and apply conditioning programs or modify existing programs to accommodate specific individual needs; emphasizes the acquisition of training and conditioning principles and assists students in developing independent problem-solving and decision-making skills. Includes practical application of theory.

HPEX 201 Individual Sports and Lifelong Leisure Activities

Semester course; 3 lecture/laboratory hours. 3 credits. Health, physical education and exercise science majors only. Prepares students to develop educational skills and methodology for instruction of individual sports in the classroom, gymnasium and outdoor field settings; students acquire skills needed to teach individual sports in middle and high school environments.

HPEX 202 Team Sports

Semester course; 3 lecture/laboratory hours. 3 credits. Health, physical education and exercise science majors only. Develops educational skills and methodology for instruction of team sports in the classroom, gymnasium and outdoor field settings; students acquire skills needed to teach team sports in middle and high school environments.

HPEX 203 Wilderness Education I

Semester course; 1 lecture hour. 1 credit. Designed to examine the principal philosophical foundations of adventure theory and wilderness leadership. Concepts of judgment, decision making, leadership and environmentally correct practices are introduced.

HPEX 211 Tumbling and Elementary Rhythmics

Semester course; 2 laboratory hours. 1 credit. Prepares students to work with elementary children 4 to 12 years of age in rhythmic activities; includes elementary tumbling, activities and games designed to help a child's rhythmic ability.

HPEX 216 Lifeguard Training

1-2 credits.

HPEX 217 Water Safety Instruction

1-2 credits.

HPEX 218 Scuba

1 credit.

HPEX 220 Introduction to Athletic Training

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 205 and BIOZ 205L. Corequisite: HPEZ 220L. An introduction to the field of athletic training. Includes the prevention and basic care of athletic injuries in the physically active.

HPEX 230 History and Philosophy of Health and Physical Education

Semester course; 3 lecture hours. 3 credits. An overview of the professional aspects of health and physical education. Historical and philosophical concepts, evaluation and research methods, current issues and trends, and career opportunities are discussed. Field experiences allow exposure to various professionals and facilities related to the health and physical education domains.

HPEX 231 Principles of Accident Prevention

Semester course; 3 lecture hours. 3 credits. This course is designed to provide information on the magnitude of the accident problem in the nation. Special attention is given to concepts and theories of accident prevention, particularly as they relate to use of highways.

HPEX 232 Introduction to Driver Education

Semester course; 3 lecture hours. 3 credits. A current automobile operator's permit is required. An introduction to the vehicle operator's task within the highway transportation system: driver task analysis.

HPEX 240 Introduction to Health Professions

Semester course; 3 lecture hours. 3 credits. Provides an overview of the state of kinesiotherapy and health promotion in the United States; explores historic and current roles of kinesiotherapists and other allied health professionals; career choices within health care presented through guest lectures and structured visits to clinical sites.

HPEX 250 Medical Terminology

Semester course; 1 lecture hour. 1 credit. Self-directed learning experience for students entering a medical or allied health profession. Presents medical terms by their root word, suffix and prefix. Develops skills to build and decode medical terms by their word parts. Develops ability to recognize and use common medical abbreviations.

HPEX 271 Safety, First Aid and CPR

Semester course; 3 lecture hours. 3 credits. This course includes American Red Cross and/or American Heart Association certification in Multimedia Standard First Aid and Basic Life Support (cardiopulmonary resuscitation). In addition, basic principles of accident causation and prevention are presented.

HPEX 291 Special Topic in Health, Physical Education and Exercise Science

Semester course; 1-3 credits. May be repeated for a maximum of 3 credits. Restricted to health, physical education and exercise science majors only. Offers students the opportunity to participate in an approved professional experience related to the students' knowledge base of general education and professional introduction courses; may include participatory and experimental formats dictated by the faculty supervisor; credits determined by the number of contact hours of the experience.

HPEX 292 Independent Study in Health, Physical Education and Exercise Science

Semester course; 1-3 credits. Health, physical education and exercise science majors only. May be repeated up to a maximum of three credits. Enables a student to create an individualized research project or professional experience based on specific professional needs and goals; must have adviser's approval; experiences based on the student's knowledge base of general education and professional core introduction courses; credits determined by the number of contact hours and extensiveness of the project.

HPEX 293 Field Practicum I

Semester course; variable practicum hours. 3-6 credits. Health, physical education and exercise science majors only. Provides observational and small group experiences for the pre-professional student; includes planned observations, tutorials and small group involvement under the supervision of the faculty and field supervisor; summary papers, observational logs, resumes and updated five-year plans are completed in this writing intensive course; minimum of 50 contact hours per credit hour required; consult with adviser to obtain specific course requirements.

HPEX 294 Field Practicum II

Semester course; variable practicum hours. 3-6 credits. Health, physical education and exercise science majors only. Provides observational and small group experiences for the pre-professional student; includes planned observations, tutorials and small group involvement under the supervision of the faculty and field supervisor; minimum of 50 contact hours per credit hour required; consult with adviser to obtain specific course requirements.

HPEX 295 Clinical Practicum I

Semester course; variable practicum hours. 3-6 credits. Health, physical education and exercise science majors only. Provides observational and small group experiences for the pre-professional student; includes planned observations, tutorials and small group involvement under the supervision of the faculty and clinical supervisor; summary papers, observational logs, resumes and updated five-year plans are completed in this writing intensive course; a minimum of 50 contact hours per credit hour required; consult with adviser to obtain specific course requirements.

HPEX 296 Clinical Practicum II

Semester course; variable practicum hours. 3-6 credits. Health, physical education and exercise science majors only. Provides observational and small group experiences for the pre-professional student; includes planned observations, tutorials and small group involvement under the supervision of the faculty and clinical supervisor; a minimum of 50 contact hours per credit hour required; consult with adviser to obtain specific course requirements.

HPEX 320 Upper Extremity Assessment of Athletic Injuries

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 205, BIOZ 205L, PHIS 206 and PHIZ 206L. Corequisite: HPEZ 320L. Includes the assessment and management of upper extremity athletic injuries in the physically active. Includes the study of head, neck, thoracic, abdominal, shoulder, elbow, forearm, wrist, hand and finger injuries.

HPEX 321 Lower Extremity Assessment of Athletic Injuries

Semester course; 3 lecture hours. 3 credits. Prerequisites: HPEX 320 and HPEZ 320L. Corequisites: HPEZ 321L and HPEX 396. This course is designed to acquaint the student with the proper assessment and treatment procedures for lower extremity athletic injuries in the physically active. The course will include the prevention, care and treatment of lower back, hip, thigh, knee, lower leg, ankle and foot athletic injuries.

HPEX 322 Therapeutic Exercise in Athletic Training

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 205, BIOZ 205L, PHIS 206 and PHIZ 206L. Corequisite: HPEZ 322L. Acquaints the student with the proper use of therapeutic exercise in the treatment and rehabilitation of athletic injuries in the physically active. Includes the use of therapeutic exercise in the treatment of groin, thigh, hip, knee, lower leg, ankle, foot, shoulder, elbow, wrist, hand, finger and back athletic injuries.

HPEX 324 Therapeutic Modalities in Athletic Training

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 205, BIOZ 205L, PHIS 206 and PHIZ 206L. Corequisite: HPEZ 324L. Provides the student with a knowledge of the proper use of therapeutic modalities in the treatment of athletic injuries in the physically active.

HPEX 325 Pathology and Pharmacology in Athletic Training

Semester course; 3 lecture hours. 3 credits. Prerequisites: HPEX 220, HPEZ 220L, PHIS 206 and PHIZ/BIOZ 206L. Acquaints the student with the pathology of athletic injuries and the proper use of pharmacology in the treatment of athletic injuries. Includes the pathomechanics of sports injuries and the use of medication in the treatment of sports injuries.

HPEX 330 Movement Education

Semester course; 3 lecture hours. 3 credits. For teachers of early childhood elementary and physical education. Emphasis is given to the role of movement and theory in the educational program and its implications for curriculum development and learning. Major consideration is given to the development of movement competency and self-awareness through creativity and exploration.

HPEX 331 Methods in Driver Education

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 232. This course is designed to provide driver education instructional principles and methodology.

HPEX 332 Motor Learning and Performance

Semester course; 3 lecture hours. 3 credits. This course is designed to introduce the student to the major concepts of motor control and motor learning and the influencing conditions. It will provide a framework for understanding the structure and function of the nervous system in relation to perception and motor control. Other topics include the general nature of skill acquisition and how learners interact with the environment while performing motor tasks. The theoretical framework underlying learning and memory are related to the acquisition of motor skills.

HPEX 333 Psychosocial Aspects of Sport and Physical Activity

Semester course; 3 lecture hours. 3 credits. The focus of this course is the scientific study of the behavior of individuals and groups within sport and physical activity in terms of the psychological effects and factors of sport participation, and in terms of the social relationships and social settings within which sport participation occurs.

HPEX 334 Measurement and Analysis in Teaching and Exercise Science

Semester course; 3 lecture hours. 3 credits. Topics include selecting, administering, scoring and evaluating tests in the areas of general motor performance, health screening, fitness, sport skills and knowledge. Includes scientific test construction and basic statistical analysis.

HPEX 335 Elementary Physical Education for Physical Education Majors

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Designed to enhance knowledge of elementary physical education through an analysis of the aims, goals, objectives, programs and teaching methods. Construction of year-round curriculum and daily lesson plans. Emphasis also placed upon the acquisition of administrative and organizational knowledge dealing with facilities, equipment, teaching aids, testing, measurement and safety.

HPEX 350 Nutrition

Semester course; 3 lecture hours. 3 credits. Provides learning opportunities that enable the student to acquire a practical and useful knowledge based on the sound principles of applied human nutrition. Emphasis will be on nutritional needs through the cycles of life providing information that will enhance the student's own lifestyle and provide experience in interpreting nutritional information for the public.

HPEX 351 Issues in Sexuality

Semester course; 3 lecture hours. 3 credits. An overview of content, principles, and strategies relating to issues in human sexuality both in the community and school settings. Basic concepts of human sexuality as they develop in today's world are presented. Issues include sexual maturity, reproductive systems, conception, birth, abortion and varieties of sexual behavior and sexual dysfunctions and disorders.

HPEX 352 Substance Abuse

Semester course; 3 lecture hours. 3 credits. A survey of drugs that are used and abused in contemporary society. Multidisciplinary lectures and discussions include the historical and sociological perspectives of drugs in the school and community; the psychological and physiological effects of drug use; and the role of local and regional resources. Designed for students, teachers, counselors, administrators and other interested persons. Rehabilitation methods and prevention programs also will be discussed.

HPEX 353 Trends in Modern Diseases

Semester course; 3 lecture hours. 3 credits. Communicable disease, nutritional disease, prevention (immunizations), developmental abnormalities, congenital defects, the handicapped child and adolescent medicine are included.

HPEX 354 Coping and Adaptation

Semester course; 3 lecture hours. 3 credits. Focuses on common stress factors in life such as death, personal loss, life changes, divorce and emotional problems, such as anger, loneliness and frustration. Strategies for dealing with such stressors are discussed and applied to both personal and professional settings.

HPEX 355 School and Community Health Resources

Semester course; 3 lecture hours. 3 credits. Acquaints the student with current available school and community resources and educational materials for health information. Available services in a community health program will be surveyed.

HPEX 356 Community Health Education and Promotion: Theory and Practice

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 355. Pre- or corequisites: HPEX 353, HPEX 354. Introduces theories, roles and skills that are the foundation for the professional practice of community health education. Emphasizes the growing significance of health education in preventing and/or treating health problems, health promotion and improving quality of life. Presents the historical evolution and development of the profession and the various settings in which health educators practice. Assists in the preparation of students for certification as health education specialists.

HPEX 357 Personal Health and Behavior Change

Semester course; 3 lecture hours. 3 credits. Designed to provide students with a basic understanding of various contemporary personal and community health issues. Special emphasis placed on increasing awareness of multiple factors that affect individual health-behavior change and, subsequently, influence current and future health status.

HPEX 370 Coaching Seminar

Semester course; 1 lecture hour. 1 credit. A lecture/discussion course that identifies the practical administrative and organizational responsibilities coaches encounter. Realistic problem solving is stressed.

HPEX 371 Psychology of Physical Activity

Semester course; 3 lecture hours. 3 credits. Examines psychological issues related to physical activity, exercise and sport participation. Topics include individual and group motivation theory and techniques, leadership effectiveness, mental health, mental skills training, injury rehabilitation, eating disorders, exercise adherence, addiction, overtraining and use of ergogenic aids. Emphasizes examination of current research and application of psychological principles in a physical activity setting.

HPEX 372 Survey of Kinesiology and Physiology of Exercise

Semester course; 3 lecture hours. 3 credits. Examines the basic concepts of human biomechanics and exercise physiology. Includes basic and applied kinesiology and metabolic, endocrinological, cardiovascular and respiratory responses and adaptations to exercise. Emphasizes the integration of kinesiological and physiological principles.

HPEX 373 Structural Kinesiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 205. Presents the anatomical aspects of human motion with particular attention given to application of anatomical structure and terminology in analysis of physical activities; emphasizes structure and function of the human musculoskeletal system and qualitative analysis of motor skills.

HPEX 374 Biomechanics

Semester course; 3 lecture hours. 3 credits. Develops an understanding of the mechanical principles applied to the analysis of a wide variety of motor skills; topics include kinematics, kinetics and biomechanics instrumentation in the context of teaching, coaching and rehabilitation.

HPEX 375 Physiology of Exercise

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL/PHIS 206. Corequisite: HPEZ 375L. Physiological changes in the human organism resulting from exercise, investigation of recent research in diet, drugs, fatigue, cardiovascular/respiratory fitness, conditioning programs for various age groups and the effects of exercise upon various components of physical fitness and health. Application of specific problems to physical education programs. Laboratory experience in the use of research instruments.

HPEX 390 Physical Education for the Elementary Teacher

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Methods and curriculum planning in physical education for the elementary school teacher and physical education specialist. Emphasis is placed on using activities and games to foster the growth and development of the child with a focus on the psychomotor and affective domains.

HPEX 391 Special Topic in Health, Physical Education and Exercise Science

Semester course; 1-3 credits. Health, physical education and exercise science majors only. May be repeated up to a maximum of three credits. Offers students the opportunity to participate in an approved professional experience related to the students' knowledge base of general education, professional introduction and some core professional courses; may include participatory experiences in which the student plays an active role in the experience; credits determined by the number of contact hours of the experience.

HPEX 392 Independent Study in Health, Physical Education and Exercise Science

Semester course; 1-3 credits. Health, physical education and exercise science majors only. May be repeated up to a maximum of three credits. Enables a student to create an individualized research project or professional experience based on specific professional needs and goals; must have adviser's approval; experiences based on the student's knowledge base of general education and professional introduction and some professional core courses; credits determined by the number of contact hours and extensiveness of the project.

HPEX 393 Field Experience I

Semester course; variable hours. 3-6 credits. Health, physical education and exercise science majors only. Precedes the in-depth student teaching experience or the in-depth exercise science field experience; includes planned observations, tutorials, small group involvement under the supervision of the faculty and field supervisor; practices routine, basic and advanced procedures; minimum of 50 contact hours per credit hour required; consult with adviser to obtain specific course requirements.

HPEX 394 Field Experience II

Semester course; variable hours. 3-6 credits. Health, physical education and exercise science majors only. Designed to provide supervised practical experience in the teaching process or delivery of health education/health promotion programs; opportunities to further abilities in physical education and exercise science through practical application of skills in school or agency settings; a minimum of 50 contact hours per credit hour required; consult with adviser to obtain specific course requirements.

HPEX 395 Clinical Experience I

Semester course; variable clinical hours. 3-6 credits. Health, physical education and exercise science majors only. Addresses required competencies in the athletic training, kinesiotherapy or community wellness education programs; provides experiences in an approved affiliate site under the supervision of faculty and approved clinical instructors; gains practical experience in routine, basic and advanced procedures associated with athletic training, kinesiotherapy or community wellness; a minimum of 50 contact hours per credit hour required; consult with adviser to obtain specific course requirements and clinical competencies addressed.

HPEX 396 Clinical Experience II

Semester course; variable clinical hours. 3-6 credits. Health, physical education and exercise science majors only. Addresses required competencies in the athletic training, kinesiotherapy or community wellness education programs; provides experiences in an approved affiliate site under the supervision of faculty and approved clinical instructors; gains practical experience in routine, basic and advanced procedures associated with athletic training, kinesiotherapy or community wellness; a minimum of 50 contact hours per credit hour required; consult with adviser to obtain specific course requirements and clinical competencies addressed.

HPEX 420 Athletic Training Administration

Semester course; 3 lecture hours. 3 credits. Prerequisites: HPEX 395 and HPEX 396. Acquaints the student with the proper organization and management techniques used in health care administration of athletic training programs. Includes organization, management and administration of health care of the physically active in the athletic setting.

HPEX 430 The Organization, Administration and Supervision of the Intramural Sports Program

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Experiences in the organization and administration of an intramural sports program. Lecture will be devoted to the theory, philosophy, history and plans for the conduct of an intramural sports program. Laboratory experience will be obtained by working in intramural programs.

HPEX 431 Adapted Physical Activity

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 205, BIOZ 205L, PHIS/BIOL 206, PHIZ/BIOZ 206L. Prepares future teachers and professionals to meet the needs of persons with disabilities in organized health, physical education and rehabilitation programs in the school, community or hospital setting. Provides an overview of those disabilities found most frequently in public school and rehabilitation settings. Service Learning course.

HPEX 432 Methods and Curriculum in Physical Education

Semester course; 3 lecture hours. 3 credits. Prepares students to become independent problem solvers and decision makers by applying previously acquired knowledge to curriculum design and instruction in multiple settings; students acquire pedagogical skills and gain insight into the development of a physical education curriculum for elementary, middle and high school levels.

HPEX 433 Methods and Curriculum in Health Education

Semester course; 3 lecture hours. 3 credits. Prepares students to become independent problem solvers and decision makers by applying previously acquired knowledge to curriculum design and instruction in a classroom setting; students acquire pedagogical skills and gain insight into the development of a health education curriculum for elementary, middle and high school levels.

HPEX 440 Chronic Disease and Exercise Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 375 and HPEZ 375L. Presents in-depth information of various concepts specifically related to exercise management of persons with chronic disease and/or disability. Provides scientific knowledge of various chronic diseases and disabilities that are commonplace and can be managed with physical activity. General topics include cardiovascular and pulmonary diseases, metabolic diseases, immunological and hematological diseases, orthopaedic diseases and disabilities, neuromuscular disorders, and cognitive, emotional, and sensory disorders. Focuses on the understanding of specific physical and physiological characteristics associated with the various diseases and disabilities.

HPEX 441 Assessment and Exercise Intervention in Health and Disease

Semester course; 2 lecture and 1 laboratory hours. 3 credits. Prerequisite: HPEX 440. Provides in-depth information of various concepts specifically related to exercise assessment and prescription for healthy persons and those with chronic disease and/or disability. Examines the various concepts specifically related to measurement of cardiorespiratory fitness, pulmonary function, body composition, flexibility and muscular strength and endurance. Focuses on the development of exercise and physical activity prescriptions for healthy and diseased populations.

HPEX 445 Organization and Administration for Health Professions

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 240 or permission of instructor. Reviews the management of both human and nonhuman resources in allied health professions. Emphasis placed on planning, organizing, staffing, directing and controlling health care options; addresses fiscal management issues, human relations and resource management, and standards of ethical practice.

HPEX 450 Program Planning and Evaluation

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 356. Pre- or corequisites: SOCY 445, PSYC 412. Presents the foundations of planning, implementation and evaluation of community health education programs. Exposes students to programming and evaluation in a variety of community health settings, including schools, work sites, hospitals, state and local health departments and nonprofit agencies.

HPEX 470 Exercise Programming and Leadership

Semester course; 3 lecture hours. 3 credits. Prerequisites: HPEX 200, HPEX 375 and HPEZ 375L. Provides knowledge and skills necessary for assessing, interpreting, and designing health and activity programs for apparently healthy populations. Develops leadership skills through presentation of ACSM exercise testing procedures and implementation of exercise prescriptions.

HPEX 491 Special Topic in Health, Physical Education and Exercise Science

Semester course; 1-3 credits. Health, physical education and exercise science majors only. May be repeated up to a maximum of three credits. Offers students the opportunity to participate in an approved professiona experience related to the students' knowledge base of general education, professional introduction and extensive core professional courses; may include research based projects or more academically rigorous experiences; credits determined by the number of contact hours of the experience.

HPEX 492 Independent Study in Health, Physical Education and Exercise Science

Semester course; 1-3 credits. Health, physical education and exercise science majors only. May be repeated up to a maximum of three credits. Enables a student to create an individualized research project or professional experience based on specific professional needs and goals; must have adviser's approval; experiences based on the student's knowledge base of general education, professional introduction and extensive core courses; credits determined by the number of contact hours and extensiveness of the project.

HPEX 493 Field Experience III

Semester course; variable hours. 3-12 credits. Health, physical education and exercise science majors only. An in-depth field experience in a public school, health education/health promotion agency or other approved setting; designed to provide the pre-professional student with greater practical application of skills culminating in full responsibility for planning, implementing and evaluating the classroom, agency or facility activities; a minimum of 50 contact hours per credit hour required; consult with adviser to obtain a course syllabus regarding prerequisites and specific course requirements.

HPEX 494 Field Experience IV

Semester course; variable hours. 3-6 credits. Health, physical education and exercise science majors only. An in-depth field experience in a public school, health education/health promotion agency or other approved setting; designed to provide the pre-professional student with greater practical application of skills culminating in full responsibility for planning, implementing and evaluating the classroom, agency or facility activities; a minimum of 50 contact hours per credit hour required; consult with adviser to obtain a course syllabus regarding prerequisites and specific course requirements.

HPEX 495 Clinical Experiences III

Semester course; variable clinical hours. 3-6 credits. Health, physical education and exercise science majors only. Addresses required competencies in the athletic training, kinesiotherapy or community wellness education programs; provides experiences in an approved site under the supervision of faculty and approved clinical instructors; practices routine, basic and advanced procedures associated with athletic training, kinesiotherapy or community wellness; a minimum of 50 contact hours per credit hour required; consult with adviser to obtain a course syllabus regarding prerequisites, specific course requirements and clinical competencies addressed.

HPEX 496 Clinical Experience IV

Semester course; variable clinical hours. 3-6 credits. Health, physical education and exercise science majors only. Addresses required competencies in the athletic training, kinesiotherapy or community wellness education programs; provides hands-on experiences in an approved site under the supervision of faculty and approved clinical instructors; practices routine, basic and advanced procedures associated with athletic training, kinesiotherapy or community wellness; consult with adviser to obtain course syllabus regarding prerequisites, specific course requirements and clinical competencies addressed.

Health, Physical Education and Exercise Science Lab(HPEZ)

HPEZ 220L Introduction to Athletic Training Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: HPEX 220. Laboratory fee required. A laboratory to introduce the basic skills used by an athletic trainer in the prevention and care of athletic injuries in the physically active.

HPEZ 320L Upper Extremity Assessment of Athletic Injuries Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: HPEX 320. Laboratory fee required. This laboratory course includes practice in the skills of assessment and management of upper extremity athletic injuries in the physically active. Includes head, neck, thoracic, abdominal, shoulder, elbow, forearm, wrist, hand and finger injuries.

HPEZ 321L Lower Extremity Assessment of Athletic Injuries Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: HPEX 321. Laboratory fee required. This laboratory course is designed to acquaint the student with the proper assessment and treatment procedures for lower extremity athletic injuries in the physically active. The lab will include prevention, care and treatment of lower back, hip, thigh, knee, lower leg, ankle and foot athletic injuries.

HPEZ 322L Therapeutic Exercise in Athletic Training Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: HPEX 322. This laboratory course is designed to acquaint the student with the proper use of therapeutic exercise in the treatment and rehabilitation of athletic injuries in the physically active. The lab course will include the skills of the therapeutic exercise used in the treatment of groin, thigh, hip, knee, lower leg, ankle, foot, shoulder, elbow, wrist, hand, finger and back athletic injuries.

HPEZ 324L Therapeutic Modalities in Athletic Training Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: HPEX 324. Laboratory fee required. This laboratory course will allow the student to develop the practical skills required to properly apply therapeutic modalities used to treat athletic injuries in the physically active.

HPEZ 334L Measurement and Analysis in Teaching and Exercise Science Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: HPEX 334. Laboratory experience applying knowledge and skills presented in HPEX 334.

HPEZ 373L Structural Kinesiology Laboratory

Semester course; 2 laboratory hours. 1 credit. Prerequisite: BIOL 205. Corequisite: HPEX 373. Laboratory experience applying knowledge and theory from HPEX 373.

HPEZ 375L Physiology of Exercise Laboratory

Semester course; 2 laboratory hours. 1 credit. Prerequisite: BIOL/PHIS 206. Pre- or corequisite: HPEX 375. Provides practical application of the physiological principles presented in HPEX 375; assists students in the development of practical application competencies associated with assessment of acute and chronic effects of exercise on the human body.

Interdisciplinary Developmental Disability Studies(IDDS)

IDDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities

Semester course; 3 lecture hours. 3 credits. Provides information and activities on models of teamwork, group decision making, team process, leadership and communication and how they influence services for persons with disabilities and their families; content/discussion focuses on the roles and functions of individuals from various disciplines (including parents) as team members; includes case studies and simulations of interdisciplinary teamwork in action.

IDDS 601 Resilience: Models, Research and Applications

Semester course; 3 lecture hours. 3 credits. Overview of resilience models and research across the life span in diverse populations. Interdisciplinary emphasis on applying this overview to prevention and intervention programs at individual, family, school, community and societal levels.

IDDS 691 Special Topics in Developmental Disabilities

Semester course; 1-3 lecture hours. 1-3 credits. Prerequisite: Permission of graduate faculty adviser, course faculty coordinator, and director of preservice training at the Virginia Institute for Developmental Disabilities. Explores specific interdisciplinary content and issues in the field of developmental disabilities and examines the practice approaches of multiple disciplines.

IDDS 692 Directed Study in Developmental Disabilities

Variable hours. 1-4 credits. Prerequisite: Permission of graduate faculty adviser and director of preservice training at the Virginia Institute for Developmental Disabilities. Provides an independent study in a specific area of interdisciplinary practice in developmental disabilities developed under the supervision of a member of the graduate faculty.

Mental Retardation(MNRT)

MNRT 400 Characteristics of Children and Youth with Mental Retardation

Semester course; 3 lecture hours. 3 credits. A study of the nature and needs of children and youth with mental retardation. Explores medical, biological and physical aspects of mental retardation, cause of retardation and introductory assessment and instructional techniques.

MNRT 500 Language/Communication Intervention for Young Children and Individuals with Severe Disabilities

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of the instructor. An intensive study of the developmental sequence of language/communication acquisition and intervention strategies for infants; preschoolers and individuals with severe language delays or deficits, severe mental retardation, and/or other severe disabilities.

MNRT 556 Introduction to Mental Retardation

Semester course; 3 lecture hours. 3 credits. Initial graduate offering for special education majors concentrating in mental retardation. Includes review and discussion of all ages and levels of individuals with mental retardation. Analysis of major issues in mental retardation such as deinstitutionalization, inclusion in school and community services, client advocacy, family involvement and new techniques in intervention and prevention.

MNRT 560 Curriculum Design for Students with Mental Retardation

Semester course; 3 lecture hours. 3 credits. Prerequisites: TEDU 330 or equivalent, and MNRT 556. Examines issues and strategies required in selecting and developing curriculum for students with mental retardation. Emphasizes three components: the content and skills from resources used in teaching particular topics, instructional design procedures and ways of coordinating and delivering instruction to students with mental retardation.

MNRT 602 Assessment and Curriculum Development for Students with Severe Disabilities

Semester course; 3 lecture hours. 3 credits. Addresses functional assessment strategies, IEP development, and curriculum organization and implementation for students with severe disabilities. Emphasizes educating learners in the least restrictive environment using a transdisciplinary team approach.

MNRT 610 Teaching Strategies for Students with Severe Disabilities

Semester course; 3 lecture hours. 3 credits. This course is designed to provide instruction in teaching methods for individuals with severe behavior, learning or emotional disabilities. Emphasis will be placed on instructional program development, task analysis and methods of precision teaching.

MNRT 700 Externship

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

Reading and Study Skills(RDSS)

RDSS 100 Reading and College Study Skills

Semester course; 3 lecture hours. 3 credits. A study of effective reading and study skills at the college-level. Emphasis is placed on vocabulary development as well as reading and study strategies.

RDSS 101 Advanced Reading, Study and Communication Skills

Semester course; 3 lecture and laboratory hours. 3 credits. Prerequisite: RDSS 100, adviser's recommendation, or instructor's permission. A study of advanced reading and study skills at the college-level. Students develop and apply critical reading-thinking skills, library research skills and advanced vocabulary.

Reading(READ)

READ 600 Analysis and Correction of Reading Problems

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 561 or 549. An analysis of factors relating to reading difficulty. Diagnostic testing procedures and instructional strategies appropriate for the reading specialist in clinical and classroom settings will be emphasized.

READ 601 Psycholinguistics and Language Arts Curriculum

Semester course; 3 lecture hours. 3 credits. An investigation of the psychological processes involved in language behavior and the relationship of these processes to the teaching of the basic communication skills.

READ 602 Teaching Reading to Adults

Semester course; 3 lecture hours. 3 credits. Examines strategies appropriate for teaching adult readers functioning at levels ranging from beginning to college level. Analyzes basic reading concepts, skills, strategies and adult reading methods and materials. Focuses on adapting teaching techniques for use with adults in various organizational patterns.
Effective Fall 2006 < p > < b > READ 602 Literacy for Adults < /b > < /br >
Semester course; 3 lecture hours. 3 credits. An examination of methods, strategies and techniques appropriate for teaching adult readers functioning at levels ranging from beginning to college level. Assessment issues, basic reading concepts, skills, and adult reading methods and materials are analyzed. Focus is on adapting teaching techniques for use with adults in various academic and life settings. < /p >

READ 605 Organizing and Implementing Reading Programs

3 lecture hours. 3 credits. Prerequisites: TEDU 561, READ 600 and TEDU 672, or permission of instructor. Integrates reading theory with program implementation. Analyzes the role of reading specialist as related to program design, assessment, supervision, instruction, and resource responsibilities. Includes specific field-based requirements.

READ 672 Internship

Semester course; 1-6 credits. May be repeated for a maximum of 12 credits. Prerequisite: Permission of adviser. Study and integration of theory with practice in clinical or off-campus settings supervised by an approved professional and university faculty. May include seminars, selected readings, projects and other activities designed and evaluated by supervising faculty.

READ 691 Topics in Reading

Semester course; 3 lecture hours. 3 credits. Prerequisites determined by topic. Examines recent trends and topics within the field. Includes review of pertinent research, examination of policy issues and investigation of historical movements. Clinical application is included as appropriate.

READ 700 Externship

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

Rehabilitation and Movement Science(REMS)

REMS 540/HEMS 540 Cardiovascular Pathophysiology and Pharmacology

Semester course; 3 lecture hours. 3 credits. Prerequisites: HPEX 375 and HPEX 440 or equivalents. Presents theoretical principles of electrocardiography and the effects of pharmacological intervention in the treatment of cardiovascular disease. Specific emphasis placed on myocardial ischemia, myocardial infarction and their treatment through exercise rehabilitation protocols. The impact of pharmacological agents on the ECG and on exercise are explored.

REMS 608/PHTY 608 Advanced Musculoskeletal Sciences

Semester course; 3 lecture hours. 3 credits. Examines the structure and function of tissues of the musculoskeletal system. Investigates mechanisms of healing of these tissues and explores the affects of various modalities, altered use and disease on the structure and function of musculoskeletal tissues.

REMS 612/PHTY 612 Advanced Biomechanics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: REMS/HEMS 611 or permission of instructor. Designed for students in the interdisciplinary Ph.D. in Rehabilitation and Movement Science. Covers advanced biomechanics techniques for the evaluation and quantification of human performance. Encourages scientific thought with practical applications.

REMS 665 Instrumentation in Motion Analysis

2 lecture and 2 laboratory hours. 3 credits. Designed for students in the interdisciplinary Ph.D. in Rehabilitation and Movement Science Program. Examines theories, principles, and applications of systems used to qualify and characterize movement.

REMS 690 Research Seminar in Rehabilitation and Movement Science

Seminar course; 0.5 credit. Seminar course designed for students in the interdisciplinary Ph.D. in Rehabilitation and Movement Science Program. Presentation and discussion of research reports and topics of interest. Advances skills in critical analysis and discussion leadership. Topics and research presentations vary from semester to semester and are coordinated by the instructor of record. May be repeated. Graded as pass/fail.

REMS 710 Research Techniques in Rehabilitation and Movement Science

50 hours of laboratory times per credit hour. 1-3 credits. Prerequisite: Permission of instructor required. Examines and explores laboratory techniques used in rehabilitation and movement science research. Provides opportunity to begin transitioning clinical problems to research questions. Opportunities in laboratories of the rehabilitation and movement science program or other laboratories approved by the adviser or program directors. Focuses on individual student learning needs. Graded as pass/fail.

REMS 793 Teaching Practicum in Higher Education

50 hours of contact/preparation time for each credit. 1 credit. Practicum designed for students in the interdisciplinary Ph.D. in Rehabilitation and Movement Science degree program. Develops skills necessary for classroom teaching including preparing and presenting selected topic (s), writing test questions, and grading examinations. May be repeated for additional teaching experience. Graded as pass/fail.

REMS 794 Research Presentation Seminar

1 lecture hour. 1 credit. Seminar course designed for students in the interdisciplinary Ph.D. in Rehabilitation and Movement Science Program. Develops presentation skills. Requires preparation and presentation of research at a public research forum scheduled by the instructor of record. Students are expected to submit their research for presentation at a selected regional, national or international conference in a related field. Graded as pass/fail.

REMS 798 Research in Rehabilitation and Movement Science

Semester course; 1-12 credits. Research leading to the Ph.D. degree and elective research projects for students in the Rehabilitation and Movement Science doctoral program. May be repeated. Graded as "S," "U" or "F."

Recreation, Parks and Sport Leadership(RPSL)

RPSL 506 Contemporary Issues in Therapeutic Recreation

Semester course; 3 lecture hours. 3 credits. Prerequisite: RPSM 371, 472 or equivalent. An examination of contemporary issues affecting the delivery of leisure services and programs to disabled persons. Both the scope and nature of leisure opportunities available to disabled individuals are considered.

RPSL 510 Tourism Policy

Semester course; 3 lecture hours. 3 credits. The examination of tourism policy with emphasis upon components involved in the formulation and implementation of public policy. The course will include an analysis of the legislative programs of regional and national tourism organizations.

RPSL 601 Conceptual Foundations of Leisure Services

Semester course; 3 lecture hours. 3 credits. A study of the development of the leisure services and sports movement in the United States. Attention will be given to the historical, philosophical and social bases of leisure services and sports in today's society. Implications for present and future leisure services and sports planning will be emphasized.

RPSL 605 Program Development in Therapeutic Recreation

Semester course; 3 lecture hours. 3 credits. This course will provide students with an opportunity to critically examine contemporary models of leisure service programming for disabled persons. Emphasis will be placed upon observation and analysis of medical-clinical custodial, therapeutic community/milieu and education and training approaches to recreation for persons with disabling conditions.

RPSL 608 Analysis and Planning for Travel and Tourism

Semester course; 3 lecture hours. 3 credits. Analysis and planning of travel and tourism resources in the development of an effective comprehensive tourism services delivery system.

RPSL 610 Organization and Administration of Recreation and Parks Systems

Semester course; 3 lecture hours. 3 credits. An analysis of administrative theories and patterns of management appropriate to the establishment and operation of community leisure service programs. Special emphasis will be given to organizational planning, goal setting, financial support, program evaluation and the role of the administrator in a leisure service setting.

RPSL 690 Seminar

Semester course; 3 lecture hours. 3 credits. Restricted to second-semester graduate students who have completed the research methods course. Individual graduate thesis and research topics will be discussed as will topics of current, specialized interest to the recreation, parks or sport fields.

RPSL 722 Recreation Systems Planning

Semester course; 3 lecture hours. 3 credits. General principles of planning and development of local and regional recreation areas and facilities. Investigation of standards relative to size, location and programs. Review of national and statewide outdoor recreation plans and trends in recreation development. A practical exercise in recreation planning to be completed in the field.

RPSL 798 Thesis

3 credits with 1 credit extension. Prerequisites: RPSL 603 and RPSL 604. The master's thesis involves a carefully planned and executed research study under the supervision of an adviser and thesis committee utilizing the traditional standards for thesis writing.

Recreation, Parks and Sport Management(RPSM)

RPSM 195 Recreation Leadership

Semester course; 3 lecture hours. 3 credits. Course provides a study of the theories of leadership, group dynamics, and human relationships used in recreation delivery systems. Students acquire and demonstrate practical skills in planning, organizing, leading, participating and evaluating a wide variety of recreation activities selected from the basic areas of programming such as social recreation, music, dance, drama, arts and crafts, environmental-outdoor recreation, special events, sports and games, linguistics and hobby clubs.

RPSM 200 Introduction to Outdoor Recreation Activities

Semester course; 3 lecture hours. 3 credits. A basic introduction to the theory and practice of outdoor adventure recreation. Emphasis is given to knowledge and understanding of the theoretical and philosophical foundations of participation in outdoor adventure recreation programs. Students will be exposed to an experiential approach to learning. Through involvement with activities, students will develop skills in planning, administering, and evaluating outdoor adventure recreation programs.

RPSM 261 Recreation, Parks and Sport Management in Modern Society

Semester course; 3 lecture hours. 3 credits. Introduction to the historical and philosophical foundations of leisure and recreation; implications of continued growth of the leisure phenomenon in contemporary society.

RPSM 301 Wilderness Education II

Semester course; 1 lecture hour. 1 credit. Prerequisites: RPSM 300 and RPSZ 300L. Corequisite: RPSZ 301L. Explores the theoretical foundations involved in utilizing the wild outdoors with minimal impact. Principles of wilderness ethics, land stewardship, expedition behavior and technical skills are introduced.

RPSM 303 Leisure Delivery Systems

Semester course; 3 lecture hours. 3 credits. Evaluation of public, private and commercial agencies that provide recreation services. Particular emphasis is given the types of leisure activities offered in relationship to the recreation market.

RPSM 320 Recreation Analysis

Semester course; 3 lecture hours. 3 credits. Examines various approaches to the study of leisure. Assesses the use of free time and the expenditure of time and money to fulfill leisure needs.

RPSM 331 Outdoor Recreation Site Selection, Analysis and Development

Semester course; 3 lecture hours. 3 credits. Principles of site selection and facility development. The site selection and facility development processes will be broken down into individual elements for the purpose of examining each to understand the interrelationships of all elements. Consideration will be given to the social, political, architectural, engineering and legal aspects of site selection and facility development. Emphasis on outside nonsport facilities.

RPSM 332 Sport Facilities Design and Development

Semester course; 3 lecture hours. 3 credits. Principles of planning, design and construction of sports facilities. Consideration will be given specific principles of design relating to both outdoor and indoor sport facilities. The use of standards relative to space requirements, location and programs also will be examined. Emphasis on inside sport facilities and outside sport fields and courts.

RPSM 340 Introduction to Sport Management

Semester course; 3 lecture hours. 3 credits. Acquaints the student with management principles, techniques and functions related to the business fundamentals of sport. Includes communications, personnel, finance, public relations, legal aspects, facilities and program development.

RPSM 341 Introduction to Travel and Tourism

Semester course; 3 lecture hours. 3 credits. Examination of historical perspective, basic policy issues and social and economic impact of the travel and tourism field. Functions, programs and objectives of various types of travel and tourism organizations will be studied.

RPSM 371 Introduction to Therapeutic Recreation

Semester course; 3 lecture hours. 3 credits. An introduction to services for special populations. Examines the various agencies and institutions, which provide such services as well as the professional competency necessary for the delivery of leisure services to the handicapped; the physically, socially and mentally disabled; and the aged. Introduces the student to client assessment and programming.

RPSM 372 Leisure Education

Short course (5 weeks); 1 lecture hour. 1 credit. Pre- or corequisite: RPSM 371. Exposes students to theory and content of leisure education. Student learning will focus on the mastery of theory, mastery of the content and process of leisure education, and skillful application of instructional activity.

RPSM 373 Assessment Techniques in Therapeutic Recreation

Short course (5 weeks); 1 lecture hour. 1 credit. Pre- or corequisite: RPSM 371. Instructs students in techniques and issues in the administration of assessment within therapeutic recreation. Students will develop an understanding of and appreciation for the role of quality assessment in ensuring client outcomes, quality programming and accountability. Students will gain skill in the selection and administration of a variety of assessment tools.

RPSM 374 Activity Development and Analysis

Short course (5 weeks); 1 lecture hour. 1 credit. Pre- or corequisite: RPSM 371. Equips students with knowledge and skills necessary to lead both groups and individuals in a variety of recreation activities across multiple domains. Students will become skilled in the analysis of activities for the purpose of treatment planning and development.

RPSM 395 Recreation Program Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: RPSM 195. Principles of recreation program development; intensive study of the recreation program areas available to participants; analysis of the methods and techniques of program implementation and program evaluation.

RPSM 400 Park Interpretation

Semester course; 3 lecture hours. 3 credits. Equips students with knowledge and skills necessary to understand and explain to others the special characteristics of natural and cultural or sports-related features of parks. Students also will become skilled in planning and delivering park-related interpretive educational programs.

RPSM 403 Management of Recreation, Park and Sport Management Agencies

Semester course; 3 lecture hours. 3 credits. Principles of the administrative process. Deals with basic procedures of recreation administration, with particular emphasis on legal foundations, organizational structure, management theory, personnel practices and policies, legal liability, activity and liability insurance.

RPSM 404 Revenue Sources for Parks and Recreation

Semester course; 3 lecture hours. 3 credits. Examination of the financing, budgeting and marketing techniques used to develop and operate leisure service opportunities.

RPSM 431 Advanced Recreation Facilitation Techniques

Semester course; 3 lecture hours. 3 credits. The course provides a study of advanced leadership, group dynamics and human relationships used in leisure delivery systems. Students acquire skills in facilitation techniques including decision making, problem solving, conflict management and evaluation strategies.

RPSM 441 Law and Sport

Semester course; 3 lecture hours. 3 credits. Prerequisite: RPSM 340. Presents the legal aspects of sport/activity service systems. Emphasizes regulations in amateur athletics, liability for injury in sport activities, antitrust laws, facility accommodation for persons with special needs and strategies to prevent legal action.

RPSM 442 Group Travel Management

Semester course; 3 lecture hours. 3 credits. A study of the processes and procedures involved in the planning and organization of group travel. Emphasis will be given to the economic and political dimensions of travel, deregulation, how travel agencies function, professional liability and future trends in the field.

RPSM 445 Conference and Convention Planning

Semester course; 3 lecture hours. 3 credits. The planning, organizing, promoting and implementing of conferences and conventions. Included will be the development of conference programming, financing and public relations as well as negotiations with meeting facilities, hotels and food services agencies.

RPSM 461 Recreation Resource Management

Semester course; 3 lecture hours. 3 credits. A comprehensive overview of recreation resource management institutions, both public and private. Emphasis is given to the public sector at the federal, state and local levels. Professional, service and educational organizations contributing to outdoor recreation are examined. The legal framework operating within recreation resource management also is covered.

RPSM 465 Park Operations and Maintenance

Semester course; 3 lecture hours. 3 credits. The purpose of this course is to gain an understanding of the concepts, principles and practices of park operations and maintenance. Quantitative and qualitative resource evaluation will be emphasized. Special consideration is given to methods and techniques for determining management and operations policies.

RPSM 471 Clinical Practice and Procedures in Therapeutic Recreation

Semester course; 3 lecture hours. 3 credits. Designed to equip students with the knowledge and skills required of therapeutic recreation specialists in clinical practice. Exposure to standards of practice, activity analysis, documentation and holistic approaches to delivering services will be included.

RPSM 472 Therapeutic Recreation Program Design

Semester course; 3 lecture hours. 3 credits. Prerequisite: RPSM 371. Open to therapeutic recreation option majors only. Instructs students in the techniques of assessment, planning, implementation and evaluation of therapeutic recreation programs for a variety of clients with special needs.

RPSM 473 Leisure and the Aged

Semester course; 3 lecture hours. 3 credits. An analysis of the leisure needs of the aged. The need for specialized leisure programs for the aged in a variety of community and institutional settings will be explored. Preretirement counseling will be emphasized.

RPSM 475 Recreation in Correctional Settings

Semester course; 3 lecture hours. 3 credits. A survey of recreational needs of inmates in adult and juvenile correctional institutions, short-term institutions and community-based correctional institutions. The development of specialized programming and the role of recreation in the rehabilitative process will be examined.

RPSM 476 Leisure Counseling

Semester course; 3 lecture hours. 3 credits. An introduction to the theory and application of leisure counseling for the general public and those with special needs. The use of leisure counseling as a means of client evaluation and assessment also will be examined.

RPSM 480 Specialized Recreation Programs for Handicapped Children

Semester course; 3 lecture hours. 3 credits. Development of recreation programs for handicapped children in schools, other institutions and community settings. Consideration will be given to the development of leisure skills and goal accomplishments.

RPSM 490 Seminar

Semester course; 3 seminar hours. 3 credits. Advanced seminar in recreation, parks and tourism that analyzes in-depth special problem areas and current issues. Independent research on special projects.

RPSM 491 Topics in Recreation

Semester course; 3 lecture hours. 3 credits. Maximum 6 credits per semester; maximum total of 9 credits in all departmental topics courses that may be applied to the major. An in-depth study of specific content areas in recreation, park and tourism operations. See the Schedule of Classes for specific topics to be offered each semester.

RPSM 492 Independent Study in Recreation

Semester course; 16 credits. Prerequisite: Permission of departmental chair. Under the supervision of a faculty member, the student selects a topic of concern to investigate. Each student must present his or her findings in writing and pass an oral examination before a faculty committee.

RPSM 493 Internship

Semester course; variable hours. 8-12 credits. Prerequisites: senior standing and a minimum of 21 credits in major. Opportunities are offered for the student to gain practical experience in a variety of public, private and commercial agencies. The student will complete a comprehensive field placement in an approved setting that will consist of 40 hours per week for 10 to 16 weeks. Each 50 hours of supervised experience equals one credit hour.

Recreation, Parks and Sport Management Lab(RPSZ)

RPSZ 201L Backpacking

Semester course; 2 laboratory hours. 1 credit. Prerequisite: RECR 200 or permission of instructor. An introduction to backpacking. Utilizing lectures, readings and hands-on-experience, emphasis will be given to the skills and knowledge necessary for safe, low-impact, short-to-moderate-duration travel through back country areas.

RPSZ 202L Flatwater Canoeing

Semester course; 28 laboratory hours. 1 credit. Prerequisites: RPSM 200 and ability to swim, or permission of instructor. Introduction to flatwater canoeing. Utilizing lectures, readings and on-the-water experience, emphasis will be given to the skills and knowledge necessary for planning and implementing flatwater canoe trips. Topics include safety, locations for trips, equipment and portaging, as well as the issues of conservation and impact.

RPSZ 203L Whitewater Canoeing

Semester course; 2 laboratory hours. 1 credit. Prerequisites: RPSZ 202L and ability to swim or permission of instructor. A basic introduction to whitewater paddling, utilizing lectures, readings and on-the-water experience. Emphasis will be given to the skills and knowledge necessary for planning and implementing whitewater canoe trips, including communication and the structure for leading group trips. Course is taught evenings and weekends as found in the Schedule of Classes.

RPSZ 204L Rock Climbing

Semester course; 2 laboratory hours. 1 credit. A basic introduction to rock climbing, utilizing lectures, readings and rock climbing experiences. Emphasis will be placed on safety, equipment and conservation, as well as techniques of belaying, climbing and rappelling. Attention is given to the importance of communication and personal feelings of mastery and success in outdoor adventure recreation. Course is taught evenings and weekends as found in the Schedule of Classes.

RPSZ 300L Wilderness Education I Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: RECR 300. Designed to practice the principal philosophical foundations of adventure theory and wilderness leadership through field experiences.

RPSZ 301L Wilderness Education II Laboratory

Semester course; 2 laboratory hours. 1 credit. Prerequisites: RPSM 300 and RPSZ 300L. Corequisite: RPSM 301. Designed to practice the principles and techniques of wilderness ethics, land stewardship, expedition behavior and back country travel.

RPSZ 371L Introduction to Therapeutic Recreation Laboratory

2 laboratory hours. 1 credit. Corequisite: RECR 371. This laboratory requires a minimum of 36 contact hours in three specified settings under supervision of certified therapeutic recreation specialists. An introduction to field experience in therapeutic recreation settings. The acquisition of field experience concurrent with classroom introductory material regarding leisure services for populations with physical, mental, emotional or social limitations, offers professional practice, individualized feedback and a holistic view of therapeutic recreation service for students.

Special Education and Disability Policy(SEDP)

SEDP 616 Introduction to Disability Studies, Community Services and Business Networks

Semester course; 3 lecture hours. 3 credits. Examines disability history, theory and current thinking in the field of disability studies. Changes in philosophy, legislation and policy over the past four decades will be examined to trace the paradigm shift that led to our current conceptualization of disability. Students will investigate the community services and resources available to support adults with disabilities, as well as new trends in business partnerships and employment service models that promote the economic self-sufficiency of adults with disabilities.

SEDP 618 Strategies for Managing Disabilities in the Workplace

Semester course; 3 lecture hours. 3 credits. Prerequsite: SEDP 616 or permission of instructor. People with disabilities are a largely untapped employment resource when compared to their non-disabled peers. This course examines employer perceptions of the obstacles to hiring and retaining workers with disabilities and the key compnenets of accommodating adults with disabilities in the workplace. Students will gain a basic understanding of the principles and practices of disability management, as well as strategies including technological advances that can be used to train adults with disabilities in the workplace.

Special Education – Learning Disabilities(SELD)

SELD 501 Methods of Clinical Teaching

Semester course; 3 lecture hours. 3 credits. Prerequisites: TEDU 533 and SELD 444, or SELD 600. Specific methodologies for teaching individuals with identified precognitive and cognitive learning disabilities. Includes the use of developmental, remedial and compensatory approaches for instruction in basic skills and accommodation to individual learning styles.

SELD 530 Language Disabilities: Assessment and Teaching

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor or equivalent. Studies normal oral language development as a basis for understanding students who experience specific or generalized difficulties in learning a first language. Includes diagnostic and instruction strategies with an emphasis on the interrelationships of language content and use.

SELD 531 Collaborative/Consultation Skills for Working with Families and Professionals

Semester course; 3 lecture hours. 3 credits. Focuses on the context, processes and content for collaboration and consultation. Students will learn how to be an effective collaborator/special educator working with other professionals and parents.

SELD 600 Characteristics of Persons with Learning Disabilities

Semester course; 3 lecture hours. 3 credits. The nature and needs of individuals with learning disabilities, with emphasis upon psychological and behavioral characteristics as related to educational needs.

SELD 611 Teaching the Adolescent with Learning Disabilities

Semester course; 3 lecture hours. 3 credits. An advanced course in identifying, diagnosing, and remediating academic learning problems in the adolescent. Explores the organization, selection and implementation of compensatory programs and methods under the impact of cognitive, motivational, curricular, social and vocational factors.

SELD 620 Advanced Educational Diagnosis of Developmental Processes

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 633 or permission of instructor. Must be taken concurrently with Clinical Experience. An advanced course in the assessment and diagnosis of educationally relevant developmental processes in students with exceptionalities, including perception, cognition, language and socialization. Develops skill in utilization and interpretation for educational purposes.

SELD 631 Aural Rehabilitation

Semester course; 3 lecture hours. 3 credits. A detailed review in techniques for teaching lip reading and auditory training for the hearing-impaired child.

SELD 677 Transition and Life Span Issues for Individuals with Learning Disabilities

Semester course; 3 lecture hours. 3 credits. Explores the literature and research, issues and trends that are relevant to school-age learning disabled population in transition, as well as the life span issues found beyond transition and throughout adulthood. The full range of functioning is addressed in the areas of education, employment, social/emotional functioning and personal and daily living issues.

SELD 688 Lifespan Issues for Adults with Learning and Behavioral Disabilities

Semester course; 3 lecture hours. 3 credits. Explores the literature, research, issues and best practices for the population of individuals with learning disabilities and behavior disorders (including ADHD) beyond the school-age years. Focus on disabilities as they are manifested in a variety of settings and contexts in which adults with learning and behavior disorders function. These include areas such as employment, post-secondary education, community, family and leisure. In addition, social-emotional functioning and daily living challenges will be interspersed in the course material. Course goal is to develop understanding and the skill of critical reflection about persons with learning disabilities and behavior disorders in their adult years.

SELD 700 Externship

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

Sport Leadership(SPTL)

SPTL 591/HEMS 591 Topical Seminar

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. A seminar intended for group study by students interested in examining topics, issues or problems related to health, physical education, exercise science, recreation and sport. Formerly RPSL 591.

SPTL 603 Research and Evaluation Processes in Recreation, Parks and Sport Systems

Semester course; 3 lecture hours. 3 credits. Familiarizes student with the scientific approach to inquiry as applied to the study of the phenomenon of leisure, recreation and sport. Explores basic research terminology, methodology, procedures and concepts with particular reference to the application of empirical investigation to topics of interest to professionals in the field of recreation, parks and sport. Formerly RPSL 603.

SPTL 604 Research Practicum

Semester course; 3 lecture hours. 3 credits. Prerequisite: SPTL 603. Focuses on conceptualizing and writing a professional paper or the first part of a research study (either RPSL 797 Research Project or RPSL 798 Thesis) on a topic in recreation, parks and sport leadership chosen by the student in consultation with the instructor and adviser. Emphasizes problem identification, literature review and research design. Formerly RPSL 604.

SPTL 606 Directed Readings

Semester course; 3 credits. Prerequisite: Permission of instructor. Provides student with the opportunity to pursue an independent research project or extensive literature review under the supervision of an instructor. Independent work by student must be preceded by the instructors review and approval of the proposal. Cannot be used in place of existing courses. Formerly RPSL 606.

SPTL 607 Field Instruction

Semester course; 150-360 clock hours. 3 credits. Enrollment only by permission of adviser. Application of theoretical knowledge as a practicing professional in a recreation, parks or sport agency or enterprise. A faculty member and field supervisor assess basic knowledge, attitudes and skills necessary to function as a provider or manager or leisure services or sports system. Formerly RPSL 607.

SPTL 608 Action Learning Project

Continuous course; 3 lecture hours. 3 credits. Designed to provide students with an integrative learning experience where they are able to gain skills and expand upon knowledge needed within all sectors of the sports business. Facilitates student teams through creating, implementing, executing and evaluating "real-world projects." The projects allow students to function in a team setting, while also learning how to contribute in a cross-functional role as an individual and leader. This course takes place over two semesters (fall and spring only) and must be taken in consecutive semesters. Must be taken for a total of six credits.

SPTL 609 Program Development and Management

Semester course; 3 lecture hours. 3 credits. Analyzes the individual, political and societal determinants of recreation and sport programming. Covers the factors influencing leisure behavior and the role of the program supervisor in recreational and sport settings. Presents the evaluation of recreation and sport programs and the research functions in recreation programming. Formerly RPSL 609.

SPTL 630 Sociology of Sport

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Provides a systematic study of human behavior as it occurs in and is influenced by social groups, institutions, organizations and societies. Provides an understanding of sport as a social phenomenon and examines principles that govern social behavior and sport. Identifies the consequences of various social structures and critically examines these consequences based on the student's own ethical and moral positions. Formerly RPSL 630.

SPTL 631 Contemporary Issues

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Provides the opportunity to investigate contemporary issues in sports today. Issues utilized for discussion include ethics and values in sport, athlete's rights and issues, ownership rights and issues, media in sports and media's impact on sports, sports agents, women in sport business, Title IX and gender equality, and the NCAA. Formerly RPSL 631.

SPTL 632 Sports Business

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Provides an in-depth examination of pertinent aspects of business and law as applied to the sports industry. Topics include contract and tort, risk and reliability, organization structure and management, budget and business plans, and facility management. Provides the basic principles of business and law necessary for successful entry into sports related careers. Formerly RPSL 632.

SPTL 633 Sports Marketing

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Provides a thorough understanding of the practice of contemporary marketing in sports business. Focuses on the concepts and issues of marketing in relation to target markets at all levels of sport enterprise. Presents the marketing mix and its utilization. Formerly RPSL 633.

SPTL 634 Coaching and Administration

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Acquaints the student with principles, techniques and functions related to coaching and administrative fundamentals for any sport. Special emphasis on communication, motivation, organization and team building for success. Provides an understanding and overview of multiple elements that contribute to successful and productive coaching of athletes and managing athletics programs. Formerly RPSL 634.

SPTL 635 Leadership Models in Sports

Semester course; 3 lecture hours. 3 credits. Restricted to sport leadership majors. Acquaints the student with principles, techniques and functions related to management and leadership in all organizations. Focuses on the impact of leadership on organizations and their members. Discusses key ingredients of successful management and visionary leadership. Formerly RPSL 635.

SPTL 641 Sports Psychology

Semester course; 3 lecture hours. 3 credits. An overview of the discipline of sports psychology designed to facilitate an understanding and application of mental skills as well as to provide an understanding of other applied domains, such as life skills within sport psychology. Goal setting, relaxation, imagery, burnout and communication are some of the key issues examined.

SPTL 651 Advanced Coaching Techniques

Semester course; 3 lecture hours. 3 credits. Restricted to students in the coaching track. Designed to provide students who have career aspirations of coaching an in-depth analysis of the profession and its challenges. Students will examine topics including coaching philosophies, networking recruiting, marketing, fundraising, crisis management and other pertinent topics.

SPTL 691 Topics in Sport Leadership

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for 9 credits. Check with department for specific prerequisites. A course for the examination of specialized issues, topics, readings or problems in sport leadership.

SPTL 692 Independent Study

Semester course; 1-3 credits. May be repeated for a maximum of 9 credits. Determination of the amount of credit and permission of the instructor and department chair must be procured prior to registration. Cannot be used in place of existing courses. An individual study of a specialized issue or problem in recreation. Formerly RPSL 692.

SPTL 695 Externship

Semester course; 1-6 credits. May be repeated for a total of 6 credits. Prerequisites: permission of the fieldwork supervisor or executive director, and completion of 24 graduate credits. Restricted to sport leadership majors. Plan of work designed by the extern with prior approval of the offering program. Off-campus planned experiences for advanced graduate students designed to extend professional competencies in recreation, parks and sport leadership. Directed by university faculty in cooperation with placement site directors. Formerly RPSL 695.

SPTL 797 Research Project

3 credits with 1 credit extension. Prerequisites: SPTL 603 and 604. The research project involves a systematically planned and executed scholarly project utilizing an approved methodology for investigating and reporting on a major issue pertinent to the student's interest in the recreation, parks and tourism fields. Formerly RPSL 797.

Teacher Education(TEDU)

TEDU 101 Introduction to Teaching

Semester course; 3 lecture hours. 3 credits. Provides undergraduate students with an introduction to teaching and learning in elementary settings. Students will explore current educational reforms and their influences on elementary schools and students. Service-learning activities will enable students to gain first-hand experiences in urban elementary classrooms.

TEDU 307/ENGL 307 Teaching Writing Skills

Semester course; 3 lecture hours. 3 credits. Studies the theory and methods for teaching writing to students in middle and secondary schools. Teaches strategies for prewriting, composing, peer revision, evaluation and topic construction. Includes extensive journal and essay writing. May not be used to satisfy the literature requirements of the College of Humanities and Sciences.

TEDU 310 Practicum

1-3 credits. May be repeated for a maximum of 6 credits. A field placement that precedes student teaching, the nonschool supervised experience or the internship. Includes planned observations, tutorials and small group involvement.

TEDU 330 Survey of Special Education

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite for all other undergraduate special education courses. For majors and nonmajors. An overview of the field of special education. Includes current trends, legal issues, definitions, etiology, identification, characteristics and appropriate services for children and adults with a range of exceptionalities.

TEDU 351/ENGL 351 Children's Literature I

Semester course; 3 lecture hours. 3 credits. Designed to give students an appreciation of values of children's literature; includes biography, fable, myth, traditional and modern fanciful tales and poetry, as well as a survey of the history of children's literature.

TEDU 400 Independent Study

Semester course; 1-6 hours. 1-6 credits. Opportunities are provided for supervised research and independent study in selected areas. Designed for advanced students. All work offered on an individual basis with the approval of instructor and departmental chair.

TEDU 407 Educational Media: Utilization

Semester course; 3 lecture hours. 3 credits. The study and use of audiovisual equipment and aids, and means for using them for more effective presentations to groups.

TEDU 411 Intergrating the Arts in Curriculum for Young Children

Semester course; 3 lecture hours. 3 credits. Provides pre-service teachers with an understanding of how experiences in visual art, music, drama and movement can be used to support the growth and development of children ages 3 to 8. Students will learn of the importance of all of the arts for children's cognitive, socio-emotional and psychomotor development. Emphasis will be given to integrating developmentally appropriate experiences in the arts into early childhood curriculum.

TEDU 414 Curriculum and Methods for Young Children

Semester course; 4 lecture hours. 4 credits. Prerequisite: Admission to teacher preparation program. Corequisite: TEDU 310. A study of developmentally appropriate curriculum and methods for young children, including diversity, behavior guidance and management, planning, learning environments, curriculum and assessment of the whole child. Includes an overview of the history of early childhood education and issues currently facing the profession.

TEDU 426 Teaching Reading and Other Language Arts

Semester course; 3 lecture hours. 3 credits. Presents teaching strategies and materials in reading and the other language arts based on current theory and research. Emphasizes the interrelatedness of listening, speaking, reading and writing and the importance of naturalistic language experiences.

TEDU 433/ENGL 433 Literature for Adolescents

Semester course; 3 lecture hours. 3 credits. Designed to acquaint the prospective middle and secondary school English teacher with the nature, scope and uses of adolescent literature. The student is acquainted with reading materials for meeting the varied needs and interests of adolescents.

TEDU 444 Introduction to Learning Disabilities

Semester course; 3 lecture hours. 3 credits. Corequisite: TEDU 310. Provides a comprehensive view of the field of learning disabilities with emphasis on the school-age years. Covers basic information pertaining to causes, characteristics, assessment, parent and family factors and laws pertaining to individuals with learning disabilities.

TEDU 461 Teaching Persons with Mental Disabilities

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Taken concurrently with TEDU 310. Curriculum development and organization of activities for the mentally retarded at different maturational levels with specific attention to program content equipment, materials and resources.

TEDU 485 Directed Student Teaching I

6 credits. Prerequisites: Admission to TEDU 310 or equivalent with a grade of "C" or better and recommendation of practicum supervisor. A classroom teaching experience in a public school or other approved setting, which includes opportunities for increasing involvement with children. Culminates in full responsibility for planning, implementing and evaluating classroom activities.

TEDU 486 Directed Student Teaching II

6 credits. Prerequisites: Admission to TEDU 310 or equivalent with a grade of "C" or better and recommendation of practicum supervisor. A classroom teaching experience in a public school or other approved setting, which includes opportunities for increasing involvement with children. Culminates in full responsibility for planning, implementing and evaluating classroom activities.

TEDU 494 Topical Seminar in Education

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. A seminar intended for group study by personnel interested in examining topics, issues or problems related to the teaching, learning and development of students.

TEDU 500 Workshop in Education

Semester course; 1-3 credits. Repeatable to 6 credits. Designed to focus on a single topic within a curriculum area, the workshop offers graduate students exposure to new information strategies and materials in the context of a flexible instructional framework. Activities emphasize a hands-on approach with direct application to the educational setting.

TEDU 501 Supervising Student Teachers

3 credits. Prerequisite: Consent of instructor. Focuses on the role of clinical faculty as site-based supervisors of student teachers. Provides knowledge, skills and training necessary to supervise and evaluate student teachers.

TEDU 503 Guidance for Exceptional Children

Semester course; 3 lecture hours. 3 credits. An introduction to guidance strategies for assisting exceptional children. Special attention is given to the interrelationships of home, school and community resources.

TEDU 504 Film as a Teaching Resource

Semester course; 3 lecture hours. 3 credits. Exploring the film as a teaching resource. The course is designed to familiarize the students with thought provoking films. Over 50 films will be presented. Especially helpful for the English teacher will be the exploration of the relationship between film and fiction. The humanities teacher will find a repertory of films on topics relating to historical and social questions useful.

TEDU 507 Survey of Educational Media

Semester course; 3 lecture hours. 3 credits. Introduces the role of educational media and technology in the instructional process. Emphasizes the systematic design of instruction and the selection, evaluation and utilization of media. Basic production skills and equipment operation are developed within a framework of designing appropriate learning activities.

TEDU 509 TV in the Classroom

Semester course; 3 lecture hours. 3-6 credits. Video taped teaching-learning materials for specified learner outcomes will be designed and produced. Educational broadcasting and the use of commercial broadcast programs will be examined.

TEDU 517 Science Education in the Elementary School

Semester course; 3 lecture hours. 3 credits. A course designed to renew and/or expand teachers' knowledge and skills in the teaching of science in the classroom and the community. New materials and methodologies will be examined in the light of current trends, research findings and professional recommendations.

TEDU 521 Teaching Mathematics for Middle Education

Semester course; 3 lecture hours. 3 credits. Emphasis on current instructional strategies, learning theories and manipulative materials appropriate for teaching mathematics to children. The content focuses on middle grades, but the developmental approach includes some topics from the primary grades.

TEDU 522 Teaching Mathematics for Elementary Education

Semester course; 3 lecture hours. 3 credits. Emphasis on current instructional strategies, learning theories and manipulative materials appropriate for teaching mathematics to children. The content focus is on the primary and elementary grades.

TEDU 523 Implementing and Administering Programs for Young Children

Semester course; 3 lecture hours. 3 credits. Provides the student with fundamental knowledge and skills in the implementation, supervision and administration of educational programs in schools, centers and homes for infants and young children. A problems approach will be utilized with emphasis on creative management and evaluative processes.

TEDU 524 Cross-cultural Perspectives in Child Rearing and Early Education

Semester course; 3 lecture hours. 3 credits. Analysis of the impact of linguistic patterns, child-rearing techniques and socialization processes on the education of young children in various cultural settings.

TEDU 525 Teaching Language Arts

Semester course; 3 lecture hours. 3 credits. Teaching techniques and materials for the developmental teaching of communication skills. Students will explore significant research and current literature related to content, organization and instruction in language arts for the elementary and middle schools.

TEDU 528/ENGL 528 Children's Literature II

Semester course; 3 lecture hours. 3 credits. A study of classic and current children's books from a variety of literary genre. Magazines and media related reference resources and journals are reviewed. The creative use of literature, its sociocultural functions and its contribution to the development of the oral and written expression of children from nursery to grade eight are explored. A focus on children with special problems is included.

TEDU 531 Collaborative/Consultation Skills for Working With Families and Professionals

Semester course; 3 lecture hours. 3 credits. Focuses on the context, processes and content for collaboration and consultation. Students will learn how to be an effective collaborator/special educator working with other professionals and parents.

TEDU 533 Educational Assessment of Individuals with Exceptionalities

Semester course; 3 lecture hours. 3 credits. An examination of standardized tests and informational techniques, and their application in educational settings. Skills needed for administration, interpretation and application of such techniques in the development and understanding of individualized educational programs (IEPs) are developed.

TEDU 534 Photography in Instruction

Semester course; 3 lecture hours. 3 credits. Skills with cameras, films, papers and other photographic equipment and materials. The use of these materials as tools for teaching and the skills for preparation of instructional resources will be discussed and practiced.

TEDU 535 Problems of Social Studies Instruction

Semester course; 3-6 credits. Prerequisite: Permission of instructor and appropriate teaching experience. An in-depth investigation into the nature of and alternatives to problems encountered by students while teaching. Developing and evaluating instructional alternatives will be stressed.

TEDU 537 Secondary School Curriculum

Semester course; 3 lecture hours. 3 credits. Studies the background and objectives of the contemporary secondary school; basic issues, current trends and practices in curriculum construction and instructional planning are examined.

TEDU 538 Orientation to Speech and Language Disorders

Semester course; 3 lecture hours. 3 credits. An introduction to the history, scope and trends in the field of speech pathology to include terminology, systems of classification and concepts of etiology, diagnosis and therapy.

TEDU 540 Teaching Middle and High School Sciences

Semester course; 3 lecture hours. 3 credits. Examines the teaching strategies, materials and objectives of the sciences in middle and high schools. Emphasizes the nature of science in science instruction, teaching of experimental design and translating science education research into teaching practices.

TEDU 541 Infants and Young Children with Special Needs

Semester course; 3 lecture hours. 3 credits. An overview of the characteristics of infants and preschool-aged children at risk for or with disabilities. Examines various disabilities, the rationale for early intervention and available resources.

TEDU 542 Family/Professional Partnerships

Semester course; 2 lecture hours. 2 credits. Theory and practice relevant to working with families of children with disabilities. Family-centered services and cultural sensitivity are emphasized. Provides an overview of family processes and reactions to having a child with a disability, strategies for helping family members support and work with their children, available community resources and legal rights of families and children with disabilities.

TEDU 543 Teaching Foreign Language

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 537. Examines objectives, materials, effective instructional strategies and procedures in the teaching of foreign languages K through 12. Focuses on a thorough understanding of current developments in foreign language pedagogy and their application to teaching and listening, speaking, reading and writing skills. Provides theoretical and practical experiences for planning and implementing effective instruction designed to facilitate student acquisition of communicative proficiencies.

TEDU 544 Introduction to the Middle School

Semester course; 3 lecture hours. 3 credits. An examination of the nature and capabilities of the middle school student, the school environment, teacher characteristics, instructional modes, the curriculum and the future of the middle school movement.

TEDU 545 Teaching Secondary School Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Upper-division mathematical sciences major. Examines materials, resources, innovations, procedures, methods, equipment and learning principles appropriate for decision making related to the teaching of secondary mathematics.

TEDU 547 Teaching Secondary School Social Studies

Semester course; 3 lecture hours. 3 credits. Examines demands involved in secondary social studies instruction; preparatory approaches to using academic and professional insights in confronting the demands; formulating and implementing appropriate methodological approaches.

TEDU 548 Teaching Secondary School English

Semester course; 3 lecture hours. 3 credits. Studies teaching strategies, materials and objectives for literature, language, and composition; developing and organizing English instruction; applying learning theory; examining evaluation strategies; questioning techniques and classroom management.

TEDU 549 Diagnostic Reading in the Secondary School

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 561 or 562 or permission of instructor. For prospective and practicing secondary school teachers. Studies diagnostic teaching of reading and techniques to help struggling readers in grades 6 through 12, as well as the role of the secondary reading specialist in reading instruction. Reading levels and selection of appropriate materials are considered. Various techniques and strategies for improving reading are investigated. Emphasis on evaluation of reading progress, differentiation of instruction, reading difficulties, and diagnostic and prescriptive procedures. Course techniques are practiced with students in grades 6 through 12.

TEDU 550 Teaching Interdisciplinary Language Arts and Social Studies in the Middle School

Semester course; 3 lecture hours. 3 credits. Describes and applies basic principles of middle school education and early adolescence with attention to the persistence of the academic disciplines and traditional curricular approaches to English and social studies. Offers a rationale for interdisciplinary instruction and proposes solutions to the practical dilemmas that confront interdisciplinary teaching in the middle school. Identifies interdisciplinary themes drawn from history, the social sciences and literature; plans units of instruction around such themes; devises instructional strategies for the teaching of interdisciplinary skills and content.

TEDU 552/ENGL 552/LING 552 Teaching English as a Second Language

Semester course; 3 lecture hours. 3 credits. Provides students who plan to teach English to people whose native language is not English with a variety of instructional/learning strategies. Presents and explores current approaches and methodology, as these relate to linguistic features and pedagogy.

TEDU 554/CMSC 554 Applications of Computers in the Teaching of Mathematics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: College calculus course or permission of instructor. Introduction to computers and programming using the language, BASIC. Applications of the computer in algebra, geometry, trigonometry, statistics and calculus.

TEDU 555 Geography in Social Studies Curriculum

Semester course; 3 lecture hours. 3 credits. A survey of geographic concepts and processes as a basis for examining curricular projects for and developing instructional approaches to geography as part of the social studies curriculum.

TEDU 556 Advanced Computer Applications in Education

Semester course; 3 lecture hours. 3 credits. Prerequsites: TEDU 507or its equivalent, a portfolio demonstrating content and skills covered in TEDU 507, or permission of instructor. Develops the technology instructional framework, including teaching strategies, models of instruction and best practices in technology integration; creation of instructional lessons integrating technology by using typical office suite production tools; and connecting theory to practice. Will satisfy most of the ISTE and state technology standards.

TEDU 558 Educating Students with Multiple Disabilities

Semester course; 3 lecture hours. 3 credits. Examines the educational, social, physical, and health care needs of students who possess both cognitive and physical/sensory disabilities. Focuses on specific strategies for positioning and handling students, assessing skills and developing goals collaboratively. Emphasizes techniques for meeting the needs of students with deaf-blindness and students with special health-care needs.

TEDU 560 Instructional Strategies Using the Internet

Semester course; 3 lecture hours. 3 credits. Emphasizes understanding of informational technology instructional strategies; theoretical underpinnings of constructivism; preparation and assessment of instructional models that include project-based learning, inquiry-based learning, problem-based learning and collaborative learning using resources on the Internet.

TEDU 561 Reading Foundations: Sociological/Psychological Perspectives

Semester course; 3 lecture hours. 3 credits. The purpose of this course is to provide a basic understanding of the theories, processes, and methodologies of reading instruction. Multidisciplinary, multicultural aspects of reading instruction are stressed. Topics of particular importance to the classroom teacher are emphasized.

TEDU 562 Reading Instruction in the Content Areas

Semester course; 3 lecture hours. 3 credits. Prepares teachers to apply skills and methods of reading instruction to content areas in elementary, middle and secondary school curricula. Includes theoretical bases and methodology for incorporating reading skills and strategies within content areas of instruction.

TEDU 564 Teaching the Gifted

Semester course; 3 lecture hours. 3 credits. Curriculum development and organization of activities for the gifted at different maturational levels with specific attention given to program content, materials, resources and guidance.

TEDU 566 Diagnosis and Remediation in Reading

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 426 or permission of instructor. Studies reading problems by focusing on reading diagnosis and correction related to classroom and clinic. Involves evaluating and tutoring individuals with reading difficulties. A supervised practicum is a component.

TEDU 569 Diagnosis and Remediation in Mathematics

Semester course; 3 lecture hours. 3 credits. For classroom and resource teachers working with children whose arithmetic achievement is significantly lower than grade-level placement or expectancy level; designed to remediate learning problems in arithmetic at the child's level and to aid teachers in the sequential development of skills and concepts.

TEDU 573 Introduction to Learning Disabilities

Semester course; 3 lecture hours. 3 credits. Not for program majors, recertification, or endorsement. An overview of individuals with learning disabilities within the educational setting through readings, discussion, simulations and guided field experiences. Recommended for teachers and other personnel who seek the understanding and skills to cope with learning problems in their own setting.

TEDU 575/FRLG 575 Intercultural Communication

Semester course; 3 lecture hours. 3 credits. An experientially oriented seminar for persons preparing for or in careers necessitating intercultural communication among persons of differing cultural and/or national backgrounds. Special attention is given to teachers and other professionals who work with a clientele from Latin America, the Middle East, Asia, Africa and Eastern Europe. American cultural patterns broaden understanding of specific groups and engagement in intercultural communication.

TEDU 578 Creative Rhythmic Movement

Semester course; 3 lecture hours. 3 credits. A study of the importance and place of movement and music in a school program, and the uses of these media in teaching. Emphasis will be placed upon music as an accompaniment for movement and movement as an accompaniment for music. Attention will be given to analysis, improvisation and creativity.

TEDU 591 Social Studies Education in the Elementary School

Semester course; 3 lecture hours. 3 credits. A course designed to renew and/or expand the knowledge and skills of the classroom teacher in the teaching of social studies. Curriculum emphasis on the development of knowledge, skills, values and attitudes will be examined in the light of professional recommendations, current trends and research findings.

TEDU 594 Topical Seminar

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. A seminar intended for group study by students interested in examining topics, issues or problems related to teaching and learning.

TEDU 595 Reference and Bibliography

Semester course; 3 lecture hours. 3 credits. A study and evaluation of basic reference hooks and other bibliographical material most frequently used to answer reference questions in a library, including applications of computer technology.

TEDU 596 Library Organization and Administration

Semester course; 3 lecture hours. 3 credits. A study of fundamental methods, routines, and procedures in the acquisition, preparation and circulation of books and other materials for libraries. Special emphasis is on the school library.

TEDU 597 Cataloging and Classification

Semester course; 3 lecture hours. 3 credits. A basic course in cataloging and classifying library materials. Practice is given in using classification systems, subject headings, filing rules and the use and adaptation of printed cards and cataloging aids.

TEDU 598 Media Center Development

Semester course; 3 lecture hours. 3 credits. The development and operation of a comprehensive library/media center requires a broad range of professional skills. This course will provide library/media professionals with knowledge and practice in the design and evaluation of media facilities and an understanding of the specific administrative supervisory skills needed to operate a comprehensive library/media center.

TEDU 600 Organizing for Effective Classroom Instruction

Semester course; 3 lecture hours. 3 credits. For elementary and secondary teachers. Designed to assist teachers in becoming effective classroom organizers. Emphasis on the theory and application of instructional planning, behavior control, classroom environment, instructional materials and teaching models.

TEDU 602 National Board Certification I

Semester course; 3 credits. Prerequisites: participation in a two-day Pre-candidacy Workshop and approval of department. Analyze and reflect on teaching practices, study national teaching standards, and develop initial portfolio entries.

TEDU 605 Theory and Practice of Educating Individuals with Special Needs

Semester course; 3 lecture hours. 3 credits. Not for certification or endorsement in special education. In-depth study of the past and current philosophies and approaches to serving students with special needs in educational settings. Attends to specific ways school services and classroom practices of general education teaching can assist in meeting these needs in today's schools through mainstreaming and inclusion.

TEDU 610 Developing and Critiquing Visual Literacy

Semester course; 3 lecture hours. 3 credits. Develop skills and evaluate the effectiveness and appropriateness of the use of media. Understand imagery, develop visual communication skills to appropriately represent data, video or text by applying design principles in creating print, as well as non-print, as an instructional resource.

TEDU 611 Critical Investigations in Mathematics Education

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 522 or permission of instructor. A critical investigation of current and appropriate learning theories, instructional activities, programs and manipulative materials applicable to mathematics education in the elementary school. This course assumes an overall knowledge of the more prominent techniques and materials used to teach mathematics in elementary and middle schools. Students will undertake in-depth critical studies of alternative curricula, materials and strategies based on experience, learning theory and research findings.

TEDU 615 Curriculum Development

Semester course; 3 lecture hours. 3 credits. A basic graduate course in curriculum development. Curriculum decision making is examined in relation to foundation areas, content areas and current educational trends. Various conceptions of curriculum are explored.

TEDU 617 Instructional Models

Semester course; 3 credits. An examination of instructional models with a focus on their analysis and adaptation to learning environments and school curriculum.

TEDU 618 Curriculum Construction

Semester course; 3-6 lecture hours. 3-6 credits. A study of curriculum problems with special attention given to the organization and preparation of teaching units. The course is individualized to meet student needs and nature of study.

TEDU 620/MASC 681 Video Applications in Instruction

Semester course; 3 lecture hours. 3 credits. Prerequisites: TEDU 556 and 610 or permission of instructor. Emphasizes the design and instructional strategies used with the production of video resources. Differentiates analog and digital video, importing images, video and sound, editing, previewing, transitions, filters, motion settings, superimposing, titles, special effect options, and exporting video. Students will produce and edit a personalized instructional module using digital video hardware and editing software.

TEDU 621 Curriculum Seminar

Semester course; 3 lecture hours. 3 credits. A study of curriculum theory, research, and practice for advanced students. The seminar is an opportunity for students to integrate previous course work and professional experiences in curriculum.

TEDU 622 Creative and Cognitive Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: EDUS 603. Application of theories of creative and cognitive development in teaching.

TEDU 623 Child Study and Assessment in Early Childhood Education

Semester course; 3 lecture hours. 3 credits. Investigation and application of methods of observing, recording, and interpreting the behavior of young children. Review of criterion and norm-referenced measures for assessing capacities and needs in early childhood education as a baseline for prescribing/providing appropriate activities.

TEDU 624 Early Childhood Education Programs and Policies

Semester course; 3 lecture hours. 3 credits. A study of Early Childhood Education paradigms including historical, federally funded and current center and home-based programs. A review of legislation, state and federal, that has affected ECE program development.

TEDU 625 Young Child and the Curriculum

Semester course; 3 lecture hours. 3 credits. Translation of curriculum development principles into appropriate curricular programs for young children. Impact of recent research on these curricula. Consideration of child development as related to planned activities and expected outcomes.

TEDU 626 Home-school Communication and Collaboration

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 414 or permission of instructor. Studies the rationale, methods, programs and current research of home-school partnerships, preschool through secondary education.

TEDU 627 Critical Investigations in Social Studies Education

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 591 or permission of instructor. Assuming a knowledge of basic content and techniques in the teaching of social studies in elementary and middle schools, this course conducts a critical examination of various curricula and methodologies from the standpoint of current research, philosophical positions and relevant learning theory.

TEDU 630 Trends in Special Education

Semester course; 3 lecture hours. 3 credits. Overview of legislation and case law pertaining to special education, characteristics of individuals with exceptionalities, mainstreaming, inclusion, transition and classroom adaptations for educating these students in least restrictive environment.

TEDU 631 Behavior Management of Students with Disabilities

Semester course; 3 lecture hours. 3 credits. An in-depth analysis of theoretical models, research, strategies for managing behavior of students with various disabilities. Emphasis on developing, implementing and evaluating behavior management programs in special education programs.

TEDU 632 Secondary Programming for Students with Disabilities

Semester course; 3 lecture hours. 3 credits. Designed to provide knowledge of the special educator's role in preparing students with disabilities for post-secondary educational and vocational environments. Emphasis is placed on designing and modifying high school curricula involving students and their families in transition planning and helping students acquire the services needed to be successful in adult life.

TEDU 636 Introduction to Supported Employment

Semester course; 3 lecture hours. 3 credits. This course is an overview of strategies for providing supported employment services to persons with severe disabilities. Emphasis is placed on job and contract development, job placement, job-site training and follow-along. Content is appropriate for use in specialized industrial training, mobile work crews, sheltered enclaves and supported competitive employment.

TEDU 637 Developing and Implementing Supported Employment Programs

Semester course; 3 lecture hours. 3 credits. This course focuses on the development of comprehensive supported employment programs at the agency or community level. Course content includes strategies for the management and operation of supported employment programs, procedures for program evaluation and methods for designing and implementing staff development programs.

TEDU 640 Designing and Managing eLearning

Semester course; 3 lecture hours. 3 credits. Prerequisites: TEDU 556 or 560, or permission of instructor. Emphasizes identification of appropriate methods of instructional delivery to meet online learner needs, develop online modules and lessons for different virtual learning environments, including team and collaborative projects, and best practices associated with the development of online instruction.

TEDU 641 Independent Study

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Determination of the amount of credit and permission of the instructor and department chair must be procured prior to registration. Cannot be used in place of existing courses. An individual study of a specialized issue or problem in education.

TEDU 648 Preparation of Instructional Materials

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 507 or permission of instructor. Development of materials for the classroom with an emphasis on determining medium, designing the message, producing the material and evaluating the effect. The design of these materials will be predicated on the learning modes and instructional styles.

TEDU 649 Educational Media: Theory and Practice

Semester course; 3 lecture hours. 3 credits. Prerequisite: TEDU 507 or permission of instructor. An analysis of educational media with emphasis on the use of media in instructional design and development of teaching strategies.

TEDU 651 Topics in Education

Semester course; 1-3 credits. May be repeated for 9 credits. Check with department for specific prerequisites. A course for the examination of specialized issues, topics, readings or problems in education.

TEDU 672 Internship

Semester course; 1-6 credits. May be repeated for a maximum of 12 credits. Prerequisite: Permission of adviser. Study and integration of theory with practice in clinical or off-campus settings supervised by an approved professional and university faculty. May include seminars, selected readings, projects and other activities designed and evaluated by supervising faculty.

TEDU 673 Technology Leadership and Staff Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: Admission to IT certificate or master's in curriculum and instruction program, or permission of instructor. Emphasis on professional preparation in educational technology leadership; studies of and experiences with leadership, staff development, and supervisory concepts and skills as they relate to the use of technology in K-12 education. Participation in field experience to observe the use of technology to support instruction required.

TEDU 680 Externship Proposal Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisites: Enrolled in curriculum and instruction program. Approval of externship goals by faculty specialist. Develops and refines the skills applicable to the preparation of an acceptable draft of an externship proposal.

TEDU 681 Investigations and Trends in Teaching

Semester course; 3 credits. May be repeated for a maximum of 9 credits. A course designed to familiarize teachers and prospective teachers with recent trends and developments in course content, strategies for organizing learning experiences and in presenting course material in their classrooms. Laboratory experience may be incorporated where appropriate.

TEDU 682 Curriculum Development in Science Education

Semester course; 3 lecture hours. 3 credits. A course for science teacher developed curriculum innovations that emphasize the initiation of formal and informal classroom work on current scientific trends, as well as special class work and laboratory programs.

TEDU 700 Externship

Semester course; 1-6 credits. May be repeated for a maximum of 9 credits. Prerequisite: Permission of department. Plan of work designed by extern with prior approval of the offering department. State certification or equivalent may be required for some externships. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Externship activities monitored and evaluated by university faculty.

TEDU 702 National Board Certification II

Semester course; 3 credits. Prerequisite: Successful completion of TEDU 602 (grade of "A" or "B"). Apply advanced analysis and reflection on teaching practice, culminating in the completion of a portfolio that provides evidence of meeting national teaching standards.

TEDU 705 Seminar on Disability Policy

Semester course; 3 lecture hours. 3 credits. Discussion and examination of key federal and state issues that affect disability policy and program management. Includes an in-depth examination of IDEA, ADA and the Rehabilitation Act of 1973.

TEDU 706 Personnel Development in Special Education

Semester course; 3 lecture hours. 3 credits. Prepares individuals to effectively design, provide and evaluate personnel development programs that prepare professionals to maximize the developmental, educational, emotional and employment outcomes of individuals with disabilities.

TEDU 707 Critical Issues in Special Education

Semester course; 3 lecture hours. 3 credits. Discussion and examination of controversial and/or critical issues in special education, as well as current IDEA definitions (learning disabilities, emotional disturbance and mental retardation), referral and assessment methods, and instructional models.

TEDU 708 Designing, Funding and Conducting Research in Special Education

Semester course; 3 lecture hours. 3 credits. Provides an overview of the frameworks and major designs within three alternative research methodologies in special education: single-subject design, group design and qualitative methods as used in special education research. Addresses advanced research reviews, funding issues and professional writing aspects.

TEDU 709 Directed Readings in Special Education

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 9 credits. Analysis and discussion of topics specific to doctoral student's disability interest (e.g., learning disabilities, emotional disturbance, mental retardation, etc.).

TEDU 730 Educational Staff Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: graduate standing and TEDU 617. This course cannot be used to meet a requirement for endorsement as a supervisor of instruction in Virginia. Provides educational leaders with the knowledge and skills necessary to design, implement and evaluate staff development programs that focus on instructional improvement. Includes the application of staff development as part of teacher evaluation systems.

TEDU 731 Instructional Theories and Strategies

Semester course; 3 lecture hours. 3 credits. Prerequisites: graduate standing and TEDU 617. Provides instructional leaders with the knowledge and competence necessary to apply and evaluate instructional strategies that are appropriate for students at all levels of schooling. The focus of the course will be on case studies, applications of principles, use of simulation and practical problem-solving approaches.

TEDU 798 Thesis

Semester course; 1-6 credits. May be repeated for a maximum of 6 credits. A research study of a topic or problem approved by the student's supervisory committee and completed in accordance with acceptable standards for thesis writing.

School of Engineering

Chemical and Life Science Engineering(CLSE)

CLSE 550 Quantitative Analysis in Chemical and Life Science Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 301 and 302 or equivalent. An understanding of the quantitative descriptions of chemical and biological processes is required for engineering analysis, including prediction and design. Analytical approaches are necessary to simplify and provide limits of complex behavior. These approaches include perturbation theory and scaling, density functional formulations, control theory, and stability theory. This course represents the applied mathematical foundations on equilibrium and nonequilibrium analysis of chemical and biological systems.

CLSE 554 Equilibrium Analysis in Chemical and Biological Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRC 205 or equivalent. Provides a molecular-based, thermodynamic framework for the quantitative equilibrium analysis of a broad range of biological and chemical processes. Contemporary equations of state, liquid solution models and elementary statistical mechanics are used to predict the behavior of molecules. Important issues addressed include the estimation of solvation and partitioning of molecules between phases or media, the calculation of free energy changes associated with cellular events and prediction of order/disorder phenomena.

CLSE 555 Nonequilibrium Analysis in Chemical and Life Science Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: CLSE 554 and the equivalent of the undergraduate courses EGRC 301 and 302 and MATH 301. An understanding of the spatial and temporal dynamics of biological systems is key to many cellular events including cell signaling processes, second messenger systems, positive and negative feedback control, transcription, translation, and many more. This course introduces nonequilibrium (dynamic) analysis as applied to biological and chemical systems.

CLSE 561 Stem Cell Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 218, EGRC 302. The production and behavior of adult and embryonic stem cells are studied and potential applications for the treatment of disease are surveyed. The importance of the extracellular matrix in cell differentiation and proliferation is established. Stem cell engineering techniques including parthenogenesis, nuclear transfer stem cells and embryonic carcinoma cells are introduced. The use of stem and germ cells for cloning, stem cells and tissue rejection, and ethical considerations in the use of embryonic human stem cells are discussed.

CLSE 562 Advanced Systems Biology Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 218, ENGR 115, EGRC 302. The system-level properties of biology will be surveyed to understand how DNA leads to cellular behavior through complex molecular interactions. Theoretical and experimental concepts associated with high-throughput data (genomics, transcriptomics, metabolomics, fluxomics, proteomics), cellular regulation and computational modeling will be introduced. Bioinformatic analysis, integration of data and current challenges are discussed.

CLSE 563 Metabolic Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 218, ENGR 115, EGRC 302. The principles and methods used in metabolic engineering of microbes will be covered. Theoretical and experimental concepts associated with metabolite production, strain design, strain construction and strain characterization will be introduced. Design principles, metabolic engineering challenges, metabolic engineering applications and ethical considerations of genomic alterations are discussed.

CLSE 570 Molecular Physiology and Microanatomy for Chemical and Life Science Engineering

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisites: BIOL 219 and EGRC 302. Understanding physiology from the molecular perspective of cellular biochemical mass action kinetics, molecular diffusion and transport, biomolecular separation processes, and dynamic biochemical control theory is key to the engineering and design strategies for medical intervention in disease and human health. This course explores these biomolecular dynamic events in human physiology with an emphasis on the application of the fundamental biochemical transport phenomena, kinetics and separation processes, and dynamic control theory. Laboratory component emphasizes living, single-cell manipulation and analysis methods, such as patch clamp devices, and the microanatomy of internal organs.

CLSE 660 Biomolecular and Computational Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLSE 550. Dynamic analysis of interacting cellular events, including cell signal pathways, clock reactions, etc., often requires large-scale computational approaches. Furthermore, these techniques are necessarily time dependent requiring unique methodologies, such as multi-time scale methods. This course introduces the subject of real-time biomolecular simulations.

CLSE 675 Polymers in Medicine

Semester course; 3 lecture hours. 3 credits. This course is based on the need for integration of engineering and materials science of polymers with applications in life science engineering. Basic principles of polymer science including structural concepts at the molecular-, nano-, micro- and macro-scales are emphasized so that the student can understand structure/function correlation. The course treats polymer synthesis, molecular weight, morphology and surface science at an introductory level, but quantitative correlations are emphasized. Surface science is emphasized, as medical applications are often dependent on the interaction of a solid polymer with an in vivo environment (tissue, blood, membrane). The polymers chosen for emphasis include polyethylene (hip, knee replacement), poly(vinylchloride) (bood bags, catheters), polyurethanes (artificial heart, wound care) and silicones (implants, catheters). The use of polymers in drug delivery applications is explored, including osmotic-pressure-driven drug delivery. Concepts surrounding polymeric surface modifiers are developed, including applications such as enhanced biodurability and biocidal function.

CLSE 690 Research Seminar in Chemical and Life Science Engineering

Semester course; 1 lecture hour. 1 credit. May be repeated up to eight times. Presentations and discussions of current problems and developments in life science engineering by faculty and visiting lecturers.

CLSE 691 Special Topics in Chemical and Life Science Engineering

Semester course; 1-4 lecture hours. 1-4 credits. Prerequisites: At least one graduate-level engineering course and permission of the instructor. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other course offerings or as part of research training.

CLSE 692 Independent Study in Chemical and Life Science Engineering

Semester course; 1-3 lecture and/or 0-4 laboratory hours. 1-5 credits. Prerequisites: graduate standing or permission of instructor. The student must submit a prospectus to the graduate committee for approval and identify a faculty member willing to supervise the course. Investigation of specialized engineering problems through literature search, mathematical analysis, computer simulation and/or experimentation. Written and oral reports, final report and examination required.

CLSE 697 Directed Research in Chemical and Life Science Engineering

Semester course; variable hours. 1-9 credits. Prerequisite: graduate standing or permission of instructor. Research directed toward completion of the requirements for the M.S. or Ph.D. in engineering, with concentration in chemical and life science engineering, under the direction of an engineering faculty member and advisory committee. Graded S/U/F.

Computer Science(CMSC)

CMSC 191 Topics in Computer Science

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of the instructor. This course will teach selected topics in computer science. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

CMSC 245 Introduction to Programming Using C++

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 151 or satisfactory score on the Mathematical Placement Test. Students registering for CMSC 245 must have taken the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course. An exception to this policy is made in the case in which the stated alternative prerequisite course has been completed at VCU. Students are expected to have fundamental computer skills. Introduction to the concepts and practice of structured programming using C++. Problem solving, top-down design of algorithms, objects, basic C++ syntax, control structures, functions and arrays. This course is intended for Engineering majors.

CMSC 246 Advanced Programming Using C++

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 245. Advanced programming in C++. Topics include program design, objects, classes, inheritance, files, strings, linked lists, stacks, queues, binary trees, recursion, and basic searching and sorting techniques. This course is intended for engineering majors.

CMSC 255 Introduction to Programming

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 151 or equivalent. Students are expected to have fundamental computer skills. Students registering for CMSC 255 must have taken the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course. An exception to this policy is made in the case in which the stated alternative prerequisite course has been completed at VCU. Introduction to structured programming using Java. Topics include problem solving, top-down design of algorithms using control structures, functions, arrays, basic I/O, basic concepts of objects and classes in Java, and the Java classes, String and String Tokenizer. Students may not receive credit for both CMSC 255 and INFO 250.

CMSC 256 Data Structures and Object Oriented Programming

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 255 with a grade of "C" or better and MATH 211 with a grade of "C" or better. Advanced programming using Java. Topics include introduction to object oriented design, inheritance, polymorphism, exceptions, interfaces, linked lists, stacks, queues, binary trees, recursion, and basic searching and sorting techniques. Students may not receive credit for both CMSC 256 and INFO 350.

CMSC 301 Introduction to Discrete Structures

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 255 with a grade of "C" or better and MATH 211 with a grade of "C" or better. A continuation of MATH 211. Recursion and induction. Operations on sets and relations. Formal languages with an emphasis on finite state automata and grammars. Monoids and graphs (trees in particular). Elementary combinatorics and advanced Boolean algebra.

CMSC 311 Computer Organization and Assembler Language Programming

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 256 with a grade of "C" or better. Registers, instruction set issues, data representation, data storage and processing, subprograms and parameter passing, macros and conditional assembly, interrupts, I/O, and arithmetic, logical and control operations.

CMSC 312 Introduction to Operating Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 311 or EGRE 364. Computer systems design, I/O processing, secondary memory organization, command languages, memory management and job scheduling. Students will work in teams to design and implement an operating system simulation.

CMSC 355 Program Design

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: CMSC 256 with a grade of "C" or better. Overview of the software design process including analysis, design and life cycle models. Students will work in teams to develop the design of a large system. Additionally, students will design smaller projects. These projects will involve the analysis and reworking of designs as well as their implementation.

CMSC 391 Topics in Computer Science

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of the instructor. This course will teach selected topics in computer science. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

CMSC 401 Algorithm Analysis with Advanced Data Structures

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 256 with a grade of "C" or better and CMSC 301 with a grade of "C" or better. Introduction to algorithm analysis and complexity classes. Advanced data structures topics including multiple linked lists, height-balanced trees, B-trees, file organization and graphs. Analysis of various searching and sorting algorithms. Algorithm design topics include divide-and-conquer, dynamic programming, greedy methods and heuristic search.

CMSC 403 Programming Languages

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 301 with a grade of "C" or better and CMSC 311. Survey of representative modern programming languages. Formal definition of programming languages including specifications of syntax and semantics. Precedence, infix, prefix and postfix notation. Global properties of algorithmic languages. Sub-routines, co-routines and tasks. List processing, string manipulation, data description and simulation languages. Run-time representation of program and data structures.

CMSC 419 Software Development Methods

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 246, EGRE 364. An introduction to the methodologies required to control the complexity involved in the development of large software systems. Students will apply software engineering techniques to an engineering problem. Students may not receive degree credit for both CMSC 419 and either CMSC 519 or CMSC 520. Not applicable toward the computer science major requirements.

CMSC 490 Research Seminar

Semester course; 1.5 lecture hours. 1 credit. Prerequisites: CMSC 312, 401, 403, ENGL 200 and a writing intensive course outside the major. Research and presentation methods in computer science. Discussion of ethical issues in computing. Each student will write a research paper on a technical topic and will give at least one oral presentation. A component of the research paper will be a discussion of associated ethical issues.

CMSC 492 Independent Study

Semester course; variable hours. 2, 3 or 4 credits per semester. Maximum 4 credits per semester; maximum total of 6 credits. Generally open only to students of junior or senior standing who have acquired at least 12 credits in the departmental discipline. Determination of the amount of credit and permission of instructor and department chair must be procured prior to registration of the course. The student must submit a proposal for investigating some area or problem not contained in the regular curriculum. The results of the student's study will be presented in a report.

CMSC 493 Computer Science Internship

Semester course; 3 credits. May not be repeated for credit. Prerequisite: CMSC 401 and CMSC 403. Approval of Computer Science Undergraduate Credentials Committee is required prior to registration. A minimum of 90 clock hours in an information technology environment. The internship is designed to provide practical experience in the computing industry. Student must present a written report reflecting upon internship experience. Graded as pass/fail. Not applicable toward the computer science major.

CMSC 502 Parallel Programming

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 312 and CMSC 401. Software and hardware mechanisms for providing mutual exclusion in uniprocessor and multiprocessor environments. Architectures of multiprocessor systems and metrics for their evaluation. Design and uses of parallel algorithms to solve concurrency problems in a distributed environment including message passing and remote procedure calls. Students will work in teams to design and implement parallel algorithms.

CMSC 504 Compiler Construction

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and CMSC 403. Review of programming language structures, translation, loading, execution and storage allocation. Compilation of simple expressions and statements. Organization of a compiler. Use of bootstrapping and compiler writing languages.

CMSC 505 Computer Architecture

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 301 with a grade of "C" or better and CMSC 311. Basic digital circuits combinational logic, data transfer and digital arithmetic. Memory and memory access, control functions, CPU organization, microprogramming, input/output interfaces.

CMSC 506/ENGR 526 Computer Networks and Communications

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 312. Theoretical and applied analysis of basic data communication systems; design of networks in the framework of the OSI reference model; Local and Wide Area Networks; performance analysis of networks; error control and security. Students will work in teams to design and implement a small computer network.

CMSC 508 Database Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 401. Design and implementation of relational database systems. Emphasis is placed on entity-relationship diagrams, relational algebra, normal forms and normalization. Introduction to SQL. Discussion of physical level issues. Brief discussion of alternative database models such as the object-oriented, hierarchical and network models. Students will be required to complete a design project and give an oral presentation of the project.

CMSC 509 Artificial Intelligence

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and CMSC 403. Problem spaces, problem-solving methods, game playing, knowledge representatives, expert systems, natural language understanding.

CMSC 511 Computer Graphics

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and MATH 310. Presents mathematical techniques for picture development and transformation, curve and surface approximation and projections, graphical languages and data structures and their implementation, graphical systems (hardware and software).

CMSC 519 Software Engineering: Specification and Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 256 and 301, both with a grade of "C" or better, and CMSC 355. Overview of the software engineering process and software life cycle models. Detailed study of planning, analysis, specification and design phases. Students will work in teams to gain experience in prototyping and in developing specification and design documents and user documentation.

CMSC 520 Software Engineering Practicum

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and CMSC 519. Students participate as part of a team in the detailed design, implementation and evaluation of a software system.

CMSC 521 Introduction to the Theory of Computation

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 301 or the equivalent with a grade of "C" or better. An introduction to automata theory, formal languages and computability. Topics include finite automata, pushdown automata, Turing machines, decidability and computational complexity.

CMSC 525 Introduction to Software Analysis, Testing and Verification

Semester course; 3 lecture hours. 3 credits. Prerequisites: CMSC 401 and 403. An introduction to concepts and techniques used in the analysis of software for certain properties. Using analytic results to derive test data and verify the correct implementation of programs. Flow graphs, fault/failure model, theoretical and practical limitations. Control flow, data flow and error flow analyses. Testing strategies including random, structural, mutation and error flow. Software metrics.

CMSC 526 Theory of Programming Languages

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 403. An introduction to the formal semantics of programming languages, logic programming and functional programming. Topics include denotational semantics, attribute grammars, Backus Formal Functional Programming, fixed point semantics, model-theoretic semantics and PROLOG.

CMSC 591 Topics in Computer Science

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisites may vary. Permission of the instructor required. Course is open to qualified undergraduates. Selected topics in computer sciences such as: Theory of data bases, information retrieval and artificial intelligence.

CMSC 602 Operating Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 502. A study of operating systems including those in multiprocessor and distributed environments. I/O programming, resource management (including processor and memory management), security and system performance evaluation.

CMSC 605/ENGR 635 Advanced Computer Architecture

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 505 or EGRE 426, or consent of instructor. This course will focus on the design and analysis of high performance computer architectures. Topics investigated include: pipeline design, superscalar computers, multiprocessors, memory systems, peripherals, interfacing techniques, networks, performance and software issues.

CMSC 608 Advanced Database

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 508. Topics discussed include: handling of missing information; the relationship between relational calculus, relational algebra and SQL; logic databases; distributed databases; outer joins; and transaction processing. Emphasis is placed on theoretical issues involved in these topics.

CMSC 611 Advanced Computer Graphics

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 511. Modeling, representation of three-dimensional (3-D) shapes, displaying depth relationships, algorithms for removing hidden edges and surfaces, color, shading models, and intensity.

CMSC 619 The Design and Specifications of User Interfaces

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing and permission of instructor. Requires knowledge of first order predicate calculus and context-free languages. Focuses on human-computer interface design principles and methodology and formal specifications of user interfaces.

CMSC 621 Theory of Computation

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 521. Discussion of the complexity and computability of problems and programs. Topics will include unsolvability, universal programs and abstract complexity.

CMSC 625 Advanced Software Analysis, Testing and Verification

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 525. Studies the concepts and techniques used in the analysis of software and the derivation of test data. Focuses on software metrics and reliability; construction of tools to aid software analysis and testing. Requires students to review seminal and current papers from the literature, and lead their discussion in class.

CMSC 691 Special Topics in Computer Science

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisites: At least one graduate-level computer science course pertaining to the topic area, and permission of instructor. Selected topics in computer science from such areas as database management, communications, advanced computer architecture, analysis of algorithms, program correctness, computational complexity.

CMSC 692 Independent Study

Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing and consent of instructor. Independent study done under the supervision of a faculty member. The student must identify a faculty member willing to supervise the research and submit a proposal for approval by the computer science graduate committee no later than the 10th week of the prior semester. A written report and an oral presentation are required upon completion of the research project. At most, three credits of CMSC 692 can be applied toward the M.S. degree in computer science.

CMSC 697 Directed Research

Hours to be arranged. 1-9 credits. May be repeated for credit. A total of 3 credits may be used to fulfill the M.S. in Computer Science thesis requirement. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis or dissertation. The student must identify a faculty member willing to supervise the research and submit a proposal to the computer science graduate committee no later than the 10th week of the prior semester. This proposal must be approved before the student can register for the course.

Biomedical Engineering(EGRB)

EGRB 101 Biomedical Engineering Practicum I

Semester course; 2 lecture hours. 2 credits. Prerequisites: registration in Biomedical Engineering Department and permission of course coordinator. This course involves the introduction of clinical procedures and biomedical devices and technology to biomedical engineering freshmen. Students will tour medical facilities, clinics and hospitals and will participate in medical seminars, workshops and medical rounds. Students will rotate among various programs and facilities including orthopaedics, cardiology, neurology, surgery, otolaryngology, emergency medicine, pharmacy, dentistry, nursing, oncology, physical medicine, ophthalmology, pediatrics and internal medicine.

EGRB 215 Computational Methods in Biomedical Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 201 and sophomore standing in biomedical engineering. Corequisite: MATH 301 (differential equations) or equivalent. Serves as an introduction and overview of numerical approaches to the solution of engineering and biomedical engineering equations. Will further introduce various computational applications such as FemLab, Algor, MATLAB and LabVIEW, which will be utilized in subsequent courses and laboratories. Also provides an introduction to structured programming in C/C++ with an emphasis on biomedical applications with examples of real-time data acquisition and analysis.

EGRB 301 Biomedical Engineering Practicum II

Semester course; 2 lecture hours. 2 credits. Prerequisites: registration in Biomedical Engineering Department as a junior or higher classification and permission of course coordinator. This course involves the introduction of biomedical and clinical issues relevant to research and design issues including economic, environmental, sustainability, manufacturability, ethical, health and safety, social and political topics. Also included are topics related to protection of human subjects. Students will tour relevant medical research facilities, clinics and hospitals, and will participate in medical seminars, workshops and medical research projects pertinent to the topics noted above.

EGRB 303 Biotransport Processes

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHIS 309, 310 (or equivalents), EGRB 215, 310, PHYS 208 and CHEM 102. Course involves the study of mass, momentum and heat transfer within the human body, between the human body and the environment, and in the design of devices and systems that are involved with transport processes in a medical and clinical setting. The underlying principles of mass, momentum and energy transfer will be addressed followed by a study of such processes that are ongoing in the human body. The design of biomedical devices and systems that involve transport processes also will be studied. Examples include cardiovascular blood flow, transport across cell membranes, respiration and thermoregulation.

EGRB 307 Biomedical Instrumentation

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 206, EGRB 215. A study of the physical principles, design and clinical uses of biomedical instrumentation. Analysis and design of low frequency electronic circuits, which are most frequently used in biomedical instruments, will be conducted. Analysis of biosensors, biopotential electrodes, the measurements of biopotential signals including electrocardiogram (ECG), electroencephalogram (EEG) and electromyogram (EMG), blood pressure, blood flow, and respiratory system will be conducted. Laboratory work on basic biomedical electronics and instrumentation will be performed.

EGRB 308 Biomedical Signal Processing

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: Calculus, differential equations, PHIS 309, 310 and EGRB 215. Explores the basic theory and application of digital signal processing techniques related to the acquisition and processing of biomedical and physiological signals.

EGRB 310 Biomechanics

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRM 202, EGRB 215 and MATH 301. This first course in biomechanics will analyze the forces, stresses and strains in the human body during normal function. Emphasis will be placed on certain parts of the human body including hard (bone) and soft (cartilage, ligaments, tendons) tissues. A knowledge of statics and the mechanics of deformable bodies is required, as is a knowledge of calculus and differential equations. Exposure to human anatomy and physiology also is necessary, however, more in-depth anatomic study of the different parts of the body will be covered.

EGRB 401-402 Biomedical Engineering Senior Design Studio

Continuous courses; 9 laboratory hours. 3-3 credits. Prerequisites: senior standing in the Biomedical Engineering Department; EGRB 301, 307 and 308. A minimum of nine laboratory hours per week is dedicated to the design, development and execution of the senior design (capstone) project for biomedical engineering under the direction of a faculty research adviser in biomedical engineering or an acceptable substitute as determined by the course coordinator. Tasks include team meetings (for team projects), brainstorming, sponsor advising, designing, fabrications, assembling, reviewing, studying, researching, testing and validating projects. Monthly progress reports are due to the research adviser and course coordinator. A final project report and presentation are due at the conclusion of the two-semester design process.

EGRB 403 Tissue Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: senior standing in engineering and at least one course in physiology or anatomy. Study of the design, development and clinical application of tissue engineered components for use in the human body. Analysis of biology, chemistry, material science, engineering, immunology and transplantation as pertains to various tissue engineered components including blood vessels, bone, cartilage, pancreas, liver and skin.

EGRB 405 Finite Element Analysis in Solid Mechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRB 310 and MATH 301. Finite element analysis as presented in this course is a numerical procedure for solving continuum mechanics problems that cannot be described by closed-form mathematical solutions. Emphasis will be placed on understanding the theoretical basis for the method, using a commercial software program, and understanding the volume of information that can be generated. Applications to both one- and two-dimensional problems in solid mechanics and biomechanics will be explored.

EGRB 406 Artificial Organs

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHIS 309 and PHIS 310 (or equivalents), EGRB 303, EGRB 310, and EGRB 307. This course explores the design, operating principles and practices regarding artificial organs and their use in the human body. Analysis of dialysis systems for kidney replacement, artificial hearts and heart assist devices, cardiac pacemakers, sensory organ assist and replacement devices, and artificial liver and pancreas devices. Design aspects, legal ramifications, regulatory issues and clinical implantation issues will be addressed.

EGRB 407 Physical Principles of Medical Imaging

Semester course; 3 lecture hours. 3 credits. Prerequisites: junior standing in School of Engineering and at least two courses in electrical circuits. A study of the physical principles and basic clinical uses of medical imaging. Analysis of radiation and interaction of radiation, generation and control of X-rays, X-ray diagnostic methods, X-ray computed tomography (CT), magnetic resonance imaging (MRI) and ultrasonic imaging will be conducted. Basic principle of radionuclide imaging also will be introduced. A knowledge of basic electrical circuits is a prerequisite as is a knowledge of wave propagation, calculus and differential equations.

EGRB 408 Advanced Biomedical Signal Processing

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRB 308. This course will briefly review the basic theory of discrete-time signal processing techniques in biomedical data processing. Advanced signal processing techniques including adaptive signal processing, wavelets, spectral estimation and multirate signal processing will be employed. Specific examples utilizing electrocardiogram (ECG) and other biological signals are provided. Topics covered are alternance phenomenon in biological systems, late potential in ECG, intrapotential in ECG and coherence analysis.

EGRB 409 Microcomputer Applications in Biomedical Engineering

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: EGRB 307. Covers microcomputer applications (hardware and software) as applied to biomedical science and biomedical engineering. Basic hardware components of a microcomputer are discussed with particular reference to configurations needed for analyzing biomedical events. Software applications including data encoding, data storage, graphical interfaces and real-time processing are explored for analysis of physiological and biomedical signals. Students will develop algorithms using LabView and MatLab to solve problems in biomedical engineering in the laboratories.

EGRB 420 Rehabilitation Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHIS 309 and PHIS 310 (or equivalents), EGRE 206 (or equivalent), and EGRB 310. This course explores the principles and practices regarding rehabilitation engineering and the interaction of biomedical engineering with health care delivery to disabled individuals. Discussions of approaches to diagnosis and treatment of disorders involving motor and cognitive function will be included as will an analysis of the design of devices and systems to aid the disabled. Chronic disabilities such as cerebral palsy, muscular dystrophy and spinal cord disorders will be used as examples as will acute disabilities resulting from traumatic injuries.

EGRB 421 Human Factors Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHIS 309 and PHIS 310 (or equivalents), and EGRB 310. This course explores the principles and practices regarding ergonomics and human factors engineering and the interaction of biomedical engineering with human function. Analysis of the functions of the human body regarding motion, sensory mechanisms, cognition and interaction with the environment will be included. Interactions of the human body with technology, workplaces equipment and computers will be examined. Design of workplaces for optimal human performance will be discussed. Analysis of the design and arrangement of controls and displays will be covered.

EGRB 427 Biomaterials

Semester course; 3 lecture hours. 3 credits. Prerequisites: junior standing in School of Engineering and at least one course in physiology or anatomy. Analysis of physical, chemical, thermal and physiological response factors associated with materials and implant devices used in the human body. Study of the properties of biomedical materials used as implants, prostheses, orthoses and as medical devices in contact with the human body.

EGRB 507 Biomedical Electronics and Instrumentation

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Fundamental principles and applications of electronics and instrumentation as related to biomedical sciences.

EGRB 509 Microcomputer Technology in the Biomedical Sciences

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Microcomputer applications to the acquisition and manipulation of data in the biomedical laboratory.

EGRB 511 Fundamentals of Biomechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: Calculus and ordinary differential equations (MATH 200-201, MATH 301 or equivalent). Presents basic mechanical properties of materials, describes methods of material testing and introduces techniques for analyzing the solid and fluid mechanics of the body. Considers topics such as stress/strain relationships, particle mechanics, and force balances.

EGRB 603 Biomedical Signal Processing

Semester course; 3 lecture hours. 3 credits. Prerequisites: Calculus and differential equations (MATH 301 or equivalent), including Laplace and Fourier Transforms. Explores theory and application of discrete-time signal processing techniques in biomedical data processing. Includes discrete-time signals and systems, the Discrete/Fast Fourier Transforms (DFT/FFT), digital filter design and implementation, and an introduction into processing of discrete-time random signals.

EGRB 610 Microprocessor Interfacing for Biomedical Instrumentation

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: EGRB 509 or permission of instructor. Principles and applications of microprocessor interfacing for biomedical instrumentation. Topics include microprocessor architecture, assembly language, programming and debugging techniques, EPROM programming and bus structure and interfacing.

EGRB 611 Cardiovascular Dynamics

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: PHIS 501 or PHIS 502. Analyzes and models the cardiovascular system in health and disease through studies on the properties of heart and vascular tissue, the mechanics of blood flow and the application of engineering methods to the diagnosis and treatment of cardiovascular pathologies.

EGRB 612 Structural Biomechanics

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRB 511. Treats mechanical functions of the human body as an engineering structure used to assist and supplement these functions. Includes movement of the musculoskeletal system, joint reaction forces, stresses and strains developed within bones, function and design of orthopedic prostheses and braces, effect of vibration and impact on the body, mathematical and other models of the body.

EGRB 613 Biomaterials

Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate material science or permission of the instructor. Primary and secondary factors determining the performance of materials used for implants in the human body. Topics will include metallurgy of stainless steel, cobalt-chromium alloys, titanium alloys, biocompatibility of implant materials, mechanical and physical properties of biomaterials, corrosion of biomaterials and medical polymers.

EGRB 615 Medical Imaging

Semester course; 3 lecture hours. 3 credits. Prerequisite: Calculus and college physics. Covers the physical principles and techniques of medical imaging modalities such as ultrasound, X-ray and nuclear magnetic resonance. Includes generation and detection of images, consideration of system design and qualitative image analysis.

EGRB 635 Modeling for Biomedical Engineers

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Applies mathematical modeling techniques to biomedical systems. Covers linear and nonlinear systems, deterministic and random systems, large systems, ecosystems, numerical techniques, graph theoretical approaches and simulation packages. Utilizes examples of biochemical, physiological and pharmacokinetic systems throughout.

EGRB 641 Survey of Molecular Modeling Methods

Semester course; lecture and laboratory hours. 1 credit. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

EGRB 670 Advanced Molecular Modeling Theory and Practice

Semester course; lecture and laboratory hours. 3 credits. Prerequisite: MEDC 641, EGRB 641 or permission of the instructor. Examines the principles and applications of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

EGRB 680-681 Research Orientation I-II

Continuous courses; 4 laboratory hours. 2 credits (nondidactic course) per semester. Research rotation through the biomedical engineering core and selected affiliate laboratories.

EGRB 690 Biomedical Engineering Research Seminar

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the program seminar or special group seminar.

EGRB 691 Special Topics in Biomedical Engineering

Semester course; 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advance study, or specialized laboratory procedures not available in other courses or as part of the research training.

EGRB 697 Directed Research in Biomedical Engineering

Semester course; 1-15 credits. Research leading to the M.S. degree or elective research projects for other students.

Chemical Engineering(EGRC)

EGRC 115 Spreadsheeting and VBA Programming Laboratory

Semester course; 3 laboratory hours. 1 credit. Prerequisites: CLSE major or permission of the instructor. This introductory computer laboratory course teaches students proficiency in the use of spreadsheets for chemical engineering computations, introduces students to computer programming through the use of VBA for writing functions and subroutines and prepares students for advanced computing instruction.

EGRC 201 Chemical Engineering Fundamentals I: Material Balances

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of “C” or higher in EGRC 115, CHEM 101 or equivalents. The first of two introductory chemical and life science engineering courses. Covers material balances on steady-state chemical processes.

EGRC 202 Chemical Engineering Fundamentals II: Energy Balances

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of “C” or higher in EGRC 115 and 201, CHEM 101-102 and MATH 200-201 or equivalents. Completion of one chemistry and one math prerequisites may be waived by the department for special cases. The second of two introductory chemical and life science engineering courses. Covers energy balances on steady-state chemical processes, computer-aided balance calculations and balances on transient processes.

EGRC 204 Engineering Thermodynamics

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of “C” or higher in EGRC 115, EGRC 202 and MATH 301. First, second and third laws of thermodynamics, volumetric properties of pure fluids, heat capacities of solids, liquids and gases, heat of reaction, heat of formation, heat of combustion, heat effects in industrial reactions, temperature scales, entropy and irreversible processes, thermodynamics of flow processes, refrigeration and liquefaction, Carnot cycle, engines and work, thermodynamic analysis of steady-flow processes and power cycles. Computations using Excel VBA are a required component of this course.

EGRC 301 Fluid Dynamics and Heat Transfer

Semester course; 3 lecture hours. 3 credits. Prerequisite: grade of “C” or higher in EGRC 204. Basic concepts of momentum and heat transfer as applied to chemical engineering. Topics include fluid statics, flow of compressible and incompressible fluids, flow past immersed bodies, transport and metering of fluids, heat transfer by conduction, convection and radiation, and heat flow with and without phase changes.

EGRC 302 Mass Transfer and Unit Operations

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of “C” or higher in EGRC 301 and 305. Basic concepts of mass transfer as applied to chemical engineering. Topics include a review of staged equilibria, diffusion, gas absorption, liquid-liquid extraction and mass transport limitations in chemical reactions. The course concludes with an integrated view of momentum, heat and mass transport in unit operations.

EGRC 305 Thermodynamics of Phase Equilibria and Chemical Reactions

Semester course; 3 lecture hours. 3 credits. Prerequisite: grade of “C” or higher in EGRC 204. Continuation of EGRC 204. Thermodynamic properties of fluids and mixtures, partial molar quantities, phase equilibria, activity coefficients and correlations, equations-of-state, chemical reaction equilibria for liquid, vapor and multiphase reactions, and the use of equations-of-state and activity/fugacity correlations to obtain the thermodynamic functions required for the calculation of chemical reaction equilibrium constants. Computing using Excel VBA are a required component of this course.

EGRC 306/CHEM 306 Industrial Applications of Inorganic Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: Chemical engineering students: EGRC 201, EGRC 205 or permission of the instructor; chemistry students: CHEM 302 and CHEZ 302L. A study and analysis of the most important industrial applications of inorganic chemistry, with emphasis on structure/properties correlation, material and energy balances, availability and logistics of starting materials, economic impact and environmental effects.

EGRC 312 Chemical Reaction Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of “C” or higher in EGRC 301 and 305. Introduces the student to the analysis of reactors via coupling of empirical reaction rates and thermodynamic constraints with reactor material and energy balances. The behavior of the ideal reactor types (batch, CSTR and PFR) is emphasized with attention given to departure from these ideals by real systems.

EGRC 320 Instrumentation Laboratory

Semester course; 6 laboratory hours. 2 credits. Prerequisite: grades of “C” or higher in EGRC 204. This laboratory introduces students to a variety of measurement instruments used in modern chemical engineering laboratories and process plants. Detailed laboratory reports are required for each of the experiments undertaken by the students.

EGRC 325 Bioengineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 101, 102, 103 or 151 and EGRC 201. An introductory and survey level course required for all chemical engineering students. This course introduces concepts and principles of chemical engineering to problems and issues in the life sciences, biotechnology and medicine. Students apply heat and mass transfer concepts, separations and controls to topics that include clinical diagnostics, bioanalytical instrumentation, biosensors and biochips, bioprocess engineering including fermentation, biochemical pathway engineering, protein folding and aggregation, bioreactors and tissue engineering.

EGRC 350 Research in Chemical Engineering

Semester course; up to 6 credits. Undergraduate research under the supervision of a faculty member. Specific topics vary depending on the interests of the student and the adviser. Registration requires approval of the student's academic adviser and research adviser.

EGRC 405 Process Synthesis

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of “C” or higher in EGRC 302, 305 and 312. A senior technical elective. Students synthesize flowsheets for existing and newly proposed chemical and biochemical products. Quantitative tools learned in earlier courses are used to examine the technical and economic feasibility of the flowsheets. Written bi-weekly status reports are required from each student and each student completes a process synthesis and analysis as a semester project.

EGRC 409 Chemical Process Control

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of “C” or higher in EGRC 301 and 305. Covers process control as applied to chemical engineering with many practical examples. Topics include time and frequency domain analysis, multivariable processes and applications to chemical and biochemical production and processing.

EGRC 428 Introduction to Polymer Science and Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: grades of “C” or higher in EGRC 302, 305 and 312, and CHEM 302 or equivalents. A senior technical elective. The course offers an introduction to the chemistry, physical properties and processing of polymers. Topics include step and chain polymerization, structure/property relationships, mechanical properties of plastics and elastomers, solution properties, methods for polymer characterization, and processing techniques.

EGRC 440 Unit Operations Laboratory

Semester course; 6 laboratory hours. 2 credits. Prerequisites: grades of “C” or higher in EGRC 302, 305 and 312. Students carry out experiments with chemical and biochemical reactors, heat exchangers, fluid flow networks, mixers, crystallizers, filters, dryers, fuel cell systems and other unit operations. Detailed laboratory reports are required for each of the experiments undertaken.

EGRC 543 Advanced Reaction Engineering

Semester course; 3 lecture hours. 3 credits. Provides the fundamental background needed to effectively design reactors at the macroscale exemplified by batch, pilot and plant operations or at the micro- and nano-scale exemplified by the current trend to miniaturize unit operations. A quantitative analysis is developed to explain why "real" reactor performance departs from ideal batch, CSTR and plug flow reactor performance.

EGRC 544 Applied Transport Phenomena

Semester course; 3 lecture hours. 3 credits. Provides the basis for analyzing mass, energy and momentum transport issues in environmental, chemical, biological and industrial processes. Molecular mechanisms of momentum transport, energy transport and mass diffusion are utilized to develop an engineering analysis of a given process. This molecular approach is complemented with macroscopic mass, momentum and mechanical energy balances.

EGRC 549 Process Biotechnology

Semester course; 3 lecture hours. 3 credits. Designed to provide a rational basis addressing engineering challenges in the emerging biotechnology area. The course material is broad in scope covering biochemical synthesis, bioreactor design and bioprocess monitoring and control. It also deals with important issues associated with separation and purification techniques used with biomaterials.

EGRC 645 Biosensors and Bioelectronic Devices

Semester course; 3 lecture hours. 3 credits. This course develops the methodologies used in the design, fabrication and application of biosensors and bioelectronic devices to monitoring problems in the environmental, medical and chemicals industries. Fundamentals of measurement science will be applied to optical, electrochemical, mass and thermal means of signal transduction. Fundamentals of surface science will be used to interpret bio-immobilization, biofouling and non-specific interactions of enzymes, antibodies and DNA at surfaces.

Electrical Engineering(EGRE)

EGRE 150 Introduction to Electrical and Computer Engineering

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: MATH 200. Students will develop a preliminary understanding of electrical and computer engineering through a series of relevant projects. The projects will focus on the fundamental building blocks: signals (analog, digital, one- and multidimensional), systems (analog, digital, one- and multidimensional), programming (computational methods and logic), implementation platforms (analog, digital, hardware, software) and implementation tools (design, tools, simulators, compilers, debuggers, testing tools). For each project, the students will be introduced to the problem, the relevant theory, the possible implementation platforms and the proper development tools.

EGRE 206 Electric Circuits

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: ENGR 101. An introduction to electrical circuit theory and its application to practical direct and alternating current circuits. Topics include: Kirchhoff's Laws (review from ENGR 101), fundamental principles of network theorems, transient and steady-state response of RC, RL and RLC circuits by classical methods, time-domain and frequency-domain relationships, phasor analysis and power. Laboratory work, practical applications and integral laboratory demonstrations emphasize and illustrate the fundamentals presented in this course.

EGRE 224 Introduction to Microelectronics

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 206 and MATH 301. This course covers the analysis, modeling and design of electrical circuits which contain electronic devices. Topics include: electrical behavior of devices such as p-n junction diodes, field effect transistors and bipolar junction transistors along with operational amplifiers. Common concepts such as input and output impedances, amplification, frequency response and circuit typologies tie together the chapters on individual devices. Students will learn to design analog circuits to specifications through laboratory problems, a design project and circuit simulation using SPICE.

EGRE 254 Digital Logic Design

Semester course; 3 lecture and 2 laboratory hours. 3 credits. Prerequisites: ENGR 101 and MATH 201 or equivalents. An introduction to digital logic design with an emphasis on practical design techniques and circuit implementations. Topics include number representation in digital computers, Boolean algebra, theory of logic functions, mapping techniques and function minimization, design of combinational, clocked sequential and interactive digital circuits such as comparators, counters, pattern detectors, adders and subtractors. Asynchronous sequential circuit concepts are introduced. Students will use the above basic skills in the laboratory to design and fabricate digital logic circuits.

EGRE 303 Electronic Devices

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 224 and MATH 301. An introduction to solid state electronic devices covering the fundamentals of atomic structure, band theory, charge transport in solids and terminal electrical characteristics of semiconductor devices including p-n junction and Schottky diodes, bipolar junction and insulated gate field-effect transistors.

EGRE 307 Integrated Circuits

Semester course; 3 lecture hours and 3 laboratory hours. 4 credits. Prerequisite: EGRE 224 or consent of chair. Analysis, modeling, design and measurement of advanced MOSFET and bipolar analog integrated circuits. Topics include active filters, differential amplifiers, frequency response and feedback topologies. Operational amplifier circuit topologies are used as a means of studying input, gain, level shift and output stages. Circuit design techniques are explored for mixed signal analog-digital circuits. This course provides the opportunity for a group design project of an integrated circuit chip, using advanced software tools for simulation and physical layout. The Myers-Briggs type indicator is administered to the students to be used in conjunction with the group project.

EGRE 309 Electromagnetic Fields

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 301 and MATH 307, or permission of department chair. Fundamentals of engineering electromagnetics, including electrostatics, magnetostatics, electrodynamics and conditions that permit the use of circuit theory. Analysis and understanding of the phenomena associated with electric and magnetic fields. Wave dynamical solutions of Maxwell's equations that will include: reflection and transmission in dielectric materials, waveguiding and transmission structures, and radiation from antennas. Computer simulation techniques such as finite-difference time-domain solutions of propagating waves will reinforce lecture material. Practical engineering applications will be investigated in a wave propagating laboratory exercise.

EGRE 310 Microwave and Photonic Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRE 224. Wireless and optical communications applications of electromagnetic fields. Theory of microwave transmission line and waveguiding structures including impedance transformation and matching. Essential concepts from geometrical and physical optics and the interaction of photons with materials will be studied. Operating principles and design considerations of fiber optics, photodetectors and receivers are considered.

EGRE 335 Signals and Systems I

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 150 and 206, MATH 301, CMSC 245. Presents the concept of linear continuous-time and discrete-time signals and systems, their classification, and analysis and design using mathematical models. Topics to be covered: the concepts of linear systems and classification of these systems, continuous-time linear systems and differential and difference equations, convolution, frequency domain analysis of systems, Fourier series and Fourier transforms and their application, and continuous-time to discrete-time conversion.

EGRE 336 Introduction to Communication Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRE 337. Introduction to the theory and application of analog and digital communications including signal analysis, baseband transmission, amplitude and angle modulation, digital modulation, baseband digital communication, and design considerations.

EGRE 337 Signals and Systems II

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRE 335. This class presents the Laplace and Z transforms and their application to electrical circuits and discrete-time systems, an introduction to probability, random variables and random processes with applications in electrical engineering.

EGRE 364 Microcomputer Systems

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 254 and CMSC 245. Basic computer organization, microprocessor instruction sets and architectures, assembly language programming and the function of computer memory and I/O subsystems will be discussed. The laboratory is designed to reinforce the lectures by providing the opportunity to study the workings of a simple computer system in detail using simulation models and real hardware. Students will write and execute assembly language programs and make use of commercial design automation tools.

EGRE 365 Digital Systems

Semester course; 3 lecture and 2 laboratory hours. 3 credits. Prerequisite: EGRE 254. Corequisite: EGRE 364. Focuses on the design of modern digital systems. Topics covered include: introduction to modeling, simulation, synthesis and FPGA design techniques using VHDL; microprocessor peripherals and interfacing; embedded system hardware and software design issues.

EGRE 426 Computer Organization and Design

Semester course; 3 lecture and 1 laboratory hours. 3 credits. Prerequisites: EGRE 364 and EGRE 365. This course presents the foundation for computer design at the register transfer level. Starting from an instruction set architecture, students will learn the process used to design a data path and control unit to implement that instruction set. In addition, the topics of computer components and structures, data paths and control unit organizations, I/O and memory systems, interrupt systems, pipelining and multiprocessing will be discussed. In addition to reinforcing the lecture material, the laboratory exercises will teach the students the art of modeling and designing computer system components using a hardware description language.

EGRE 427 Advanced Digital Design

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: EGRE 426. This course provides students with practical foundations for the design, implementation and testing of digital systems It expands on the digital and computer system theory presented in prerequisite courses. Topics covered include: microcontrollers and embedded processors, application specific IC (ASIC) architectures and implementing digital systems with ACISs, logic families and high-speed interfacing, logic synthesis, design methodologies, hardware/software codesign, production testing and design for testability, and construction, testing and debugging of digital system prototypes. In the laboratory, the students will design, construct, test and debug a multidisciplinary, computer-based hardware/software system for their senior design project.

EGRE 429 VLSI Design

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 307 and EGRE 364. Analysis of NMOS and PMOS transistor design and their use in implementing digital logic. Implementation and layout of simple and complex digital logic cells using CMOS and other techniques. Fabrication design rules and design technology. VLSI chip layout and implementation. Students will design a complete VLSI chip using commercial design tools. The resulting designs will be submitted for fabrication using the MOSIS process.

EGRE 435 Semiconductor Processes

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 303 and ENGR 334 or the consent of the instructor. This course presents a detailed analysis of the physics and modeling of the basic processes used in semiconductor processing. Emphasis is placed on the non-ideal effects that cause realistic processes to deviate from first order models, including second order effects such as interactions on the atomic level and the influence of crystal defects. After developing a theoretical understanding, a higher order physical modeling approach is derived. These models are implemented and explored in the laboratory section of the course using computer simulation and are used as a basis for designing a realistic semiconductor device process. Circuit layout software is used in the laboratory portion of the course to design a test chip specifically for the lab device process. This device and process design accomplishes the design phase of the senior design project, which is then completed in EGRE 436.

EGRE 436 Advanced Semiconductor Fabrication

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: EGRE 435 or consent of instructor. This course covers process integration into functional modules such as trench or LOCOS isolation, retrograde well formation, shallow junction formation, channel engineering, advanced gate structures and multilevel metal interconnects. This course covers low-pressure chemical vapor deposition, silicide formation, plasma etching of thin films and chemical mechanical polishing. A polysilicon gate CMOS process is used as the basis for studying many of the topics covered in lecture. Electrical characterization of devices and circuits also are included in the lab work.

EGRE 444 Communication Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRE 336. Design and analysis of analog and digital communication systems, pulse modulation, information and digital transmission, digital modulation, information theory and coding will be treated. Emphasis is placed on the student gaining an appreciation for and an understanding of the role of optimization and trade-offs by considering bandwidth requirements, signal-to-noise ratio limitations, complexity and cost of analog and digital communication systems.

EGRE 445 Digital Signal Processing

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: EGRE 337. The course focuses on digital signal processing theory and algorithms, including sampling theorems, transform analysis and filter design techniques. Discrete-time signals and systems, sampling of continuous time signals, the Z transform, transform analysis of linear time-invariant systems, structures for discrete-time systems and filter design techniques are treated. Several applications of DSP in telecommunications, image and video processing, and speech and audio processing are studied.

EGRE 455 Control Systems Design

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGR 454. This course covers the use of state space methods to model analog and digital linear and nonlinear systems. Emphasis is placed on the student gaining mathematical modeling experience, performing sensitivity and stability analysis and designing compensators to meet systems specifications. Topics treated will include a review of root locus and frequency design methods, linear algebraic equations, state variable equations, state space design and digital control systems (principles and case studies). The students will use complex dynamic systems for analysis and design.

EGRE 491 Special Topics

Semester course; 3 lecture/laboratory hours. 3 credits. May be repeated for a maximum of 9 credits (in three separate topics) applicable toward the electrical engineering major elective requirement. Advanced study of a selected topic in electrical engineering. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

EGRE 520 Semiconductor and Quantum Electronics

Semester course; 3 lecture hours. 3 credits. Dedicated to electronic structures, band structure calculations, optical absorption and emission, lasing in semiconductors, electron-photon interactions, heterostructures and nanostructured (quantum confined).

EGRE 521 Advanced Semiconductor Devices

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 303, PHYS 420 and 440, or equivalents or permission of instructor. Studies the fundamentals of semiconductor heterojunctions, metal-semiconductor contacts, metal-oxide-semiconductor structures, defects, interface states, scaled MOS transistors and heterojunction bipolar transistors.

EGRE 522 Micro-Electro-Mechanical Systems (MEMS)

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: ENGR 334 and EGRE 435 or equivalents. Designed to bring together concepts from all branches of engineering, including biomedical engineering, and to apply these concepts to the creation of miniature systems. The operation of many common transducers will be described. The course focuses on how a variety of different micro-fabrication processes can be combined in order to make miniature versions of these systems or make entirely new systems.

EGRE 525 Fundamentals of Photonics Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 303, 309 and 310 or equivalents. An introduction to the interaction of electromagnetic lightwaves with solid-state materials. Based on the quantum mechanics of photon emission and absorption, the generation and detection of coherent light by semiconductor lasers and photodetectors are investigated. Optical waveguides also are studies for use in sensors employing interferometric and evanescent-field principles. Examples of integrated photonic sensors are presented for mechanical, chemical and biological systems.

EGRE 526/CMSC 506 Computer Networks and Communications

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 312. Theoretical and applied analysis of basic data communication systems; design of networks in the framework of the OSI reference model; Local and Wide Area Networks; performance analysis of networks; error control and security. Students will work in teams to design and implement a small computer network.

EGRE 533 VLSI Design

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 307 and EGRE 364 or consent of instructor. Analysis of NMOS and PMOS transistor design and their use in implementing digital logic. Implementation and layout of simple and complex digital logic cells using CMOS and other techniques. Fabrication design rules and design technology. VLSI chip layout and implementation. Students will design a complete VLSI chip using commercial design tools. The resulting designs will be submitted for fabrication using the MOSIS process.

EGRE 535 Digital Signal Processing

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: EGRE 337 or consent of instructor. The course focuses on digital signal processing theory and algorithms, including sampling theorems, transform analysis and filter design techniques. Discrete-time signals and systems, and filter design techniques are treated. Several applications of DSP in telecommunications, image and video processing, and speech and audio processing are studied.

EGRE 555/MATH 555 Dynamics and Multivariable Control I

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 301 and 310 or the equivalent. Systems of differential equations with controls, linear control systems, controllability, observability, introduction to feedback control and stabilization.

EGRE 620 Electron Theory of Solids II

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRE 520 or equivalent, or consent of instructor. Quantum theory of electron-photon interaction, absorption and emission, semiconductor lasers, linear response transport, Landauer Buttiker formulas, mesoscopic devices and phenomena, resonant tunneling, single electronics, non-equilibrium Green's function formalism, second quantization, coupled mode theory, electrons in a magnetic field, and integer quantum Hall effect.

EGRE 621 Spintronics

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 520 and 620 or equivalent, or consent of instructor. Basic concept of spin, spin interactions, spin transport, spin-based classical devices, single spintronics and spin-based quantum computing.

EGRE 623 Nanostructures and Nanodevices

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 303, PHYS 420 and 440, equivalents or permission of instructor. Devoted to the fundamentals and technology of semiconductor nanostructures and relevant devices. Engineering and physics of new solid state devices, confined structures in one, two and three dimensions and their effect on more traditional solid state devices are covered.

EGRE 630 Neural Networks

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Introduces students to the fundamental theory, design and applications of neural networks. Topics covered will include network architectures, the learning process, types of learning, single layer perceptrons, multilayer perceptrons and neural network applications.

EGRE 631 Embedded Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 426 and 427 or equivalents. Presents advanced material in the area of the design, implementation and testing of embedded computer systems intended to operate as part of a larger system. Topics to be discussed include: specification and performance modeling, hardware/software partitioning and hardware/software co-design, hardware synthesis, implementation technologies such as ASICS and FPGAs, dependability analysis and the design of dependable systems, production testing and cost analysis for the design of digital systems. A large scale design project that will make extensive use of commercial EDA tools and the VHDL language will be included in the course.

EGRE 633 Advanced VLSI Systems Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRE 429 or equivalent. Design techniques, implementation technologies and device design for high speed, large scale and low power integrated circuits. Topics presented include: submicron technologies, devices and architectures for low power VLSI, high speed clocking issues, BiCMOS devices and circuits, I/O circuit design, design for testing, analog VLSI, VLSI design methodologies, and physical design and VLSI algorithms. The course will include a design project for a complex VLSI device which will be performed using commercial design tools.

EGRE 634 Advanced Digital Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRE 254 or equivalent. Addresses topics and techniques in advanced switching theory that are relevant to the design of modern digital systems. Topics covered include: mathematical foundations, logic functions and their representations, optimization, verification, synthesis, synchronous and asynchronous finite state machines, modular designs, and fault detection.

EGRE 635/CMSC 605 Advanced Computer Architecture

Semester course; 3 lecture hours. 3 credits. Prerequisite: CMSC 505 or EGRE 426, or consent of instructor. This course will focus on the design and analysis of high performance computer architectures. Topics investigated include: pipeline design, superscalar computers, multiprocessors, memory systems, peripherals, interfacing techniques, networks, performance and software issues.

EGRE 655/MATH 655 Dynamics and Multivariable Control II

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 555 and MATH 507 recommended, or permission of instructor. Control problems for nonlinear systems of ordinary differential equations, methods of feedback control to achieve control objectives.

Mechanical Engineering(EGRM)

EGRM 201 Dynamics and Kinematics

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHYS 207. Corequisite: MATH 201. Kinematics and kinetics of particles. Kinematics of rigid bodies; translation and fixed-axis rotation relative to translating axes, general planar motion, fixed-point rotation and general motion. Kinetics of rigid bodies: center of mass, mass moment of inertia, product of inertia, principal-axes, parallel-axes theorems. Planar motion, work-energy method. Design of cams, gears and linkages.

EGRM 202 Mechanics of Deformables

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 102, MATH 200-201. An introductory course covering the mechanics of deformable solids. Subjects include stress, strain and constitutive relations; bending of beams; torsion; shearing; deflection of beams; column buckling; fatigue; failure theory; analysis and design of bar-type members.

EGRM 204 Thermodynamics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 207 and MATH 301, or permission of instructor. Fundamental concepts of thermodynamics; first and second law of thermodynamics; entropy and equilibrium; equations of state; properties of pure fluids; molecular interpretation of thermodynamic properties; phase equilibria; work and heat; power cycles; chemical reactions.

EGRM 215 Engineering Visualization and Computation

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Programming in C++ and MATLAB will be introduced. The creation and interpretation of graphical communication for engineering students. Two- and three-dimensional part and assembly representations. Dimensioning and tolerancing as a link between design and manufacturing. An introduction to solid modeling and virtual prototyping. The course will impart proficiency in computer and graphical applications of fundamental and practical importance to engineering students.

EGRM 300 Mechanical Systems Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRM 201, EGRM 202 and MATH 301, or permission of the instructor. Basic principles of applied mechanics and materials employed for the design of machine elements and mechanical systems; state of stress, deformation and failure criterion is applied to bearings, brakes, clutches, belt drives, gears, chains, springs, gear trains, power screws and transmissions.

EGRM 303 Thermal Systems Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 301, ENGR 301 and ENGR 304, or permission of the instructor. Fundamentals of heat transfer, thermodynamics and fluid mechanics applied to the analysis, design, selection and application of energy conversion systems.

EGRM 308 Automatic Controls

Semester course; 3 lecture and 1 laboratory hours. 3 credits. Prerequisites: PHYS 207, MATH 301 and ENGR 102, or permission of instructor. Mathematical modeling of automatic control systems; transfer functions, stability theory; open-loop and closed-loop control; root locks plots; application to control system design.

EGRM 309 Material Science for Engineers

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101, EGRM 202. The study of materials from a microscopic or atomic level. Consideration of mechanical, electrical, thermal, magnetic and optical properties of metals, ceramics, polymers and composites. Thermal processing for modification of properties, dislocation and phase transformation. Material selection for design with consideration of economic, environmental and societal issues.

EGRM 311 Solid Mechanics Lab

Semester course; 4.5 laboratory hours. 1.5 credits. Prerequisites: EGRM 202 and junior standing. Experiments will be conducted on fundamental principles of solid mechanics, materials and dynamics. Topics covered include testing of materials for tensile, compression, bending and torsional loads, vibrations and material microstructure.

EGRM 312 Thermal Sciences Lab

Semester course; 4.5 laboratory hours. 1.5 credits. Prerequisites: ENGR 301 and junior standing. Experiments will be conducted on fundamental principles of fluid mechanics, thermodynamics and heat transfer. Topics covered include hydrostatics, Bernoulli equation, impact jets, aerodynamic force, heat pump thermodynamics cycles, heat exchangers and convection heat transfer.

EGRM 410 Engineering Synthesis Laboratory

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: senior standing in the School of Engineering or permission of the instructor. Students perform design-oriented experiments in the area of mechanical systems, with a focus on motor controls and mechatronics, and in the area of thermal-fluid systems, with a focus on refrigeration and air-conditioning.
Effective Fall 2006 EGRM 410
Mechatronics
Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: senior standing in the School of Engineering or permission of the instructor. Lecture materials and laboratory experiments focus on the fundamentals of design-oriented mechanical, electrical and computer systems integration. Specifically, students learn analog and digital electronic design, data acquisition, transducers, actuator technologies and control, design with microprocessors and embedded electronics, and application of control theory.

EGRM 420 CAE Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: junior standing in the School of Engineering. Review of geometric modeling, engineering visualization tools applicable to engineering design. Develop visual thinking and communication skills with assistance of computer modeling tools. Emphasis placed on creative design, application of physical laws, and hands-on virtual or physical projects. Topics include review of kinematics/dynamics of commonly used planar mechanisms and programming techniques for motion simulation. Interdisciplinary projects will be assigned to assess students' design knowledge.

EGRM 421 CAE Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRM 202, MATH 301 or permission of the instructor. Application of computer-aided techniques to the analysis of engineering problems utilizing linear algebra, computer calculations of matrices and numerical solution of governing differential equilibrium equations common to all fields of engineering. Students will be exposed to formulations of finite element (FE) methods of analysis. Emphasis is placed on practical aspects of structural FE modeling. Analysis programs such as MSC/PATRAN, MSC/NASTRAN and MATLAB are utilized.

EGRM 425 Introduction to Manufacturing Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: senior standing in the School of Engineering or permission of the instructor. Basic principles of systems analysis and modeling applied to manufacturing processes and operations; numerical control, programmable controllers, flexible manufacturing systems, group technology, process planning and control, modeling and simulation of factory operations.

EGRM 426 Manufacturing Processes

Semester course; 3 lecture hours. 3 credits. Prerequisite: senior standing in the School of Engineering or permission of the instructor. Introduction to the operation and design of metal fabrication processes; analysis of metal casting, extrusion, rolling, forging, wire and rod drawing; review of metal removal and joining methods; economic and business considerations.

EGRM 428 Polymer Processing

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 301, ENGR 302 or permission of the instructor. Basic principles of momentum and heat transfer applied to the analysis of polymer processing operations; introduction to polymer rheology; operation and design aspects of extruders, blown film, injection molding, thermoforming and compression molding machinery.
Effective Fall 2006

EGRM 435 Design for Manufacturing and Assembly

Semester course; 3 lecture hours. 3 credits. Prerequisite: senior standing in the School of Engineering or permission of the instructor. Methodologies used in the synthesis and analysis of product design in order to optimize manufacturing and assembly; relationship of design to the production processes, materials handling, assembly, finishing, quality and costs with emphasis on both formed and assembled products.

EGRM 436 Engineering Materials

Semester course; 3 lecture hours. 3 credits. Prerequisite: senior standing in the School of Engineering or permission of the instructor. Materials properties and their modification as related to engineering properties and design; elastic and plastic stress-strain behavior of materials along with diffusion in solids, phase equilibria, and phase transformations; materials selection considerations include design, fabrication, mechanical failure, corrosion, service stability as well as compatibility and function in the human body.

EGRM 437 Principles of Polymer Engineering

Semester course; 3 lecture and 1 laboratory hours. 3 credits. Prerequisite: EGRM 202 or permission of the instructor. Basic principles of mechanics applied to the mechanical design and fabrication of polymers; introduction to polymer structure, rubber elasticity, and viscoelasticity; mechanical properties, plastic part design and plastic materials selection; fabrication processes.
Effective Fall 2006

EGRM 561 Advanced Fluid Mechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 301, 302, 304 and computer programming or equivalent or permission of instructor. Covers the principles necessary to analyze viscous flow. Students learn how to formulate solutions to general viscous flow problems.

EGRM 566 Advanced Computer-aided Design and Manufacturing

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 420, 421, 425, 426 or equivalents or permission of instructor. Provides students with an understanding of how modern computer techniques can enhance the generation, analysis, synthesis, manufacturing and quality of engineering products. The design and manufacture of better products and processes is a fundamental goal of all engineering disciplines.

EGRM 568 Robot Manipulators

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGR 427 or permission of instructor. Provides students with a basic knowledge in the dynamic analysis and control of robot manipulators. Topics include Jacobian analysis, manipulator dynamics, linear and nonlinear control of manipulators, force control of manipulators, robot manipulator applications and an introduction to telemanipulation.

EGRM 573 Engineering Acoustics

Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate standing or permission of instructor. Designed to equip students to perform design work, testing and research in structural acoustics and vibrations. Applications from the fields of automotive, aerospace, marine, architectural, medical equipment and consumer appliance industries will be investigated.

EGRM 580 Flow Control

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGR 301 or equivalent. Passive, active and reactive flow management strategies to achieve transition delay/advance, separation control, mixing augmentation, drag reduction, lift enhancement and noise suppression. Unified framework for flow control. Futuristic reactive control methods using MEMS devices, soft computing and dynamical systems theory.

EGRM 661 Computational Fluid Dynamics

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 561 or equivalent or permission of instructor. Teaches students how to perform two- and three-dimensional fluid flow and heat transfer analyses. Students will be able to understand and use most of the commercial flow analyses applied in industry today.

EGRM 662 Advanced Turbomachinery Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 561 and 661 or permission of instructor. Teaches students the principles used in analyzing/designing compressors and turbines. Students will be expected to design a gas turbine to meet specific mission requirements. Upon completion of the course, students will be able to understand the design systems and techniques used in the aeropropulsion and gas turbine industries.

EGRM 663 Viscous Flows

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGR 301 or equivalent. Designed to introduce graduate students to the fundamentals and the theoretical underpinnings of viscous fluid flows. An extensive project will be included as part of this class.

EGRM 680 Advanced Flow Control

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGR 301 or equivalent In-depth passive, active and reactive flow-management strategies to achieve transition delay/advance, separation control, mixing augmentation, drag reduction, lift enhancement and noise suppression. Unified framework and theoretical underpinnings of flow control. Futuristic reactive control methods using MEMS devices, soft computing and dynamical systems theory. An extensive project will be included as part of this class. Not open to undergraduate students. Mechnical engineering students may use EGRM 580 or EGRM 680 (but not both) to meet the requirements for the M.S. and/or Ph.D. degrees. Students cannot receive credit for both EGRM 580 and EGRM 680.

Engineering(ENGR)

ENGR 101 Introduction to Engineering

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: Admission to the School of Engineering or permission of instructor. Introduces basic circuits including resistors, diodes, transistors, digital gates and motors. Simple electromechanical systems are considered including motors, gears and wheels. The laboratory introduces fundamental circuit testing and measurement, and proper laboratory notebook writing; students are required to analyze, build and test a digitally controlled robot.

ENGR 102 Engineering Statics

Semester course; 3 lecture hours. 3 credits. Corequisite: MATH 200. The theory and application of engineering mechanics applied to the design and analysis of rigid structures. Equilibrium of two and three dimensional bodies. The study of forces and their effects. Applications to engineering systems.

ENGR 291 Special Topics in Engineering

Semester course; variable hours. 1-5 credits. Prerequisite: To be determined by the instructor. Specialized topics in engineering designed to provide a topic not covered by an existing course or program. General engineering or multidisciplinary. May be repeated with different content. Graded as pass/fail or normal letter grading at the option of the instructor. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

ENGR 301 Fluid Mechanics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 207 and MATH 301, or permission of instructor. Basic and applied fluid mechanics; fluid properties; application of Bernoulli and Navier-Stokes equations; macroscopic mass, momentum and energy balances; dimensional analysis; laminar and turbulent flow; boundary layer theory; friction factors in pipes and packed beds; drag coefficients; compressible flow; flow measurements; numerical simulation; applications to the operation and design of turbo machinery.

ENGR 302 Heat Transfer

Semester course; 3 lecture hours. 3 credits. Prerequisite: ENGR 301 or permission of the instructor. Basic and applied heat transfer; diffusion and rate concepts; evaporation; boiling and condensation; dispersion coefficients; stagnant film; falling film; porous membrane; packed bed; numerical simulation; applications to industrial processes. Lecture topics will include a review of fundamental concepts in thermodynamics.

ENGR 303 Junior Seminar

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. This course provides students an opportunity to explore business and leadership topics. Topics include the fundamentals of product design and new product development, manufacturing and quality systems, finances and financial reports, ethics in the workplace, intellectual property, teamwork, leadership and communications. Students will be assigned selected readings, written compositions and oral presentations. This course prepares the student to participate in the Engineering Laboratory/Manufacturing Internship.

ENGR 305 Sensors/Measurements

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 208 and MATH 301, or permission of instructor. Introduction to sensors and their utilization for measurement and control; sensor types: electro-mechanical, electro-optical, electro-chemical; applications in medicine, chemical manufacturing, mechanical control and optical inspection.

ENGR 315 Process and Systems Dynamics

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 301. Undergraduate course covering the analysis of chemical, fluid, mechanical and electrical dynamic systems. Pedagogically, a single approach is taught that applies to any of the systems in any of these disciplines using conservation equations and constitutive relationships to build the systems of differential equations needed for the analysis. The mathematical structures of the types of differential equations typically generated in dynamic physical systems are reviewed and both analytical and numerical solution techniques are taught. Finally, the tools used to develop control components for systems in these areas are covered along with the mathematical tools (e.g., Laplace transforms) needed for their analysis.

ENGR 334 Introduction to Microelectronic Fabrication

Semester course; 3 lecture and 3 laboratory hours. 4 credits. This course gives an overview of the integrated circuit fabrication and testing process for a general audience. A wide variety of new terms, equipment and processes are presented. Fundamentals of photolithography, mask making, diffusion, oxidation, chemical vapor deposition and etching are covered. Laboratory work consists of safety training, facility operation, wafer cleaning, oxidation, photolithography, etching, diffusion, metal deposition and electrical testing. A complete metal gate PMOS circuit will be fabricated in the laboratory portion of the course.

ENGR 402-403 Senior Design Studio (Seminar)

Continuous courses; 1 lecture hour. 1-1 credit. Prerequisites: senior standing and participation in a senior design (capstone) project. This weekly seminar presents and discusses topics relevant to senior-level engineering students in support of the capstone project and upcoming graduation. A single course coordinator manages and administers the course and schedules the various faculty lectures and guest speakers. Topics include, but are not limited to, the following: proposal writing, project planning and management, scheduling resources and budgeting for technical projects, patents and intellectual property, quality systems (six sigma, ISO standards, statistical process control), entrepreneurship, creativity and innovation and professional registration.

ENGR 410 Review of Internship

Semester course; 1 credit. Prerequisite: Chemical, electrical or mechanical engineering majors or research experience to satisfy the engineering internship. Students complete oral presentations and written reports summarizing the internship experience.

ENGR 411 Fundamentals of Engineering Exam Preparation

Semester course; 1 lecture hour. 1 credit. Prerequisite: senior standing or permission of instructor. This course prepares students for taking the fundamentals of Engineering Exam. Passing the FE Exam is the first step to getting a Professional Engineering license. This course is not intended to teach the various subject matters, but to review the subject areas and help students prepare as well as possible for the examination.

ENGR 412 Advanced Engineering Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 301 or equivalent. Advanced topics in engineering mathematics. Topics include partial differential equations, boundary value problems, infinite series, Fourier series, Sturm-Liouville theory, orthogonal functions and the theory of a function of a complex variable. Engineering applications include heat and mass transfer, oscillations in plates and membranes, buckling of columns under axial loads, traveling waves and electromagnetic fields.

ENGR 427 Robotics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Senior standing in the School of Engineering or permission of the instructor. Introduction to the state-of-the-art and technology of robotics and its applications for productivity gain in industry.

ENGR 430 Process Modeling and Simulation

Semester course; 3 lecture hours. 3 credits. Prerequisite: Senior standing in chemical engineering. Process modeling and simulation are an integral part of process design and analysis. This course continues training in the derivation of steady-state and dynamic mass and energy balances. Emphasis is placed on the use of student-written and commercially available software to develop and analyze models for individual process units (a single reactor or distillation column), process modules (combination of a reactor, crystallizer, centrifuge and dryer) and entire plant flowsheets.

ENGR 454 Automatic Controls

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 335 or ENGR 305 or ENGR 315. This course covers the design and analysis of linear feedback systems. Emphasis is placed upon the student gaining mathematical modeling experience and performing sensitivity and stability analysis. The use of compensators to meet systems design specifications will be treated. Topics include: an overview and brief history of feedback control, dynamic models, dynamic response, basic properties of feedback, root-locus, frequency response and state space design methods. The laboratory will consist of modeling and control demonstrations and experiments single-input/single-output and multivariable systems, analysis and simulation using matlab/simulink and other control system analysis/design/implementation software.

ENGR 460 Undergraduate Honors Research in Life Sciences Engineering

Semester course; 1-3 lecture hours. 1-3 credits. Corequisites: BIOL 218, EGRC 302. An undergraduate honors research course for academically talented juniors and seniors requiring advanced work and an honors thesis on a topic relevant to life sciences engineering. Topics and credit hours will be chosen in consultation with a sponsoring faculty member.

ENGR 461 Stem Cell Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 218, EGRC 302. The production and behavior of adult and embryonic stem cells are studied and potential applications for the treatment of disease are surveyed. Stem cell engineering techniques including parthenogenesis, nuclear transfer stem cells and embryonic carcinoma cells are introduced. The use of stem and germ cells for cloning is covered, and ethical considerations involving the use of embryonic human stem cells are discussed.

ENGR 490 Engineering Seminar

Semester course; variable hours. 1-3 credits. May be repeated with different content. Prerequisite: Permission of the instructor. A series of specialized topics in engineering that are of general interest but not covered by an existing course or program. Lectures will be presented in seminar format by speakers from business, industry, government and academia. Subjects will be multidisciplinary in nature. Graded as pass/fail or normal letter grading at the option of the instructor.

ENGR 491 Special Topics in Engineering

Semester course; variable hours. 1-5 credits. Prerequisite: Determined by the instructor. Specialized topics in engineering designed to provide a topic not covered by an existing course or program. General engineering or multidisciplinary. May be repeated with different content. Graded as pass/fail or normal letter grading at the option of the instructor. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

ENGR 492 Independent Study in Engineering

Semester course; variable hours. 1-5 credits. May be repeated with different content. Prerequisite: Permission of the instructor. Students must submit a written proposal to be approved by the supervising instructor prior to registration. Investigation of specialized engineering problems that are multidisciplinary or of general interest through literature search, mathematical analysis, computer simulation and/or laboratory experimentation. Written and oral progress reports as well as a final report and presentation are required. Graded as pass/fail or normal letter grading at the option of the instructor.

ENGR 501 Advanced Manufacturing Systems

Semester course; 3 lecture hours. 3 credits. Prerequisites: EGRM 425 and 426 or permission of instructor. Studies the fundamental systems required for mechanical, chemical and electrical manufacturing, including material procurement, logistics, quality and distribution. The principles are applied to all types of manufacturing processes from project through continuous. Advanced systems for lean, agile and global manufacturing also are covered.

ENGR 502 Product Design and Development

Semester course; 3 lecture hours. 3 credits. Prerequisites: Admission to engineering graduate school and/or permission of instructor. Presents engineering concepts and techniques necessary to successfully develop new products and introduce them to the marketplace. Topics include development processes, converting direct customer input to marketing specifications, creating technical specifications, quantifying customer input, using rapid prototyping to reduce development time, design for manufacturability and product certification issues.

ENGR 505 Characterization of Materials

Semester course; 3 lecture hours. 3 credits. Focuses on characterization techniques of solids at the molecular, surface and bulk levels, including resonant, vibrational and electronic spectroscopies, X-ray methods and optical and electron microscopies. A connection will be developed between the theoretically-derived and experimentally-observed properties of materials and a rationale also will be developed for choosing an appropriate characterization technique for a given material.

ENGR 565 Design Optimization

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENGR 420 and 421 or equivalent or permission of instructor. Focuses on providing students with a methodology and set of skills to apply in improving engineering components, systems and processes. The design of better products and processes is a fundamental goal of all engineering.

ENGR 591 Special Topics in Engineering

Semester course; 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of research training.

ENGR 630 Technology, Security and Preparedness

Semester course; 3 lecture hours. 3 credits. An overview of the role of technology in detecting and defeating terrorism. The course begins with a detailed review of weapons of mass destruction including chemical, biological and radiological devices. This is followed by a review of the various technologies curently being developed and deployed to detect the presence of terrorist weapons and associated activities. These technologies inlcude chemical sensors, biosensors and radiation detectors, portal monitors, satellite and infrared imaging systems, as well acoustic sensors and magnetometers.

ENGR 690 Engineering Research Seminar

Semester course; 1 credit. May be repeated for a maximum of 2 credits. Presentations and discussion of current problems and developments in engineering by students, staff and visiting lecturers.

ENGR 691 Special Topics in Engineering

Semester course; 1-4 lecture hours. 1-4 credits. Prerequisites: At least one graduate-level engineering course and permission of instructor. An advanced study of selected topic(s) in engineering. See the Schedule of Classes for specific topics to be offered each semester.

ENGR 692 Independent Study

Semester course; 1-3 lecture and 1-3 laboratory hours. 1-3 credits. Prerequisites: Graduate standing and consent of instructor. The student must identify a faculty member willing to supervise the course and submit a proposal for approval to the appropriate track's graduate committee. Investigation of specialized engineering problems through literature search, mathematical analysis, computer simulation and/or experimentation. Written and oral reports, final report and examination are required.

ENGR 697 Directed Research

1-9 credits. Research directed towards completion of the requirements for M.S. and Ph.D. Engineering degrees under the direction of engineering faculty and an advisory committee.

Engineering Lab(ENGZ)

ENGZ 402L-403L Senior Design Studio (Laboratory/Project Time)

Continuous courses; 6-6 laboratory hours. 2-2 credits. Prerequisite: Senior standing and participation in a senior design (capstone project). A minimum of six laboratory hours per week dedicated to the execution phase of the senior design (capstone) project. Tasks include: team meetings, brainstorming, sponsor advising, designing, fabrications, assembling, reviewing, studying, researching, testing and validating projects.

School of Medicine

Anatomy and Neurobiology(ANAT)

ANAT 301 Head and Neck Anatomy for Dental Hygienists

2 lecture and 1 seminar hours. 3 credits. Prerequisite: Admission to the Dental Hygiene Program. An overview of head and neck anatomy that examines the major osteological, neural, muscular, vascular and visceral features. Lectures will be supplemented by textbook, self-study packages and by brief laboratory exercises that provide hands-on exposure to these major anatomical features.

ANAT 302 Microscopic Anatomy (Dental Hygiene)

8-week course; 3 lecture and 1 laboratory hours. 2 credits. A lecture course in the microscopic anatomy of the cells and tissues relevant to the oral cavity.

ANAT 501 Gross Anatomy (Dentistry)

Semester course; 5.5 lecture and 8 laboratory hours. 7 credits. A systematic dissection and study of the human body with clinical correlation and emphasis on the head and neck.

ANAT 502 Microscopic Anatomy (Dentistry)

Semester course; 3 lecture and 6 laboratory hours. 6 credits. A study of the normal tissues and organs of the human body at the microscopic level, with emphasis on the histological organization and development of the oral cavity.

ANAT 503 Neuroanatomy (Dentistry)

Semester course; 1.5 lecture hours. 1.5 credits. This course provides the student with a broad exposure to the field of neuroanatomy. The structure and connections of the brain and spinal cord are stressed to prepare the student for dealing with physiological, pharmacological, and clinical aspects presented in other courses.

ANAT 505 Principles of Human Anatomy (Pharmacy)

Semester course; 2.5 lecture and 1.5 laboratory hours. 3 credits. The structure of the human body is surveyed by studying micro-, neuro-, and gross anatomy. Emphasis is placed on basic concepts and their application to various body components.

ANAT 509/PHIS 509/PHTX 509/NEUS 509 Cellular and Molecular Neuroscience

Semester course; 4 lecture hours. 4 credits. Prerequisite: Permission of instructor. Designed as an interdisciplinary introduction to the cellular and molecular aspects of central nervous system function. The basic principles of neuroscience including neuronal structure, electrical properties of single neurons, cell biology of neurotransmitter release and postsynaptic function will be discussed, followed by intracellular signaling in neurons, gene regulation, transgenic model systems, glia, neuronal development, basic neurochemistry, and molecular and cellular aspects of motor, sensory and integrative function. The course will conclude with lectures on various aspects of neural injury and disease, including traumatic brain injury, Parkinson's and Alzheimer's diseases.

ANAT 525 Advanced Functional Anatomy (Occupational Therapy)

Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisites: BIOL 205 or equivalent and permission of the instructor. A study of the anatomy and kinesiology of the human body using prosected specimens and the dissected cadaver. Emphasis is placed on the study of the extremities, particularly the hand.

ANAT 529 Functional Neuroanatomy

Semester course; 2 laboratory hours. 1 credit. Prerequisites: ANAT 525 and permission of instructor. Survey via models, computer programs, discussion of morphological and functional aspects of the human nervous system with emphasis on sensory integration and motor activity.

ANAT 609 Gross and Developmental Anatomy

Semester course; 4 lecture and 10 laboratory hours. 9 credits. A dissection and macroscopic study of the human body, with clinical correlations.

ANAT 610 Neuroanatomy

Semester course; 4 lecture and 2 laboratory hours. 5 credits. A study of the structure, connections and function of the central nervous system. Laboratory sessions complement lecture presentations, emphasizing light microscopic and ultrastructural neurohistology, gross and sectional anatomy of the brain, and tracing of functionally related CNS connections.

ANAT 611 Histology

Semester course; 4 lecture and 2 laboratory hours. 5 credits. A study of the basic light and electron microscopic structure of cells, tissues, and organs. Emphasis on correlating structure with function.

ANAT 613 Advanced Studies in Anatomy

1-6 credits. An in-depth study in specific areas of anatomy: histology, gross anatomy, and neuroanatomy.

ANAT 615 Techniques in Neuroscience and Cell Biology

Semester course; 2 lecture hours. 2 credits. Prerequisites: BIOC 503-504 or equivalent. Designed to provide in-depth coverage of techniques commonly used in neuroscience and cell biology. Topics include tissue processing for light and electron microscopy, immunocytochemistry, laser confocal microscopy, protein purification and analysis, molecular approaches to the study of the nervous system, genetic manipulation of protein expression, gene arrays, transgenic and knockout animal modes, and electrophysiological techniques including single and multi-unit extracellular recording, sharp intracellular recording and patch clamp recording. Consists of one two-hour meeting per week. Graded as "S," "U" or "F."

ANAT 617 Developmental Neurobiology

Semester course; 4 lecture hours. 4 credits. Prerequisite: ANAT 509/ PHTX 509/ PHIS 509 or equivalent. The course is designed to expose students to the fundamental mechanisms underlying the development of the central nervous system, including patterning, birth and death of neurons, axon guidance, formation, maintenance and plasticity of synaptic connections and glial biology. Emphasis will be on the cellular and molecular aspects of these topics. The course consists of one meeting a week devoted to lectures (two one-hour lectures) and a second meeting devoted to a student-led discussion of scientific papers (two one-hour discussion meetings).

ANAT 690 Anatomy Research Seminar

1 lecture hour. 1 credit. A course consisting of faculty and student-led seminars presenting current research in neurobiology, immunobiology, and reproductive biology.

ANAT 691 Special Topics in Anatomy

1-4 credits. Lectures, seminars, tutorial sessions, and/or library research assignments in selected areas of advanced study not available in other graduate level anatomy courses, or as concentrated emphasis on a particular area of research.

ANAT 697 Directed Research in Anatomy

1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Biochemistry(BIOC)

BIOC 403/CHEM 403 Biochemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and CHEM 301-302, or equivalents with permission of instructor. A presentation of structural biochemistry, enzymology, biophysical techniques, bioenergetics and an introduction to intermediary metabolism.

BIOC 404/CHEM 404 Advanced Topics in Biochemistry

Semester course; 2 lecture hours. 2 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L, 102L and CHEM 301-302, and CHEM/BIOC 403, or equivalents with permission of instructor. Presentations of cellular, molecular and structural aspects of biochemistry. Selected topics of biomedical research.

BIOC 501/BIOC 523 Biochemistry (Pharmacy and Dentistry Core Biochemistry Course)

Continuous course; 3 lecture hours plus clinical correlations. 3 credits. Prerequisite: CHEM 301-302 or equivalent, organic chemistry and three credits of physical chemistry, or permission of the course director. An undergraduate course in biochemistry is highly recommended. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as part of the fundamental background of modern pharmacy and dentistry is presented.

BIOC 502 Biochemistry (Medicine)

Semester course; 3 lecture hours. 3 credits. Enrollment restricted to students accepted in the School of Medicine. An introduction of structural biochemistry, intermediary metabolism, cell biology and methods of biochemical analysis as part of the fundamental background of modern medicine.

BIOC 503-504/MICR 503-504 Biochemistry, Cell and Molecular Biology

Continuous courses; 5 lecture hours. 5 credits. Prerequisites: undergraduate organic and physical chemistry, or permission of instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

BIOC 505-506 Experimental Biochemistry

Continuous courses; 4 laboratory hours. 2 credits. Prerequisite: BIOC 503 (or concurrent) or equivalent quantitative chemistry. Laboratory work, including theory and practice of advanced biochemical research methods.

BIOC 507 Bioorganic Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of the instructor. Study of structure, chemistry, and mechanism of small, biologically important molecules.

BIOC 510 Radiation Safety

Semester course; 15 lecture hours. 1 credit. Provides basic principles for the safe use of radioactive materials in biological research and meets the minimum training requirements set forth for responsible investigators in the university's Nuclear Radiation License. Offered on a demand basis (2-4 times or approximately 20 students per year).

BIOC 516C Human Nutrition

Semester course; 3 lecture hours. 3 credits. This off-campus survey course is designed for secondary school health and physical education, and biology teachers as well as others who wish to expand their knowledge of nutrition. The course involves core as well as current issues in human nutrition and primarily involves a series of interdisciplinary lecture/discussions. Topics include: description of the biochemistry and physiology of food components and nutrients; the accepted recommendations relating to health, nutrition and exercise, physical fitness and athletic performance; as well as topics related to eating disorders; growth and development; nutrition misinformation; nutrition and health issues.

BIOC 523/BIOC 501 Biochemistry (Pharmacy and Dentistry Core Biochemistry Course)

Continuous course; 3 lecture hours plus clinical correlations. 3 credits. Prerequisite: CHEM 301-302 or equivalent, organic chemistry and three credits of physical chemistry, or permission of the course director. An undergraduate course in biochemistry is highly recommended. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as part of the fundamental background of modern pharmacy and dentistry is presented.

BIOC 524 Biochemistry (Pharmacy)

Continuous courses; 2 lecture hours. 2 credits. Prerequisites: BIOC 501 or 523. Specialty topics in biochemistry are presented in the spring semester as part of the fundamental background of modern pharmacy.

BIOC 601 Membranes and Lipids

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOC 503-504. Comprehensive presentation of important areas in biological membrane research. Key topics include techniques in the study of membrane lipids and proteins, "order" and organization in membranes, transport, receptors and cell surface antigens, physical measurements in membranes, reconstituted systems, and signal transduction.

BIOC 602 Physical Properties of Macromolecules

Semester course; 3 lecture hours. 2-4 credits. Prerequisite: BIOC 503-504 and physical chemistry. Structure of macromolecular components and macromolecules; biophysical approaches to the determination of structure.

BIOC 604 Enzymology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOC 503-504. Physical and chemical properties and mechanisms of action of enzymes. Treatment of chemical catalysis, enzyme kinetics, and correlation of enzyme structure to mechanisms.

BIOC 605 Molecular Biology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate chemistry or biochemistry. An advanced course on molecular biology. Eukaryotic replication, transcription, RNA processing, control of gene expression, translation, cell cycle, oncogenes and tumor suppressors, viral vectors, and gene therapy.

BIOC 606 Biochemical Control Processes

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOC 503-504 and permission of instructor. An advanced course on aspects of control mechanisms and cellular communication: current concepts of signal transduction.

BIOC 610 Current Trends in Biochemistry

Semester course; 2 lecture hours. 2 credits. Prerequisites: BIOC 503-504. A study and literature review of common and complex biochemical substances using recent research methodology.

BIOC 690 Biochemistry Seminar

Semester course; 1 credit. Reports on recent biochemical literature and research by students and staff.

BIOC 691 Special Topics in Biochemistry

Semester course; 1-4 credits. Lectures, tutorial studies and/or special assignments in selected areas of advanced study not available in other courses or as part of research training.

BIOC 697 Directed Research in Biochemistry

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Biostatistics(BIOS)

BIOS 513-514/STAT 513-514 Mathematical Statistics I-II

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MATH 307. Probability, random variables and their properties, distributions, moment generating functions, limit theorems, estimators and their properties; Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

BIOS 516 Biostatistical Consulting

Semester course; 1 lecture hour. 1 credit. The principles dealing with the basic art and concepts of consulting in biostatistics. The nonstatistical course discusses role, responsibilities of biostatisticians, relationship between clients and consultants, method of writing reports, etc.

BIOS 523/STAT 523 Nonparametric Statistical Methods

Semester course; 3 lecture hours. 3 credits. Prerequisites: Any two courses of statistics or permission of instructor. Estimation and hypothesis testing when the form of the underlying distribution is unknown. One-, two- and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables and coefficients of association.

BIOS 524 Biostatistical Computing

Semester course; 3 lecture hours. 3 credits. Techniques for biostatistical computing are presented by way of contemporary statistical packages. Students learn how to create and manage computer data files. Methods for data entry, preparation of data for analysis and summaritive procedures are covered. Students learn the basics of random number generation and its applications, numerical methods for statistical algorithms, and concepts of numerical accuracy and stability. Advanced topics include interactive matrix and macro languages. Emphasis is placed on computational methods and data management rather than on statistical methods and procedures.

BIOS 531 Clinical Epidemiology

Semester course; 3 lecture hours. 3 credits. This course is intended primarily for clinicians. Permission of the course coordinator is required for others interested in registering. Epidemiological concepts necessary for evidence based studies of medicine. Specific topics will include: cause and effect criteria, demographic rates, measures of association or effect, study designs, decision trees, meta-analysis, evaluation of the literature, sources of data, reliability and validity, bias, confounding and effect modification, screening and diagnostic tests, sensitivity, specificity, false positives, false negatives, applications of the above to diagnosis and treatment, treatment efficacy and improved patient care.

BIOS 543/STAT 543 Statistical Methods I

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis, and statistical measures; variation, sampling, and sampling distributions; point estimation, confidence intervals, and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance, and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit. Students may not receive degree credit for both STAT 541 and STAT 543. STAT 543 is not applicable toward the M.S. degree in mathematical sciences or the M.S. degree in computer science.

BIOS 544/STAT 544 Statistical Methods II

Semester course; 3 lecture hours. 3 credits. Prerequisite: One of the following: STAT 314, 541, 543 or equivalent. Advanced treatment of the design of experiments and the statistical analysis of experimental data using analysis of variance (ANOVA) and multiple-regression. Includes the use of a statistical software package for data analysis.

BIOS 546 Linear Models

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 513, 543 and 553. Introduction to generalized linear models with in-depth coverage of the Gaussian general linear model. Topics include distribution of quadratic forms under normal theory; general linear model of full rank and less than full rank; least squares and maximum likelihood estimation; hypothesis testing; multivariable regression; analysis of variance, balanced and unbalanced designs; random and fixed effects; robust regression.

BIOS 553-554 Applied Statistics

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites: MATH 200-201 or equivalent, one course in statistics and permission of instructor. Introduces applied statistics of biostatistics intended primarily for graduate students in the Department of Biostatistics. Reviews elementary probability, theory and frequency distributions, sampling theory, principles of inference, one and two sample problems. ANOVA. Principles of experimental design. Variance components. Multiple comparison procedures. Block designs and Latin Squares. Nested ANOVA. Multiway ANOVA. Correlation and regression analysis. Multiple regression. Nonlinear regression. ANCOVA. MANOVA. Repeated measures.

BIOS 567 Statistical Methods for Microarray Data

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOS 513, 524 and 553. Provides a detailed overview of all aspects pertaining to the preprocessing of microarray data including image analysis, normalization techniques, gene expression summaries, quality control assessments and gene filtering methods. Presents strategies for class discovery and feature selection. Includes hands-on experience using statistical software for processing and analyzing microarray data.

BIOS 571 Clinical Trials

Semester course; 3 lecture hours. 3 credits. Concepts of data management and statistical design and analysis in single-center and multicenter clinical trials. Data management topics include the collection, edition, and validation of data. Statistical design topics include randomization, stratification, blinding, placebo- and active-control groups, parallel and crossover designs, and power and sample size calculations. Statistical analysis topics include sequential and group sequential methods.

BIOS 572 Statistical Analysis of Biomedical Data

Semester course; 3 lecture hours. 3 credits. Statistical methodology for data sets frequently encountered in biomedical experiments. Topics include analysis of rates and proportions, epidemiological indices, frequency data, contingency tables, logistic regression, life-tables and survival analysis.

BIOS 581 Applied Multivariate Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOS 544 or 554. Focuses on multivariate statistical methods, including Hotelling's T-square, MANOVA, multivariate multiple regression, canonical correlation, discriminant analysis, partially and blocking, multivariate outliers, components and factor analysis, and GMANOVA. Presumes the material in BIOS 543-544 or BIOS 553-554, including a matrix approach to multiple regression.

BIOS 615-616 Advanced Inference

Continuous courses; 4 lecture hours. 4 credits. Prerequisites: BIOS 514 and MATH 508, or permission of instructor. Mathematical preliminaries: probability and measure; integration; modes of convergence. Decision theoretical approach to statistical inference; decision rules; admissibility. Bayes and minimax procedures, invariance; complete classes. Point estimation; unbiasedness; efficiency; M, L, and R estimators; U statistics. Hypothesis testing: the Neyman-Pearson theory; unbiasedness and invariant tests; conditional tests; permutation tests; rank tests; likelihood based tests. Interval estimation; confidence sets; relationship between confidence sets and families of tests; unbiased and invariant confidence sets. Asymoptotics; stochastic convergence; statistical limit theorems; ARE; asymptotic likelihood based procedures. Overview of robust statistical procedures.

BIOS 625 Analysis of Categorical Data

Semester course; 4 lecture hours. 4 credits. Prerequisites: BIOS 514, 554 and 572. Introduction to the theory and methods of analysis of binomial and multinomial data. Topics include exact and asymptotic analysis of contingency tables; measures of association and agreement; modeling approaches including logistic regression, loglinear models, tests; invariance, MANOVA, GMANOVA, and multiple design models, nonparametric methods; inference with covariance matrices; principal components; factor analysis; discriminant analysis; clustering; multidimensional scaling.

BIOS 631 Multivariate Analysis I

Semester course; 4 lecture hours. 4 credits. Prerequisites: BIOS 514, 546 and 554. Introduction to the multivariate distributions; sampling, estimation and inferences for multivariate normal model. Multivariate theory and applications of the normal mixed models, generalized linear mixed models, mixed models for categorical data, nonlinear mixed models and multiple imputation methods for missing data. Multivariate applications of the generalized estimating equations.

BIOS 632 Multivariate Analysis II

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOS 631. One- and two-sample multivariate tests; invariance: MANOVA, MANCOVA and multiple design models; nonparametric methods; inference with covariance matrices; principal components; factor analysis; discriminate analysis; clustering.

BIOS 638-639 Statistical Design and Analysis in Toxicology

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisites for BIOS students: BIOS 514 and 554. Prerequisite for non-biostatistics students (who can enroll on a Pass/Fail basis): BIOS 554. Classical bioassay, dose-response relationships, continuous and quantal data; probit and logit analysis; estimation of the ED50; combination experiments; low dose extrapolation and risk assessment; carcinogenicity, mutagenicity, and teratogenicity screening; overview of laboratory and experimental problems for the toxicologist. Non-biostatistics students may enroll on a pass/fail basis.

BIOS 646 Generalized Linear Models

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 514 and BIOS 546. Theory and applications of generalized linear models. Topics include theory of the exponential family of distributions, maximum likelihood estimation and related numerical methods, likelihood-based inference, linear models with different link functions and distributions, model fitting and diagnostics, quasi-likelihood, correlated data, generalized estimating equations and generalized additive models. Practical examples from biomedical applications will be presented.

BIOS 647 Survival Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 514 and 554. The analysis of survival (or failure time) data, with/without censoring. Actuarial and life-table methods, nonparametric and parametric estimation of survival functions, and comparison of survival curves; regression methods, such as the Cox proportional hazards model; competing risks; sequential models; applications to clinical trails.

BIOS 650 Design and Analysis of Response Surface Experiments

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 546 and 554. Philosophy, terminology, and nomenclature for response surface methodology, analysis in the vicinity of the stationary point, canonical analyses, description of the response surfaces, rotatability, uniform information designs, central composite in design, and modern design criteria.

BIOS 660 Sequential Analysis and Advanced Design and Analysis of Clinical Trials

3 lecture hours. 3 credits. Prerequisites: BIOS 514 and 554. Sequential methods versus fixed sample methods; the sequential probability ratio test with extensions and modifications; some applications of Cox's theorem; overview of analysis of clinical trials; closed and truncated tests; group sequential tests in clinical trials; sequential monitoring; sequential estimation; other topics with emphasis in clinical trials.

BIOS 667 Advanced Data Analysis

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 514 and 554. Provides a detailed overview of statistical methods used to discover the underlying structure of large complex datasets. Particular emphasis, though not exclusive, is placed on applications of these methods to preprocessed microarray data. Includes bootstrap methods, non-parametric regression, classification and regression trees, neural networks, and support vector machines. The course includes hands-on experience using statistical software for each method.

BIOS 671 Nonlinear Models

Semester course; 3 lecture hours. 3 credits. Nonlinear modeling is an important tool for biostatisticians working with clinical and pre-clinical applications of dose responsiveness. Addresses issues regarding estimation, inference and experimental designs associated with nonlinear models. Special attention is paid to sigmoid-shaped models and threshold or piecewise models. Both the generalized nonlinear least-squares and quasi-likelihood estimation criteria are developed for these models. In addition to the usual univariate data structure, nonlinear mixed models are described and illustrated with examples. Includes hands-on experience with available SAS software for data analyses.

BIOS 690 Biostatistical Research Seminar

Semester course; 1 lecture hour. 1 credit. Talks by the students, faculty, and visitors describing recent research or reviewing topics of mutual interest.

BIOS 691 Special Topics in Biostatistics

Semester course; lecture and laboratory hours by arrangement. 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized biostatistical procedures not available in other courses or as part of the research training.

BIOS 697 Directed Research in Biostatistics

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Epidemiology and Community Health(EPID)

EPID 511 Industrial Hygiene: Hazard Identification and Evaluation

Semester course; 3 lecture hours. 3 credits. Basic concepts include identification and evaluation of toxic substances and physical agents in the workplace and in the environment, health effects of chemicals, epidemiology, toxicology, biological monitoring, dermatosis, air sampling and regulatory aspects.

EPID 512 Industrial Hygiene: Methods of Hazard Control

Semester course; 3 lecture hours. 3 credits. Describes methods of control of occupational and environmental hazards including engineering controls, work practices, administrative controls, personal protective equipment, respiratory protection through the use of respirators and ventilation systems. Ergonomic hazards, noise, hot and cold environments, and radiation also will be addressed.

EPID 521 Regulation of Toxic Substances

Semester course; 3 lecture hours. 3 credits. This course introduces the student to the administrative law and policy issues. This course examines the Clean Water Act, Clean Air Act, Resources Conservation & Recovery (RCRA), Federal Facility Compliance Act, Comprehensive Environmental Response, Compensation & Liability Act (CERCLA-Superfund), Toxic Torts; Real Estate Issues; Recovery of Money Damages; Criminal Law, Occupational & Mine Safety & Health Acts (OSHA/MSHA), Workman's Compensation; Occupational Disease; Victim Compensation, Safe Drinking Water Act; Pollution Prevention Act, Food Drug & Cosmetic Act, RCRA & Superfund Regulations & Case Law; State Hazwaste/Superfund Programs, Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA); Lead Based Paint Poisoning Prevention Act, Radiation Law & Regulation; Transportation, Marine Sanctuaries Act; International Environmental Law.

EPID 531/BIOS 531 Clinical Epidemiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Must have completed statistics course before being given permission to take epidemiology course with permission of instructor. A survey course which focuses on the concepts of epidemiology and its role in risk assignment. This course will distill the underlying theory and the principles used by epidemiologist. The course will introduce the sources and uses of vital data, their conversion into morbidity and mortality rates and indices. Procedures such as age standardization and abridged life table will be introduced, as will concepts of disease transmission, epidemiology and various summary statistics. The Surgeon General's criteria for causation will be examined, designs in epidemiological research reviewed, and the use and limitations for epidemiological data in risk assessment described. Students should have a current VAX account and some background in mathematics and elementary statistics.

EPID 533 Contemporary Issues in Addiction Prevention and Treatment

Semester course; 3 lecture hours. 3 credits. This course is required for students in the addiction studies track of the MPH Program. Covers important contemporary issues regarding substance addiction, including such items as current theories of prevention interventions, the economics of addiction treatment, addiction in adolescents and evidence-based practices for prevention and treatment. Students will hear from a variety of professionals working in the addiction field.

EPID 541 Principles of Waste Management

Semester course; 3 lecture hours. 3 credits. Design and operation of waste treatment, storage, disposal and control processes will be covered. Design tanks, landfills, and incinerators will be discussed in detail. Data acquisition and interpretation methods needed for process control and monitoring will be examined.

EPID 543 Statistical Methods I

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis, and statistical measures; variation, sampling and sampling distributions; point estimation, confidence intervals and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance and multiple comparisons; correlation and simple linear regression analysis; contingency tables and tests for goodness of fit. Students may not receive degree credit for both STAT 541 and STAT 543. STAT 543 is not applicable toward the M.S. degree in mathematical sciences or the M.S. degree in computer science.

EPID 555 Bioterrorism and Public Health Preparedness

Summer course (eleven weeks); 3 lecture hours. 2 credits. This graduate-level course examines public health, legal, medical and surgical issues related to terrorism examining biological, chemical and radiation agents and the prevention and response efforts of local, state and federal systems and agencies.

EPID 571 Epidemiology I: Principles of Epidemiology

Semester course; 3 lecture hours. 3 credits. Co- or prerequisite: BIOS 543. Offers the theoretical foundations, concepts and principles of epidemiological research methods utilized to examine the distribution and determinants of diseases or other health problems. Entails understanding of measures of disease frequency and association, descriptive and analytic studies, community surveys, sampling, bias, confounding surveillance, outbreak investigation, screening and research proposal writing. Also provides basic foundations for data analysis and its translation into health care planning, management and policy formulation.

EPID 583 Industrial Ventilation

Semester course; 3 lecture hours. 3 credits. Principles of design and evaluation of local exhaust systems. Principles of airflow, characteristics of pressure losses, and selection of air cleaners and air moving.

EPID 600 Introduction to Public Health

Semester course; 3 lecture hours. 3 credits. Describes the public health system in the United States. Explores the disease prevention and philosophy and foundations of public health management, economics, law, ethics and education. Examines the use of epidemiology and statistics to determine personal, environmental, and occupational health problems.

EPID 602 Public Health Organization and Management

Semester course; 3 lecture hours. 3 credits. Addresses management and organizational issues in regard to public health agencies. Students will learn about the different models for structuring public health agencies, personnel management issues, evidence-based public health program planning, financing and budgeting issues.

EPID 603 Public Health Policy and Politics

Semester course; 3 lecture hours. 3 credits. Provides an understanding of the public health policy development process, the influence of politics and special interest groups on this process, and current governmental policies for the provision of major public health services. The legislative process is a major focus of the course.

EPID 604 Principles of Occupational and Environmental Health II

Semester course; 3 lecture hours. 3 credits. Basic principles of occupational and environmental health are presented, with emphasis on biological, chemical, and physical factors that influence human health. Current workplace and public health safety and regulatory issues are emphasized.

EPID 605 Epidemiology of Health Behaviors

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 543 and PMCH 571. Provides an overview of the epidemiology of specific health-related behaviors, the relationships between these behaviors and health outcomes, and available evidence for the effectiveness and appropriateness of various approaches to modification of these behaviors. This material will be covered in the contexts of theories of health-related behavior and of methodological issues concerning the assessment of these behaviors and their relationships to outcomes of interest. The applicability of this material to underserved populations will be emphasized. The course format, as far as possible, will be that of an interactive seminar.

EPID 606 Epidemiology II: Epidemiologic Methods

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 543 and EPID 571. Focuses on examining the design, conduct and analysis of major epidemiologic studies and the methods to deal with the problems of bias, confounding and effect modification; using multivariate modeling techniques focusing on applications of logistic regression and Cox proprtional hazards models to answer relevant research questions; solving meta-analytic problems using fixed and random effects models; understanding specific research areas of disease screening and exposure assessment; writing a research paper based on literature review and data analyses of a large dataset demonstrating application of essential epidemiologic abd biostatistical principles.

EPID 607 Nutritional Epidemiology

Semester course; 3 lecture hours. 3 credits. This course focuses on methods of measuring exposures to dietary factors for epidemiological investigations of diet-disease relationships and risk assessment. An introductory course in basic epidemiology is a prerequisite. Students learn to select the most appropriate method(s) of collecting and analyzing food intake and to evaluate the adequacy of dietary assessment methods used in published epidemiological studies.

EPID 608 Politics and Policy Planning for Addiction

Semester course; 3 lecture hours. 3 credits. Provides students of differing backgrounds with an understanding of the process by which national addiction health policy is formed and reformed using controlled pharmaceutical product development examples. Examines competing interests of the three branches of government as that policy is formed and the interplay of those interests during the process.

EPID 610 Environmental and Occupational Epidemiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOS 543 and PMCH 571. This course is designed to provide students with an overview of the principles, methods and content of environmental and occupational epidemiology with a focus on designing, conducting, and interpreting studies on the effects of chemical and physical agents. Students will critique published occupational and environmental epidemiology studies, learn how to evaluate the potential for cause-effect relationships, and become familiar with the role of epidemiology in human health risk assessment. Each session will include a seminar component where exercises are completed and/or published papers will be critiqued and discussed.

EPID 615 Public Health Issues and Interventions in Communities of Color

Semester course; 3 lecture hours. 3 credits. This course is an overview of many critical psychological, social, cultural, demographic, biological, and other factors that influence lifestyle and disease susceptibility among minority status ethnic groups and other medically underserved populations in the United States. A lecture/discussion seminar format will be used, along with readings, student presentations and guest lecturers working in the field, to: (1) improve the students' understanding of the underpinnings of health status differences across communities; and (2) provide students with tools that can be used in developing effective interventions to address the maldistribution of health risk behavior and disease burden.

EPID 616 Public Health Education

Semester course; 3 lecture hours. 3 credits. Provides the student with an examination of theory and practice of public health education. This examination represents an overview of selected topics that are congruent to the Responsibilities and Competencies for Entry-Level Health Educators. Specifically, course content will be centered around assessing individual and community needs for health education programs, coordinating provision of health education services, acting as a resource person in health education, and communicating health and health education needs, concerns, and resources.

EPID 617 International Health

Semester course; 3 lecture hours. 3 credits. Provides an overview of and/or introduction to international health. Focus is on the relationship between external factors and the health of populations.

EPID 618 Public Health Law

Semester course; 3 lecture hours. 3 credits. Provides the student with the structure of the legal system and statutes and regulations governing state and local health departments. This course examines the federal public health laws, medical malpractice, privacy and confidentiality issues, mental health laws, abortion and sterilization, patients rights, emergency medical care law, human experimentation, rights of the terminally ill, AIDS law, occupational and environmental health law, and health planning and reimbursement law.

EPID 619 Intentional Injury

Semester course; 3 lecture hours. 3 credits. Examines the number, distribution, and impact of intentional injuries in the United States, as well as some of the crucial psychological, social, cultural, demographic, economic, biological, and other factors associated with their cause, control, and prevention. Through lectures and dialogue, expert panels, student presentations, reading, and other assignments, students are expected to become acquainted with theory and research findings from the behavioral sciences, behavioral epidemiology, public health, and other sources that are likely to contribute to: (1) a greater comprehension of the magnitude and complexities of violence and intentional injuries in American life and (2) advancements in our capacity to successfully confront this epidemic with public health and related measures.

EPID 620 Cancer Epidemiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: EPID 571. Covers general principles of carcinogenesis and the genetics of cancer; domestic and international patterns in cancer incidence and mortality; cancer surveillance and screening, and their relation to cancer prevention; epidemiologic characteristics and risk factors for cancers to the lung, breast, prostate, gastrointestinal tract, pancreas, bladder, endometrium, ovary, cervix and skin, as well as cancer in children and young adults; and the public health implications of cancer. Additional focus on critical evaluation of different methodological approaches used in cancer research and potential biases inherent given study designs.

EPID 621 Infectious Disease Epidemiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PMCH 571. This course will discuss the origins of epidemiology and how epidemiology methods are continually applied to the study of communicable diseases. Several infectious diseases will be studied in depth to show the progression toward characterization of the natural history of the diseases and how policies regarding prevention have been defined. Smallpox, HIV/AIDS, the hepatitis family of agents and a vector-borne disease will be studied. In addition, the topic of antibiotic resistance will be covered in depth. How the epidemiology of an infectious agent relates to bioterrorism also will be discussed.

EPID 622 Maternal and Child Health

Semester course; 3 lecture hours. 3 credits. Prerequisite: EPID 571. Exposes students to current issues in maternal and child health (MCH) primarily using a domestic perspective. Students will learn about key MCH topics including intergenerational risk factors, low birth weight, infant mortality, developmental disabilities and childhood obesity. Students will use epidemiological methods to evaluate MCH data to determine risk and protective factors for women and children, and describe how these data guide public health policy and program-planning efforts.

EPID 642 Advanced Epidemiological Protocol Design

Semester course; 3 lecture hours. 3 credits. Prerequisites: PMCH 571, PMCH 606, BIOS 553 and BIOS 554 Develops skills needed to design and describe in written format a valid and appropriate epidemiology study to address specific hypotheses. Hypotheses and possible design methods will be discussed in class and subsequently students will present (both orally and in written form) a research design to include a critical review of the literature and hypotheses to be tested. The proposal must address sample size and power, exposure definition, methods for accurate exposure assessment, prevention of measurement errors, and statistical methods proposed for analysis.

EPID 690 Journal Club

Semester course; 1 lecture hour. 1 credit. Talks given by students and faculty describing and critiquing recent published research or review articles. Graded as "S," "U" or "F."

EPID 691 Program Research Project

Semester course; 9 clinical hours. 1-6 credits. Each student will complete a research project that demonstrates the application of the knowledge acquired in the MPH Program. The student will answer one or more relevant research questions. The final product is a scholarly written report of publishable quality. A proposal must be submitted for approval and credits are assigned commensurate with the complexity of the project. Arrangements are made directly with the faculty adviser. Graded as "S," "U" or "F."

EPID 692 Public Health Internship

Semester course; 3 lecture hours. 1-3 credits. Prerequisite: EPID 571. Students will spend 180 hours in a planned, supervised experience with a community agency. Such agencies might include a local free clinic or other nonprofit organization such as The American Cancer Society, or a local or state health department or other public health agency.

EPID 693 Special Topics Research

Semester course; 3 lecture hours. 1-6 variable credits. This course provides the opportunity for students to explore a special topic of interest under the direction of a faculty member. A proposal must be submitted for this approval and credits are assigned commensurate with the complexity of the project. Arrangements are made directly with the appropriate faculty member and department chair.

EPID 697 Directed Research in Epidemiology

Semester course; 1-15 credits. Research leading to the Ph.D. degree. Graded as "S," "U" or "F."

Human Genetics(HGEN)

HGEN 501/BIOL 530 Human Genetics

Semester course; 3 credits. Prerequisites: BIOL 310 and CHEM 301, 302 and CHEZ 301L, 302L or equivalents. Emphasizes a broad approach, at an advanced level, to human genetics. Explores topics including cytogenetics, pedigree analysis, gene mapping, aneuploid syndromes, inborn errors of metabolism, neonatal screening, cancer, genetic engineering, behavior and intelligence, prenatal diagnosis and genetic counseling.

HGEN 502 Advanced Human Genetics

Semester course; 2-6 lecture hours. 2-6 credits. Prerequisite: HGEN 501 or equivalent. For human genetics graduate students only. A comprehensive study of the principles of specific areas in human genetics.

HGEN 511 Human Cytogenetics

Semester course; 3 lecture hours. 3 credits. Prerequisites: HGEN 501 and HGEN 502. A discussion of recent advances in human cytogenetics. Topics covered will include chromosome banding techniques and ultrastructure, meiosis, numerical and structural abnormalities, fragile sites, cancer cytogenetics, methodology for linkage studies, and population cytogenetics. Clinical cases are used to illustrate the application of special diagnostic methodologies.

HGEN 516/BIOL 516 Population Genetics

Semester course; 3 lecture hours. 3 credits. Genetic and ecological factors affecting normal and abnormal variation within and between populations of organisms.

HGEN 525-526 Practice of Genetic Counseling

Continuous courses; 3 lecture hours. 3-3 credits. Provides context for practice of genetic counseling through literature review and practical techniques. Places specific emphasis on pregnancy and childhood evaluation, interviewing techniques, social and ethical issues, including fieldwork in prenatal, general genetics and specialty clinics.

HGEN 527-528 Medical Genetics

Continuous courses; 3 lecture hours. 3-3 credits. Provides medical information and principles of human genetic disease with specific emphasis on the molecular basis of Mendelian disorders, disorders of sexual development, assessment of dysmorphic features, and the genetics of common diseases. Emphasizes the use of all available resource materials in genetics.

HGEN 600 Clinical Genetics

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: HGEN 501 or equivalent. Practical experience in the genetic counseling clinic and on ward rounds. Includes collection and analysis of family histories, genetic counseling, and introduction to genetic nosology.

HGEN 603 Mathematical and Statistical Genetics

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOS 543-544 or equivalent. Provides an introduction to the rudiments of theoretical and applied mathematical population genetics including the segregation of genes in families, genetic linkage and quantitative inheritance. Emphasizes the methods used in the analysis of genetic data.

HGEN 614 Human Biochemical and Molecular Genetics

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOC 503-504, equivalent, or permission of instructor. Surveys the mechanisms and varieties of human gene mutations resulting in human genetic disease and emphasizes different investigational disorders using current scientific literature.

HGEN 617 Genetic Analysis of Complex Traits

Semester course; 3 lecture hours. 3 credits. Prerequisite: Introductory biostatistics or permission of instructor. Introduces the theory and practice of analysis of complex human traits. Provides a solid grounding in the fundamental concepts, study designs and analytical strategies for this evolving and important area.

HGEN 619 Quantitative Genetics

Semester course; 3 lecture hours. 3 credits. The effects of genes and environment on complex human traits with emphasis on: Genetic architecture and evolution; nongenetic inheritance; mate selection; developmental change; sex-effects; genotype-environment interaction; resolving cause from effect; design of genetic studies, statistical methods and computer algorithms for genetic data analysis.

HGEN 620 Principles of Human Behavioral Genetics

Semester course; 3 lecture hours. 3 credits. The theory of genetic and nongenetic transmission considered in relation to the design, analysis, and interpretation of studies to identify the principal genetic and environmental causes of behavioral variation. Included will be analysis of intelligence, personality, social attitudes, and psychiatric disorders.

HGEN 622 Cancer Genetic Counseling

Semester course; 3 lecture hours. 3 credits. Provides a background in as well as the most current information relevant to cancer genetics and cancer genetic counseling. Includes instruction in basic science and genetic and psychosocial aspects of cancer, with an emphasis on familial and hereditary cancers.

HGEN 631 Advanced Dental Genetics

Semester course; 1 lecture hour. 1 credit. This course follows HGEN 531 and provides instruction on the genetic basis for craniofacial and dental anomalies, caries and periodontal disease. Topics also include genetic consultation and ethical, legal and social issues surrounding genetic testing.
Effective Spring 2007 < p > < b > HGEN 673 Dental Genetics < /b > < br > Semester course; 1 lecture hour. 1 credit. A 1 credit hour course on topics in human genetics with application to clinical dentistry. Enrollment is limited to students in the DDS program. Enrollment is limited to students in the DDS program. Graded as P/F. < /p >

HGEN 690 Genetics Research Seminar

Semester course; 1 lecture hour. 1 credit. Selected topics in genetics presented by students and staff.

HGEN 691 Special Topics in Genetics

1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of the research training.

HGEN 697 Directed Research in Genetics

1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Microbiology and Immunology(MICR)

MICR 365 Infection and Immunity (Dental Hygiene)

Semester course; 2 lecture hours. 2 credits. A study of infectious diseases and the immune system of humans with emphasis on the distribution properties and roles of pathogenic microorganisms and the varied responses of the host, with emphasis on oral pathologies. Principles of prevention, control, and chemotherapy of infectious diseases are major components of the course.

MICR 501 Infection and Immunity (Pharmacy)

Semester course; 4 lecture hours. 4 credits. Offered to pharmacy students in the first professional year. Others admitted with permission of instructor. A course on the fundamentals of microbiology and immunology with aspects on disease and treatment of interest to dentistry and pharmacy.

MICR 503-504/BIOC 503-504 Biochemistry, Cell and Molecular Biology

Continuous courses; 5 lecture hours. 5 credits. Prerequisites: undergraduate organic and physical chemistry, or permission of the instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

MICR 505 Immunobiology

Semester course; 3 lecture hours. 3 credits. A survey of immunobiology as a total host response to foreign agents, covering the nature of antigens and antibodies, antigen-antibody reactions, immunocompetent cells, allergic reactions, tumor immunology, transplantation immunology, immunological diseases and immunogenetics.

MICR 507 Techniques in Molecular Biology and Genetics

Semester course; 2 lecture hours. 2 credits. Prerequisite: BIOC/MICR 503-504 or equivalent, permission of instructor. Designed to give an overview of the techniques utilized in modern molecular biology. The principles underlying techniques such as plasmid and phage cloning, RNA and DNA analysis, PCR, DNA sequencing, mutagenesis, genomic mapping, heterologous gene expression, and production and analysis of recombinant protein and transgenic mouse technology will be discussed in detail by experts in the field.

MICR 508-509 Introduction to Microbiology and Immunology Research

Continuous courses; lectures and 4 laboratory hours. 3-3 credits. Prerequisite: Permission of instructor. Required of all first-year graduate students. Introduction to all active research programs in microbiology and immunology. Presentations of research programs by investigators and rotation of students through faculty laboratories to gain direct exposure to individual research projects.

MICR 510 Scientific Integrity

Semester course; 1 lecture hour. 1 credit. A survey of contemporary issues relating to responsible conduct in research. Topics include academic integrity, mentoring, authorship and peer review, use of humans and animals in biomedical research, ownership of data, intellectual property, conflict of interest, scientific record keeping, collaborative research, research misconduct and genetic technology.

MICR 512 Laboratory Safety

Semester course; 1 lecture hour. 1 credit. Describes health hazards commonly found in biomedical laboratories and their appropriate safety precautions, government regulations and emergency responses. Includes hazards of working with micro-organisms, experimental animals, and chemical, electrical and fire hazards.

MICR 513 Infection and Immunity (Dentistry)

Semester course; 4 lecture hours. 4 credits. Offered to dental students in the first professional year. Others admitted with permission of instructor. A course on the fundamentals of microbiology and immunology with aspects on disease and treatment of interest to dentistry and pharmacy.

MICR 515 Principles of Molecular Microbiology

Semester course; 3 lecture hours. 3 credits. A comprehensive course designed to provide the student with a thorough understanding of microbial physiology, genetics and diversity. Also covered are some basic concepts in microbial pathogenesis and in applied microbiology. The course focuses on structural and functional characteristics of micro-organisms; ecological and physiological diversity of microbes; growth and control of micro-organisms; genetics of bacteria and viruses; bacteria as agents of disease; and applications of microbiology.

MICR 516 Mechanisms of Viral and Parasite Pathogenesis

Semester course; 3 lecture hours. 3 credits. A comprehensive introduction to the basic principles of virology and human parasitology. Interactions of the infecting agents and hosts will be stressed at the molecular and cellular level.

MICR 518 Molecular Mechanisms of Bacterial Pathogenesis

Semester course; 3 lecture hours. 3 credits. Prerequisites: undergraduate-level courses in microbiology or microbial physiology, immunology and molecular genetics. The goals of this comprehensive course are to explore in detail the virulence mechanisms of microbes and the response of the infected host. The focus will be on important bacterial pathogens.

MICR 605 Prokaryotic Molecular Genetics

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOC/MICR 503-504 and MICR 515 or permission of instructor. A comprehensive introductory course examining the organization of the genetic material in bacteria and their viruses and the molecular mechanisms involved in its maintenance, replication, exchange and expression. Emphasis will be on experimental approaches integrating classical and modern methods of genetic analysis with biochemical studies of genetic regulatory mechanisms.

MICR 606 Molecular Biology and Genetics

Semester course; 3 lecture hours. 3 credits. Prerequisites: undergraduate organic and physical chemistry, or permission of instructor. A comprehensive introductory course that describes the structure of the genetic material and the molecular mechanisms involved in its maintenance, replication, transmission and expression. Emphasis on experimental approaches integrating genetics and biochemistry in the studies of molecular genetics in prokaryotic and eukaryotic cellular and viral systems.

MICR 653/BNFO 653 Advanced Molecular Genetics: Bioinformatics

Semester course; 3 lecture hours. 3 credits. Prerequisites: MICR/BIOC 503, MICR/BIOC 504 and permission of instructor. An advanced course on contemporary bioinformatics. Topics covered include the principles and practice of DNA, RNA and protein sequence analysis, computational chemistry and molecular modeling, expression array analysis and pharmacogenomics. The course includes lectures, reading, computer lab, homework problem sets and projects.

MICR 686 Advanced Immunobiology

Semester course; 2 lecture hours. 2 credits. Open primarily to residents, medical students and graduate students with an immunology background such as MICR 505. Lectures, seminars and conferences on basic and clinical immunobiology. Topics have included tumor immunology, cell interactions in the immune response, genetics of the immune response, mechanisms of host-defense and membrane receptors in immunology and neoplasia.

MICR 690 Microbiology Research Seminar

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the departmental seminar or special group seminars.

MICR 691 Special Topics in Microbiology

Semester course; 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

MICR 692 Current Topics in Molecular Pathogenesis

Semester course; 1 lecture hour. 1 credit. Open to all graduate and certificate students. Presents a forum for the discussion of recent advances in the study of the molecular mechanisms of microbial pathogenesis. Consists of presentations by students, postdoctoral fellows and faculty followed by interactive discussions of the implications of presented work to the study of molecular pathogenesis.

MICR 697 Directed Research in Microbiology

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective research projects for other students.

Neurosciences(NEUS)

NEUS 509/PHTX 509/ANAT 509/PHIS 509 Cellular and Molecular Neuroscience

Semester course; 4 lecture hours. 4 credits. Prerequisite: Permission of instructor. Designed as an interdisciplinary introduction to the cellular and molecular aspects of central nervous system function. The basic principles of neuroscience including neuronal structure, electrical properties of single neurons, cell biology of neurotransmitter release and postsynaptic function will be discussed, followed by intracellular signaling in neurons, gene regulation, transgenic model systems, glia, neuronal development, basic neurochemistry, and molecular and cellular aspects of motor, sensory and integrative function. The course will conclude with lectures on various aspects of neural injury and disease, including traumatic brain injury, Parkinson's and Alzheimer's diseases.

Pathology(PATH)

PATH 445/FRSC 445 Forensic Toxicology

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 101-102, CHEZ/FRSZ 101L; CHEM 301-302 and CHEZ 301L. Provides a comprehensive overview of the basic principles of toxicology and the practical aspects of forensic toxicology. Students will learn to define the toxic agents most commonly resulting in legal problems in U.S. society and also the process by which the U.S. judicial system is aided by scientific investigation.

PATH 521 Laboratory Techniques in Diagnostic Pathology

Semester course; 3 lecture hours. 3 credits. This team taught course includes principles of automated and non-automated testing, diagnostic testing, and an active laboratory demonstration of each method.

PATH 540 Pathology for Allied Health Sciences

Semester course; 1.5 lecture and 1 laboratory hours. 2 credits. Explores morbid tissue changes involved in selected disease states, with emphasis on musculoskeletal and nervous systems. Provides the foundation to understanding clinical problems that physical therapists and other paramedical personnel will encounter and treat in their patients.

PATH 590 Experimental Pathology Seminar

Semester course; 1 lecture hour. 1 credit.

PATH 601 General Pathology (Dentistry)

Semester course; 6 lecture hours. 6 credits. Instruction in the basic principles regarding alteration of structure and function in disease and in the pathogenesis and effect of disease in the various organ systems.

PATH 620 Special Topics in Modern Instrumental Methods

Semester course; 1 lecture and 2 laboratory hours. 2 credits. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studies.

PATH 670 Experimental Approaches to Tumor Biology

Semester course; 3 lecture/discussion hours. 3 credits. Introduces central problems in tumor biology and the methods available for their study. Develops through lectures and presentations skills in critical review and interpretation of research reports.

PATH 690 Clinical Chemistry Seminar

Semester course; 1 lecture hour. 1 credit. Graduate students, residents, and staff present topics of current interest in clinical chemistry.

PATH 691 Special Topics in Modern Instrumental Methods

Semester course; 1 lecture and 2 laboratory hours. 2 credits. By special arrangement with instructor. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studied.

PATH 697 Research in Pathology

Semester course; 1-15 credits. Research leading to Ph.D. degree and elective research projects for other students.

Physiology(PHIS)

PHIS 206 Human Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: A "C" grade or better in BIOL 101 and 101L or equivalent. Functioning of the human body with emphasis on experimental procedures. Not applicable toward biology major.

PHIS 309 Introductory Quantitative Physiology I

Semester course; 3 lecture hours and 3 laboratory hours. 4 credits. Prerequisite: Calculus at the level of MATH 200 and MATH 201. The course is intended for majors in Biomedical Engineering. Other students may enroll with permission of the instructor. This course is a survey course in physiology with emphasis on physical principles. It is a systems analysis of cellular anatomy, physiology and biochemistry which leads into analysis of the nervous system, musculoskeletal system and the digestive system. It is meant to be taken as part of a two-semester series with PHIS 310.

PHIS 310 Introductory Quantitative Physiology II

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: Calculus at the level of MATH 200 and MATH 201 and PHIS 309. The course is intended for majors in biomedical engineering. Other students may enroll with permission of the instructor. This course is the second semester of a survey course in physiology with emphasis on physical principles. It includes a systems analysis of the cardiovascular, respiratory, renal and endocrine systems. It is meant to be taken as part of a two-semester series with PHIS 309.

PHIS 461 Introduction to Human Physiology

3 lecture hours. 3 credits. Prerequisites: Biology, general chemistry, and human anatomy. An introductory course to human physiology based on an analysis of organ systems.

PHIS 501 Mammalian Physiology

Semester course; 5 lecture hours. 5 credits. Prerequisites: Biology, chemistry, and physics. A comprehensive study of the function of mammalian organ systems, designed primarily for graduate students.

PHIS 502 Physiology and Pathophysiology (Dentistry)

Semester course; 5 lecture hours. 5 credits. Prerequisites: biology, chemistry and physics. A comprehensive study of the function of mammalian organ systems, designed primarily for dental students.

PHIS 506 Mammalian Physiology (Pharmacy)

Semester course; 5 lecture hours. 5 credits. A comprehensive study of the function of mammalian organ system, designed primarily for pharmacy students.

PHIS 509/ANAT 509/PHTX 509/NEUS Cellular and Molecular Neuroscience

Semester course; 4 lecture hours. 4 credits. Prerequisite: Permission of instructor. Designed as an interdisciplinary introduction to the cellular and molecular aspects of central nervous system function. The basic principles of neuroscience including neuronal structure, electrical properties of single neurons, cell biology of neurotransmitter release and postsynaptic function will be discussed, followed by intracellular signaling in neurons, gene regulation, transgenic model systems, glia, neuronal development, basic neurochemistry, and molecular and cellular aspects of motor, sensory and integrative function. The course will conclude with lectures on various aspects of neural injury and disease, including traumatic brain injury, Parkinson's and Alzheimer's diseases.

PHIS 512 Cardiovascular and Exercise Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHIS 501 or permission of instructor. A comprehensive study of cell and system cardiovascular and exercise physiology with pathophysiological implications, primarily designed for professional students. Physiological basis and introduction to the practical interpretation of the electrocardiogram will be taught with a computer-assisted method.

PHIS 604 Cell Physiology

Semester course; 4 lecture hours. 4 credits. Provides first year graduate students with a physiological understanding of excitable tissues at the cellular level. Topics covered include the resting membrane potential and action potential, communication between excitable cells, sensory transduction mechanisms and contractile tissues.

PHIS 612 Cardiovascular Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An in-depth study of the original literature in selected areas of cardiovascular physiology.

PHIS 615 Signal Detection in Sensory Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHIS 501 or permission of instructor. An in-depth study of cells and cell systems that serve as either internal or external environmental sensors. Topics will emphasize the physiology, anatomy and the biochemistry of mature sensing systems, the systems in normal development and their plasticity toward stresses during development or in maturity.

PHIS 617 Cellular Signaling

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHIS 501 and BIOC 503, or permission of instructor. An in-depth study of the original literature in selected areas that involve cellular signaling.

PHIS 620/PHTX 620 Ion Channels in Membranes

Semester course; 3 lecture hours. 3 credits. Previous course work including basic concepts in electrophysiology, such as those covered in PHIS 501 or PHTX/PHIS/ANAT 509, is highly recommended. Detailed presentation of the fundamental biophysical properties of ionic channels in membranes including the elementary properties of pores, molecular mechanisms of ionic selectivity, mechanisms of drug block, structure-function relationships, and basis for channel gating. Discussion will encompass modern techniques for studying ion channel function.

PHIS 690 Physiology Research Seminar

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the departmental seminar or special group seminar.

PHIS 691 Special Topics in Physiology

Semester course; 1-4 credits. Prerequisites: A 500-level physiology course or equivalent and permission of instructor.
< br > < br > < b > Special Topics in Physiology (Section 1) < /b > < br >
1-4 credits. Lectures, tutorial studies and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training. < br > < br >

< b > Special Topics: Student Seminar (Section 3) < /b > < br >
Semester course; 1 credit. Designed to develop skills in preparing and delivering lectures and other oral presentations. Students present talks on topics in which they are particularly interested, and provide mutual constructive criticism. < br > < br >

< b > Special Topics: Nutrition Research (Section 5) < /b > < br >
Semester course; 3 credits. Weekly discussion of selected topics in nutrition. Topics change yearly. Topics range from biochemical aspects of nutrition to International Nutrition, with selections from various levels of nutritional interest presented each year. Past topics have included nutrition and exercise, diet and cancer, total parenteral nutrition, alcohol nutrition, food safety, drug-nutrient interactions, nutrition and immunological response, cholesterol and nutrition, salty taste mechanisms, vitamin A, vitamin D, and intestinal calcium absorption.

PHIS 697 Directed Research in Physiology

Semester course; 1-15 credits. Research Leading to the M.S. or Ph.D. degree and elective research projects for other students.

Physiology Lab(PHIZ)

PHIZ 206L/BIOZ 206L Human Physiology Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisites: PHIS 206. Functioning of the human body with emphasis on experimental procedures. Not applicable toward biology major.

Pharmacology and Toxicology(PHTX)

PHTX 400 Drugs and their Actions

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior or senior standing, or permission of instructor. This course is a general survey of pharmacology and related disciplines. The history and basic principles are presented followed by discussions of neuropharmacology, psychoactive drugs, drugs of abuse, immunopharmacology, basic toxicology, drug design, drug development, autonomic pharmacology, cardiovascular pharmacology, and endocrine pharmacology, as well as selected topics including scientific ethics, molecular pharmacology, and behavioral pharmacology.

PHTX 441 Pharmacology (Dental Hygiene)

Semester course; 5 lecture hours. 5 credits. A didactic course designed to emphasize the principles of pharmacology and pain control and the rationale of drug actions, uses, and adverse effects.

PHTX 509/ANAT 509/PHIS 509/NEUS 509 Cellular and Molecular Neuroscience

Semester course; 4 lecture hours. 4 credits. Prerequisite: Permission of instructor. Designed as an interdisciplinary introduction to the cellular and molecular aspects of central nervous system function. The basic principles of neuroscience including neuronal structure, electrical properties of single neurons, cell biology of neurotransmitter release and postsynaptic function will be discussed, followed by intracellular signaling in neurons, gene regulation, transgenic model systems, glia, neuronal development, basic neurochemistry, and molecular and cellular aspects of motor, sensory and integrative function. The course will conclude with lectures on various aspects of neural injury and disease, including traumatic brain injury, Parkinson's and Alzheimer's diseases.

PHTX 515 Pharmacology for Nurse Anesthetists I

Semester course; 3 lecture hours. 3 credits. The basic principles of pharmacology including mechanisms of absorption, distribution, biotransformation, elimination, dose-response relationships, drug and receptor interactions are presented followed by a detailed discussion of autonomic, cardiovascular, and renal pharmacology as it relates to nurse anesthesia. Detailed presentation of the pharmacology of classes of drugs used by nurse anesthetists will be made, with emphasis on general anesthetics.

PHTX 516 Pharmacology for Nurse Anesthetists II

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 515. Detailed presentation of the pharmacology of classes of drugs used or encountered by nurse anesthetics will be made with emphasis upon local anesthetics, cardiovascular, chemotherapeutic, and anti-inflammatory agents. Continuation of PHTX 515.

PHTX 535 Introduction to Toxicology

Semester course; 4 lecture hours. 4 credits. The basic principles of toxicology and toxicological evaluations; correlations of toxicological responses with biochemical, functional and morphological changes; environmental (including occupational and public health), forensic and regulatory concerns; and risk assessment and management are presented for graduate students in the biomedical sciences.

PHTX 536 Principles of Pharmacology and Toxicology

Semester course; 5 lecture hours. 5 credits. Prerequisites: PHIS 501 and BIOC 503, or permission of instructor. A comprehensive course in pharmacology for graduate students. The mechanisms of action of major classes of pharmacologically active agents and basic principles of pharmacology are discussed. Topics include drug absorption, distribution, and metabolism; chemotherapy; endocrine pharmacology and principles of toxicology/immunotoxicology.

PHTX 537 Principles of Pharmacology and Toxicology

Semester course; 5 lecture hours. 5 credits. Prerequisite: PHTX 536 or with permission of instructor. Topics include receptor theory, autonomic, cardiovascular, and central nervous system pharmacology and toxicology. Continuation of PHTX 536.

PHTX 548 Drug Dependence

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate or post-baccalaureate standing. A broad survey course in problems of drug and alcohol use and abuse. It will focus on the pharmacology of abused drugs as well as a study of the psychological and sociological factors in drug-taking behavior, rehabilitation methods, and prevention. This course may not be taken in lieu of any pharmacology offerings in the professional schools on the MCV Campus.

PHTX 597 Introduction to Pharmacological Research

Semester course; 1-12 credits. Prerequisite: Permission of instructor. Rotation research in pharmacology and toxicology laboratories for beginning graduate students.

PHTX 603 Principles of Pharmacology (Pharmacy)

Semester course; 2.7 lecture and 0.3 laboratory hours. 3 credits. The basic principles of pharmacology and an in-depth consideration of the biodisposition and mechanisms of action of these agents. Drugs acting on the autonomic nervous system, chemotherapeutic agents, and endocrine agents are covered this semester.

PHTX 604 Pharmacological Agents (Pharmacy)

Semester course; 3.7 lecture and 0.3 conference hours. 4 credits. Includes drugs acting on the cardiovascular and central nervous system and principles of toxicology. This is a continuation of PHTX 603.

PHTX 609 General Pharmacology and Pain Control

Semester course; 2 lecture hours per week for 2 semesters. One grade for 4 credits at end of second semester. A two-semester course that covers the study of the effects of chemical agents on the structure and function of living tissues, which may be normal or pathological. Provides a basic understanding of pharmacological principles and the basic concepts of currently accepted theories of pain mechanisms and provides a scientific basis for the use of therapeutic agents in order that the future dentist will be able to safely administer drugs to control pain by parenteral, oral or inhalation routes.

PHTX 611 Dental Pharmacology and Pain Control

Semester course; 2 lecture hours per week. 2 credits. Offered for the D-3 students who have successfully completed PHTX 609. A continuation of PHTX 609. The study of the effects of chemical agents on the structure and/or function of living tissues, which may be normal or pathological. Provides a basic understanding of pharmacological principles and the basic concepts of currently accepted theories of pain mechanisms and provides a scientific basis for the use of therapeutic agents in order that the future dentist will be able to safely administer drugs to control pain by parenteral, oral or inhalation routes. PHTX 611 differs from PHTX 609 in that the material presented is more clinical in content and more classes involve clinical correlates of the didactic material presented.

PHTX 614 Foundation in Psychoneuroimmunology

Semester course; 3 lecture hours. 3 credits. Prerequisite: At least one graduate level course in either immunocompetence, pharmacology, physiology, immunology, biochemistry, psychology or permission of instructor. This course will provide an in-depth overview of how brain and immune systems interact to maintain physiological and biochemical steady-states essential to wellness. Theory and research drawn from neuroscience, immunology and psychology will be examined as a foundation for understanding mind-body relationships. Beginning at the cellular level, fundamental information underlying mutually interact neuroendocrine-immune system functions will be synthesized to inform an understanding of wellness as well as a variety of pathophysiological states related to the stress process.

PHTX 620/PHIS 620 Ion Channels in Membranes

Semester course; 3 lecture hours. 3 credits. Previous course work including basic concepts in electrophysiology, such as those covered in PHIS 501 or PHTX/PHIS/ANAT 509, is highly recommended. Detailed presentation of the fundamental biophysical properties of ionic channels in membranes including the elementary properties of pores, molecular mechanisms of ionic selectivity, mechanisms of drug block, structure-function relationships, and basis for channel gating. Discussion will encompass modern techniques for studying ion channel function.

PHTX 625 Cell Signaling and Growth Control

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or consent of instructor. Covers biochemical and molecular biology approaches to pharmacological problems. Emphasizes signal transduction, oncogenes, protein kinases, stress responses and the control of cellular proliferation.

PHTX 632 Neurochemical Pharmacology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or permission of instructor. Investigates the mechanisms of drugs acting on the central nervous system in relation to their effects on endogenous neurochemical systems. Examines the milieu in which drugs act upon the central nervous system, experimental techniques frequently used in neuropharmacology, specific neurotransmitter systems, as well as the mechanisms of action of specific drugs.

PHTX 633 Behavioral Pharmacology

Semester course; 3 lecture hours. 3 credits. This is a survey course covering research on the effects of drugs on behavior. The major emphasis will be on schedule-controlled learned behavior. Additional topics will include drug self-administration, drug discrimination, and conditioned drug effects and behavioral toxicology. The course focuses primarily on laboratory research in animals although human research will also be covered. The relevance of this research literature to drug treatment of behavioral disorders and substance abuse will be discussed.

PHTX 637 Cellular Pharmacology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or permission of instructor. The principles governing the interactions of drugs and hormones with their cellular receptors are presented followed by a discussion of the biochemical mechanisms by which the interactions are transduced into specific cellular responses. Lectures are supplemented with demonstrations and student presentations of current literature in the area.

PHTX 638 Cellular Mechanisms of Toxicology

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTX 536 or permission of instructor. A holistic approach is taken to describe and analyze toxicological information. Intact animal, organ, cellular, and biochemical responses to toxic agents are presented. Immunologic, genetic, endocrine, and central nervous system paradigms and their relationship to the mechanism of action of toxic agents as well as the predictive value of tests of these systems are presented. Kinetics and metabolism of toxic agents as well as statistical and analytical procedures are integrated into the discussions.

PHTX 644 Forensic Toxicology

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Lecture and demonstrations in which common poisons and groups of poisons are discussed as to detection, diagnosis, and treatment of poisoning. Demonstrations include basic principles of analytical toxicology, forensic science, and courtroom testimony.

PHTX 690 Pharmacology Research Seminar

Semester course; 1 lecture hour. 1 credit. Members of the departmental staff, students, and visiting lecturers participate in discussions on topics of current and historical interest.

PHTX 691 Special Topics in Pharmacology

Semester course; 1-4 credits. Prerequisite: Permission of instructor. Special topics in pharmacology or toxicology covered in less detail in other courses will be studied in depth in this course.

PHTX 697 Directed Research in Pharmacology

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree and elective projects for other students.

School of Nursing

Nursing(NURS)

The following list is of courses in the nursing major. For all courses with a clinical laboratory, the laboratory is designed to develop the clinical and critical thinking skills needed to use the nursing process with specific population groups.

NURS 101 Introduction to Nursing

Semester course; 1 lecture hour. 1 credit. Restricted to nursing majors. Introduces future nurses to the process and practice of nursing in the modern health care environment. Interaction with staff nurses in multiple practice environments illuminates "real world" nursing in the "ideal" learning environment. Combines discussions and field experiences.

NURS 102 Introduction to Nursing and Other Health Care Careers

Semester course; 1 lecture hour. 1 credit. Offered: Fall. Introduces the student to the impact of nursing on health care. Provides an overview of health care careers with special emphasis on nursing. Investigates the preparation, role and contributions of a variety of nursing and other health care careers.

NURS 201 Concepts of Nursing

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: NURS 261. Provides a foundation for all clinical nursing courses. Content focuses on nursing as a profession and discipline. Nursing, health, persons and environment are organizing concepts. Course activities are structured to establish effective professional behaviors and learning strategies useful across one's professional career.

NURS 202 Technologies of Nursing Practice

Semester course; 2 lecture and 6 clinical hours. 4 credits. Pre- or corequisites: NURS 201, NURS 261. Studies and applies techniques basic to all nursing practice. Includes cognitive, psychomotor, affective, interpersonal and communication techniques organized through the nursing process to provide nursing care based on health needs and human responses. Also focuses on application of principles and demonstration of beginning skills in caring relationships; provides opportunities for practice and demonstration of selected skills in the laboratory and in clinical settings; and introduces tools of patient information acquisition and management, and patient monitoring. Students will be active paricipants in the learning process.

NURS 261 Health Assessment for Nursing Practice

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: Admission to the nursing program. Pre- or corequisite: Anatomy. Provides the student with the knowledge and skills necessary to enact the first phase of the nursing process, assessment or the collection of patient specific data and the formulation of a patient database as the foundation of the care planning process. Demonstrates specific techniques of patient interview and physical examination skills. Focuses on the healthy adult client. Introduces students to a variety of assessment framework to be used with a diversity of patient populations in acute care, ambulatory and community settings.

NURS 302 Dynamics of Professional Nursing Practice

Semester course; 3 lecture and 1 clinical laboratory hours. 4 credits. Prerequisite: Admission to undergraduate nursing program. Provides a transition from the student's initial education into the baccalaureate program. Expands knowledge of concepts and theories of nursing practice using a process aimed at evaluating and validating clinical practice in the student's work setting. Introduces information technology in modern health care and academic environments.

NURS 305 Knowledge Validation by Portfolio

Semester course; 3 credits. Culminates in submission of a portfolio for validation of course-specific knowledge and evaluation for full or partial credit. Elective. RN students only. Involves self-assessment of prior learning for RN. Requires correlation of experiential and theoretical knowledge with objectives of selected nursing courses.

NURS 325 Nursing of Adults I

Semester course; 3 lecture and 6 clinical laboratory hours. 6 credits. Prerequisite: Completion of 200-level required nursing courses. Focuses on the client with acute and chronic physical illnesses that have relatively stable trajectories. Examines principles of rehabilitation and concepts relevant to the care of the elderly. Provides theoretical foundations for nursing management and relates therapeutic regimens. Develops clinical decision making and selected specialized technical skills in the provision of care to adults in a variety of settings including specialty areas such as the operating room.

NURS 335 Nursing of Women

Semester course; 3 lecture and 6 clinical laboratory hours. 6 credits. Prerequisite: Completion of 200-level nursing course. Examines the health needs of women across the life span with an emphasis on the health needs of the childbearing family. Applies nursing process, theory and research with an emphasis on the development of critical thinking skills in the diagnosis and treatment of human responses to health needs of women, neonates and families. Practices clinical skills and applies theoretical knowledge in selected ambulatory care settings for women's health and post-discharge care, and hospital settings for antenatal, intrapartum, post-partum and neonatal experiences.

NURS 345 Nursing of Children

Semester course; 3 lecture and 6 clinical laboratory hours. 6 credits. Prerequisite: Completion of 200-level required nursing courses. Examines the health needs of children within the context of the family system, environment, developmental capability, stress and adaptation. Focuses on application of the nursing process, development of communication skills, and critical thinking when giving nursing care to well and ill children. Reinforces current theory and research on children and their families in clinical experiences. Reinforces standards of care for both well and ill children and their families.

NURS 355 Psychiatric-Mental Health Nursing

Semester course; 3 lecture and 4 clinical laboratory hours. 5 credits. Prerequisite: Completion of 200-level required nursing courses. Provides knowledge and learning experiences in accordance with ANA Scope and Standards for Psychiatric Mental Health Nursing to assist students in understanding actual and potential psychiatric illnesses and mental health problems in individuals, families and communities. Examines theoretical, empirical and practical knowledge applied to the prevention and treatment of common psychiatric and mental health conditions encountered in basic nursing practice. Emphasizes core dimensions of professional practice including therapeutic communication and ethical and legal principles. Provides students with an integrative perspective from which to incorporate various forms of knowledge into practice.

NURS 365 Nursing Science I

Semester course; 3 lecture hours. 3 credits. Prerequisites: Anatomy and physiology. Integrates the foundations of nursing diagnosis and interventions derived from pathophysiology, biochemistry and pharmacology for selected human systems.

NURS 366 Nursing Science II

Semester course; 3 lecture hours. 3 credits. Prerequisites: Anatomy, physiology and microbiology. Integrates the foundations of nursing diagnoses and interventions derived from pathophysiology, biochemistry and pharmacology for selected human systems.

NURS 370 Theory and Research in Clinical Practice

Semester course; 3 lecture hours for undergraduate nursing students; 2 lecture hours for graduate students who have not taken a research undergraduate course. 3 credits for undergraduate students; 2 credits for graduate students. Designed to promote understanding of the role of theory and research in the development of nursing as a profession. Focus on three primary areas: (1) developing the language necessary to understand theory and research; (2) analyzing the relevance of theory and research to nursing practice; and (3) beginning to understand the research process. Skill in the ability to critically read and evaluate nursing research literature for application to clinical practice also will be emphasized.

NURS 371 Principles of Research in Nursing Practice

Semester course; 1 lecture hour. 1 credit. This overview course will: introduce nursing research (its history, its relevance to nursing practice, the role of nurses in research based on educational preparation), provide an overview of important research concepts (e.g., sources of knowledge, general types of research and research paradigms, scientific integrity, human subjects protection, research design, reliability and validity, research control, probability, principles of measurement, credibility, applicability) and focus on developing skills related to identifying, locating, reading, summarizing and critiquing research articles and evidence-based guidelines.

NURS 395 Junior Synthesis

Semester course; 3 laboratory hours. 1 credit. Pre- or corequisite: Completion of at least three 300-level clinical courses. Facilitates the synthesis and integration of the nursing curriculum from its conception through the junior year of study. Provides opportunities for students to integrate knowledge from prior course work, apply it to clinical experiences and analyze this synthesis. Prepares students for the transition into their senior year.

NURS 396 Nursing Internship

Semester course; 120 clinical hours per credit. Variable credit. Pre- or corequisites: Completion of junior-level clinical course or equivalent. Some units may require enrollment for three credits. Enrolled students must meet requirements for employment at the VCU Medical Center, including one week of paid orientation. Provides combination supervised clinical experience and paid work experience in selected settings of the VCU Medical Center. Many of these settings are not available in traditional curriculum. Introduces students to the work life of a nurse.

NURS 405 Nursing in Long-term Care

Semester course; 3 lecture hours. 3 credits. Prerequisite: Senior status. Focuses on the care management of patients across the life span who require long-term care. Integrates pathophysiologic presentation of selected chronic, long-term conditions with psychophysiologic aspects of patient care, including pharmacologic and non-pharmacologic treatments. Includes interdisciplinary management of the disease process and the patient, family and community response. Addresses financial impact, health care delivery systems and health policy implications. Incorporates long-term therapeutic regimens into the illness trajectory.

NURS 415 Community Health Nursing

Semester course; 3 lecture and 2 laboratory hours (45 laboratory hours per credit). 5 credits. Prerequisite: completion of all required 300-level nursing courses. Builds on knowledge and practice skills from prior nursing education and develops nursing competencies for care of communities and targeted populations based on the core functions of public health. Concentrates on an epidemiological approach to population-focused nursing through community assessment, evaluation of the effects of contemporary issues and health policy on the public's health. Directs service-learning projects to prevent disease and promote and preserve the health of populations at risk.

NURS 425 Nursing of Adults II

Semester course; 3 lecture and 6 clinical laboratory hours. 6 credits. Prerequisite: completion of all 300-level required nursing courses. Focuses on the client in acute phases of physical illnesses and with complicated multisystem health problems. Provides theoretical foundations for nursing management and related therapeutic regimens. Focuses on the development and application of clinical decision making in the provision of care to acutely ill adults in a variety of settings.

NURS 426 Critical Care Nursing I

Semester course; 3 lecture hours. 3 credits. Prerequisite: Licensure as a registered nurse or senior undergraduate nursing student with permission of instructor. Focuses on nursing care of the critically ill adult with health care needs in the following systems: cardiovascular, endocrine, pulmonary, immunology and hematology. Focuses on the development and application of clinical decision making in the provision of care to critically ill or injured adults in a variety of settings.

NURS 427 Critical Care Nursing Technologies

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: Licensure as a registered nurse or senior undergraduate nursing student with permission of instructor. Focuses on critical care technologies that are commonly used in care of the critically ill. Course content will include the theoretical principles on which the selected technologies are based as well as discussions of the practical use and troubleshooting of the technologies presented.

NURS 428 Critical Care Nursing II

Semester course; 3 lecture hours. 3 credits. Prerequisite: Licensure as a registered nurse or senior undergraduate nursing student with permission of instructor. Focuses on nursing care of the critically ill adult with health care needs in the following systems: neurology, gastrointestinal and renal. Focuses on the development and application of clinical decision making in the provision of care to critically ill or injured adults in a variety of settings.

NURS 429 Critical Care Nursing Practicum

Semester course; 9 clinical laboratory hours. 3 credits. Prerequisites: Completion of Critical Care Nursing I and Critical Care Nursing Technologies. Completion of Critical Care Nursing II or may be taken concurrently with Critical Care Nursing II. Focuses on the client in the critical phase of physical illness with complicated multisystem health problems. It provides an opportunity for practice in a critical care area.

NURS 471 Evidence-based Practice in Nursing

Semester course; 2 lecture hours. 2 credits. Co- or prerequisite: NURS 371. Focuses on skills required to enact evidence-based practice over one's professional life. Formally introduces models for evidence-based practice (EBP), reviews change theories useful to initiate EBP and identifies individual and organizational resources needed for EBP. Final competency related to knowledge of current evidence guiding selected aspects of nursing practice is documented.

NURS 476 Professional Transitions

Semester course; 1 lecture hour. 1 credit. Prerequisite: NURS 201. Focuses on the development of the second-degree student as a professional nurse within the context of prior education. Analyzes social forces, issues and trends that have shaped the profession.

NURS 477 Leadership and Management in Health Care

Semester course; 4 lecture hours. 4 credits. Integrates principles of leadership and management to prepare students for the management, coordination and implementation of safe and ethical patient care in contemporary health care delivery systems. Focuses on the development of nursing as a profession and on the nurse as a professional.

NURS 486 Nursing Leadership and Management Practicum

6 clinical laboratory hours. 2 credits. Prerequisite: completion of 300-level required nursing courses. Provides opportunities to apply management principles to nursing practice in a variety of settings and specialty areas.

NURS 487 Advanced Leadership Practicum

Semester course; 2 lecture and 1 clinical practicum hours (45 clinical practicum hours per credit). 3 credits. Co- or prerequisite: completion of NURS 477. Provides an opportunity for preceptorship with a nurse who is leading the profession. Leadership may be in service, education, health policy or research and is not defined by position but by its influence in the discipline. The student will directly observe what the leader does to plan and deliver effective innovation and analyze the effectiveness. The student also will evaluate herself/himself for leadership potential and construct a personal leadership development plan. This course is not appropriate for students wishing to study organizational management.

NURS 491 Special Topics Course

This course has several sections, one is a Military Science section related to ROTC requirements. Military Science majors may take the course.

NURS 492 Elective Study

1-5 credits. Prerequisite: Consent of department. Independent study projects planned to meet the learning objectives of the student.

NURS 496 Senior Synthesis

Semester course; 2 lecture and 3 clinical hours (45 clinical hours per credit). 5 credits. Co- or prerequisite: cumulative assessment test (taken at least two weeks prior to the first day of the semester); to be taken during the last semester of the undergraduate program. Designed as a culminating experience, this course prepares students for transition into professional practice. Provides opportunities to demonstrate higher level cognitive processes that include synthesis of knowledge and skills from all previous course work and clinical experiences. Documents consistent enactment of professional practice and demonstrated competency in standards of care, professionalism, and safe and legal practice.

NURS 497 Specialty Clinical Practice

Semester course; variable hours. 1-3 credits. Prerequisites: R.N. licensure, and enrollment in R.N.-B.S. track or graduate nursing program. Completion or enrollment in 200- and 300-level courses or permission of instructor is required. Advances professional nursing clinical competence using a faculty-student-preceptor mentorship model in a student selected area of specialty clinical nursing practice.

NURS 500 School Nursing Practice: Adressing the Health Needs of Vulnerable Populations within the Context of Schools

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Focuses on school nursing services within the context of inclusive educational practices for students with low-incidence disabilities. Content emphasizes knowledge of the guiding principles of collaborative, comprehensive, coordinated, culturally competent, developmentally appropriate, family-centered and inclusive health and educational service provision. Also covers content on the IDEA and related legislation; health promotion, support and restoration needs of students with disabilities; working within the culture of schools; and the implications of working with culturally and linguistically diverse students and families. A web-based course available for advanced undergraduate and graduate students enrolled in the SNAPP progam.

NURS 501 Advanced Professionalization I

Semester course; 1 lecture hour. 1 credit. Pre- or corequisites: Admission to the graduate program in nursing. Focuses on socialization to the roles and responsibilities related to advanced practice nursing. Explores applicability of nursing theory to advanced practice nursing.

NURS 502 Advanced Nursing Practice: Pharmacotherapeutics

Semester course; 3 lecture hours. 3 credits. Prerequisite: graduate standing or permission of the instructor. Develops the requisite knowledge of pharmacotherapeutics necessary for the safe pharmacological management of common patient problems by the advanced practice nurse.

NURS 503 Advanced Nursing Practice: Psychosocial

Semester course; 3 lecture hours. 3 credits. Prerequisite: NURS 201 or R.N. license. Examines and analyzes selected psychosocial theories and research, relating them to advanced practice nursing. Derives nursing strategies for phenomena of concern associated with specialty areas.

NURS 504 Advanced Nursing Practice: Biological

Semester course; 3 lecture hours. 3 credits. Focuses on the biological changes underlying selected health risks and health problems as a framework for critically appraising health assessment data and for understanding advanced nursing therapeutic strategies.
Effective Fall 2006 < p > < b > NURS 504 Advanced Nursing Practice: The Biological Basis of Health and Illness Across the Lifespan < /b > < br >
Semester course; 3 lecture hours. 3 credits. Focuses on the biological and pathophysiological foundations of health problems across the life span. Uses biologic changes underlying selected health risks and health problems as a framework for critically appraising health assessment data and for understanding advanced nursing therapeutic strategies. < /p >

NURS 505 Advanced Nursing Practice: Computer and Information Technology

Semester course; 1 lecture hour. 1 credit. Prerequisite: Admission to the Graduate Program in Nursing or permission of instructor. Provides students with knowledge and skills necessary to incorporate information technology into nursing practice and to be successful users of information technology programs and systems. Knowledge of nursing-specific applications will be emphasized. Graded as pass/fail.

NURS 508 Advanced Nursing Practice: Systems

3 lecture hours. 3 credits. Provides an understanding of the context in which health services are managed and delivered. Explores social, ethical, and political issues affecting current and future nursing care delivery systems. Examines cost effectiveness of nursing care in a variety of settings.

NURS 509 Advanced Nursing Practice: Community

3 lecture hours. 3 credits. Emphasizes target populations in the community as a perspective for advanced nursing practice. Introduces small area analysis to diagnose and prioritize health needs/problems and to plan, provide, and evaluate care for individuals, families, and population groups. Uses advanced nursing practice skills to examine the need for risk reduction and health promotion, health preservation and rehabilitation among community populations.

NURS 510 Nursing Ethics

3 lecture hours. 3 credits. Identifies and examines moral dilemmas encountered in professional nursing practice. Examines personal value systems, applies ethical theory and principles to dilemmas in clinical nursing practice: patient's rights, informed consent, confidentiality, quality of life and death and dying. Examines relationships between professional nursing and resolution of moral dilemmas.

NURS 511 Health Assessment for Advanced Nursing Practice

1 lecture and 2 laboratory hours. 3 credits. Prerequisite: Undergraduate or graduate health or physical assessment course (3 credits). Provides the framework for holistic, culturally relevant assessment of individuals. Focuses on advancing students' knowledge and assessment in health history, risk appraisal, health promotion, psychosocial, developmental and functional assessment and physical examination techniques. Emphasizes the application of diagnostic reasoning skills in assessing deviations from normal in selected content in specialty areas. Includes supervised experiences with advanced clinical assessment skills.

NURS 512 Advanced Nursing Science

3 lecture hours. 3 credits. Focuses on theory and research in advanced practice with aim of critique and utilization of current theories and findings/outcomes. Emphasizes analysis and synthesis of nursing science in the context of relevant programs, practice problems, issues, and concerns. Reviews major research design and analytic strategies.

NURS 514/INTL 514 International Perspectives on Community Health in Developing Countries

Semester course; 1 lecture and 2 laboratory hours. 3 credits. This course may be taken for a maximum of 6 credits in two different world areas. Open to undergraduate (junior or senior level) and graduate students. Explores the impact of national and international policy decisions on the health and well-being of individuals and communities (country varies semester to semester). Examines the relationship of cultural beliefs and values on health-seeking behaviors. Allows students to become immersed in a culture different than their own. Evaluates the impact of international conflict and economic development on the health status of the community. See the Schedule of Classes for location.

NURS 540 Spirituality in Health Care

3 lecture hours. 3 credits. Explores the phenomenon of spirituality in health and illness across cultures and life spans from a framework of humility and respect for multiple world views. Integrates theory and research as well as individual and communal ways of knowing to provide spiritually sensitive care that nurtures wholeness and promotes healing.

NURS 591 Special Topics

Semester course; 1-3 credits. Explores specific topics in nursing theory and practice.

NURS 592 Directed Study in Nursing

1-3 credits. Prerequisite: Permission of instructor. Independent study in a specific area of nursing developed under the supervision of a member of the graduate faculty.

NURS 601 Advanced Professionalization II

1 lecture hour. 1 credit. Prerequisite: NURS 501. Facilitates enactment of selected advanced practice role following graduation from the program. Focuses on issues influencing implementation of selected advanced practice role.

NURS 602 Contexts and Curriculum of Nursing Education

Semester course; 3 lecture hours. 3 credits. Provides a background for the structure of nursing education in American colleges and universities. Explores macro-environment of accreditation as well as curriculum structures for the organization of nursing education programs. Emphasis includes analysis of philosophy and assumptions that underlie select curriculum models, influence of external and internal factors on selection of content and processes, and various structures for deriving and organizing content. Development of courses to achieve identified curricular outcomes is a major course focus. Graded A/B/C/D/F.

NURS 603 Nursing Education Classroom Practicum

Semester course; 2 lecture and 1 laboratory hours. 3 credits. Addresses the theoretical and practical foundations for classroom teaching in a nursing curriculum. Reviews research in nursing and other fields on effectiveness of teaching and learning. Focuses on working with an experienced faculty member in teaching an undergraduate or graduate nursing course with special emphasis on the development and evaluation of learning strategies in the classroom with an emphasis on critical-thinking outcomes. Graded A/B/C/D/F.

NURS 604 Nursing Education Clinical Practicum

Semester course; 1 lecture and 3 laboratory hours. 4 credits. Focuses on the synthesis and application of nursing and educational theories in clinical teaching. Provides an opportunity to work with experienced faculty in teaching a clinical experience for either undergraduate or graduate students. Emphasis is placed on learning to use approaches that enhance student clinical reasoning/critical thinking capabilities. Graded A/B/C/D/F.

NURS 620 Theoretical Perspectives of Community Health Nursing

Semester course; 3 lecture hours. 3 credits. Reviews and critically analyzes theoretical underpinnings of community health nursing, public health practice, and behavior change. Describes the differences among community level interventions, family and group level interventions, and individual level interventions for behavior change. Explores various methods of community assessment, and describes community development, structure and organization. Relationships among community health needs, health services, resources, community health policy and community health indices are examined.

NURS 622 Integrative Pyschiatric Mental Health Nursing Practicum I

Semester course; 180 clinical hours. 4 credits (45 clinical hours per credit). Prerequisites: NURS 502, 503, 504, 511. Co-requisite: NURS 656. May be repeated. Uses application of diagnostic algorithms for the most common psychiatric symptoms as a framework in the psychopathological assessment of common disorders seen in adolescents, adults and the elderly. Employs clinical assessment tools to assess the psychiatric and psychosocial needs of families and groups considering the biological, environmental, lifestyle and sociocultural impact on the diagnosis of individuals with acute or chronic primary health care problems.

NURS 623 Integrative Psychiatric Mental Health Nursing Practicum II

Semester course; 225 clinical hours. 5 credits (45 clinical hours per credit). Prerequisite: NURS 622. Co- or prerequisite: NURS 657. Prepares individuals for advanced psychiatric mental health practice by integrating theoretical, clinical and research knowledge in acute and primary mental health care settings. Applies nursing process in advanced psychiatric mental health practice. Explores contemporary somatic and psychotherapies with preceptors and faculty in advanced clinical practice. Emphasizes application of integrated knowledge related to theories and therapeutic techniques for individuals, families and groups, particularly urban and underserved. Experiences selected by preceptors considering individual learning needs and desires of students.

NURS 624 Integrative Psychiatric Mental Health Nursing Practicum III

Semester course; 225 clinical hours. 5 credits (45 clinical hours per credit). Prerequisites: NURS 509 and NURS 623. Co- or prerequisite: NURS 659. Prepares individuals to apply knowledge in primary mental health to urban and underserved populations with acute and chronic conditions. Students employ approaches that address population-specific needs of communities with varied social and cultural contexts. Advanced practice nursing care planned, delivered and evaluated consistent with integrative mental health principles and current research findings. Alternative and complementary approaches incorporated based on relevance and efficacy.

NURS 625 Clinical Nurse Specialist: Adult Acute Care Practicum

Semester course; 2-5 practicum hours. 2-5 credits (45 clinical hours per credit). May be repeated. Prerequisites: NURS 501, 502, 511, 663. Pre- or corequisite: NURS 686. Focuses on the synthesis, application and evaluation of knowledge with a target population in acute care settings. Provides opportunities for achievement of competencies in the spheres of influence (patient, staff and organization) of the clinical nurse specialist (CNS) through faculty-supervised clinical experience with a preceptor. Allows for the practicum to be planned in relation to the student's area of clinical specialization. Focuses on the evaluation of specific competencies (outcomes) determined by the faculty and student. Provides an oportunity for practica to be repeated in order to evaluate knowledge in the specialty and meet the minimum clinical hours necessary for national certification and licensure. A total of 7 credit hours are required.

NURS 626 Clinical Nurse Specialist: Advanced Adult Acute Care Practicum

Semester course; 2-5 practicum hours. 2-5 credits (45 clinical hours per credit). May be repeated. Prerequisite: NURS 625. Co- or prerequisite: NURS 601. Focuses on advanced nursing practice with a specialty patient population in an acute care setting. Provides opportunities for achievement of advanced competencies within the spheres of influence of the clinical nurse specialist: patient, staff and organization. These opportunities are provided through faculty-supervised clinical experiences with a preceptor. Provides an opportunity for practica to be repeated in order to evaluate knowledge in the specialty and meet the minimum clinical hours necessary for national certification and licensure. A total of 5 credit hours are required. Upon completion of the required hours, performance at the advanced level is expected.

NURS 627 Critical Care Nursing

Semester course; 2 lecture and 1 laboratory hours. 3 credits. Prerequisites: R.N. licensure, Advanced Cardiac Life Support Certification (ACLS, PALS or NALS), NURS 511 and NURS 504. Focuses on critical care technologies that are used in care of the critically ill. Course content will include the theoretical principles on which the selected technologies are based as well as discussions of the practical use and troubleshooting of the technologies presented. Provides experience in critically evaluating research and evidence-based guidelines related to commonly used critical care technologies.

NURS 632 Health Promotion in Women

1-2 lecture hours. 1-2 credits. Addresses issues that affect the health of women throughout the life cycle. Reflects the historical, developmental, political, psychological, and sociological perspectives of understanding the condition of women in our society and the impact on their health care needs. Emphasizes the advanced practice role in health promotion and early detection of health problems, sociopolitical variables that impact women's health, and the application of alternative paradigms in health care practice.

NURS 633 Common Health Problems of Women

Semester course; 1-3 lecture hours. 1-3 credits. Prerequisites: NURS 504 and NURS 511. Provides content on common physical and psychosocial health and illness changes of women. Emphasizes health promotion and maintenance, as well as illness prevention, detection and management approaches. Includes current nursing, medical, and pharmacological diagnostic and management modalities. Reinforces essential content and clinical judgment application for advanced nursing practice through case study discussions.

NURS 634 Advanced Practice: The Childbearing Woman

Semester course; 2 lecture hours for Family Health students and 3 lecture hours for Women's Health students. 2-3 credits. Prerequisite or corequisite: NURS 501, 502, 504 and 511. Note: the last third of the course, which focuses on high risk perinatal conditions, would be elective for the Family Health students but required for the Women's Health students. Focuses on management of potential and actual health problems of women as members of families and their newborns during the perinatal period, pregnancy, labor, delivery, the postpartum and neonatal periods. Nursing assessment, diagnosis and intervention related to health promotion, treatment and prevention of perinatal problems are addressed. Emphasizes the integration of theories and research in perinatal health care and the role of the advanced practice nurse in caring for these clients.

NURS 647 Health Promotion and Disease Prevention in Children

Semester course; 3 lecture hours. 3 credits. Pre- or corequisites: NURS 501 and NURS 511. Focuses on health needs of well children from infancy through adolescence, and their families. Emphasizes health promotion and disease prevention, and early identification of illness or disease risk. Integrates concepts of development, family systems, and individual and family adaptation. Develops a student's skills in pediatric screening and developmental and behavioral assessment. Stresses collaborative decision making with children and families.

NURS 648 Management of Acute Problems of Children and Adolescents

1-3 lecture hours. 1-3 credits. Prerequisites: NURS 504 and NURS 511. Focuses on management of advanced nursing practice related to the management of common developmental, health and illness changes of children and adolescents. Includes pathophysiological, pharmacological, and nutritional management implications. Emphasizes the development of diagnostic reasoning and critical thinking skills in the management of common health problems, using selected organizing frameworks.

NURS 649 Children with Special Health Care Needs

3 lecture hours. 3 credits. Prerequisites: NURS 501, NURS 503, NURS 504, NURS 511, NURS 512, NURS 647, NURS 648, NURS 672 and NURS 673. Corequisite: NURS 674 or permission of instructor. Prepares the student to manage children and adolescents with chronic illness, disability or complex health conditions across health care settings. Integrates well child care with the management of chronic or complex conditions.

NURS 650 Child Behavior and Mental Health

Semester course; 2 lecture hours. 2 credits. Prerequisites: NURS 501, 502, 511, 647 or with permission of instructor. Focuses on increasing knowledge and skills in assessing and distinguishing normal and abnormal behavioral and mental health symptoms in children and adolescents. Further development of management skills for common behavioral and mental health problems are refined. Case management skills to utilize community and school-based resources for more complex disorders are examined. Techniques for therapeutic communication with parent throughout the care continuum are highlighted.

NURS 654 Nurse as Therapist

Continuing course; 6 seminar hours. 3 credits. Prerequisite: Admission to graduate program or permission of instructor. Focuses on understanding and application of principles derived from the art and science of integrative healing to self-care and care of others as critical to the role of advanced practice nurse in mental health and holistic nursing. Provides opportunities for self-exploration and awareness, modeling a wellness lifestyle, and applying practices that support the well-being of others. Uses seminar dialogues, participatory learning strategies and demonstrations as primary modalities of learning. Designed for continuing enrollment for two academic semesters, graded one credit in the fall and two credits in the spring, for a total of three credits.

NURS 655 Nurse as Leader

Semester course; 4 seminar hours. 2 credits. Prerequisite: Admission to graduate program or permission of instructor. Explores central theories and practice of leadership with emphasis on implications for the advanced practice nurse. Explores student's capacity for leadership, including contemporary contexts and personal propensities, strengths and deterrents to effective leadership practice. Includes learning experiences designed to enhance student's self-understanding as leader and provide culturally diverse urban arena for practicing emerging competencies. Requires an action plan designed, in consultation with faculty mentor, to systematically improve leadership skills.

NURS 656 Integrative Mental Health Nursing: Management and Treatment of Psychopathology for Advanced Practice Nurses

Semester course; 3 lecture hours. 3 credits. Prerequisite: NURS 502, NURS 504 or permission of instructor. Synthesizes advanced practice knowledge relevant to the primary care of individuals with psychiatric disorders from a neurobiological and psychopharmacologic perspective. Integrates diagnostic algorithms with biological and psychological theories and research findings pertinent to care of individuals. Addresses knowledge needed for the assessment, diagnosis and management of culturally diverse clients with psychiatric disorders in primary care settings. Examines neurobiology in the context of experience.

NURS 657 Integrative Mental Health Nursing: Contemporary Practice

Semester course; 4 lecture hours. 4 credits. Prerequisites: NURS 502, NURS 503, NURS 504, NURS 511, NURS 512 and NURS 656. Pre- or corequisite: NURS 654. Prepares individuals for advanced psychiatric mental health nursing practice by integrating theoretical, clinical, and research knowledge for primary mental health care and clinical management of acute and chronic mental health conditions. Explores advanced nursing assessment, classifications and interventions from cultural perspectives in a variety of settings. Emphasizes urban and underserved populations. Covers standards and scope of advanced practice psychiatric mental health nursing with emphasis on clinical management, policy-practice relationships and reimbursable services. Examines knowledge of theories and therapeutic techniques for individuals, families and groups within an integrative context for advanced nursing practice and interdisciplinary leadership.

NURS 658 Complementary Healing Modalities

Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to the graduate program or permission of the instructor. Critically examines complementary health strategies from a variety of perspectives including social, historical, cultural, political and economic contexts. Analyzes philosophical, theoretical and research literature associated with the use of complementary healing modalities. Explores frameworks for advanced nursing practice that incorporate tenets of healing modalities. Students will have the opportunity to select and examine a complementary health strategy for in-depth study and potential application.

NURS 659 Integrative Mental Health Nursing: Synthesis

Semester course; 4 lecture hours. 4 credits. Prerequisites: NURS 508, NURS 509, NURS 656 and NURS 657. Co- or prerequisites: NURS 624 and NURS 655. Focuses on theory and practice of integrative mental health nursing and its roll in addressing acute and chronic conditions from a population-specific perspective. Integrates and synthesizes psychosocial and holistic theories, research, and knowledge for advanced primary mental health practice with a community focus. Students will plan care based on integrative assessments and incorporating holistic strategies with an emphasis on urban and underserved communities. A capstone project reflecting a synthesis of integrative nursing knowledge for advanced practice will be conducted and presented.

NURS 660 Advanced Adult Health I

3 lecture hours. 3 credits. Pre- or corequisites: NURS 501, 504 and 511. Focuses on advanced nursing assessment and therapeutics across the life span from adolescence to old age. Applies theories, concepts and research findings related to health promotion, health protection and disease prevention as a basis for clinical decision making with adolescent and adult patients and their families within a variety of care settings.

NURS 661 Advanced Adult Health II

1-4 lecture hours. 1-4 credits. Prerequisites: NURS 511, NURS 501 and NURS 504. Provides content on selected common health and illness changes encountered in primary/ambulatory care settings using clinical simulations. Focuses on increasing students' knowledge and clinical decision-making skills in order to promote health, accurately diagnose, prevent and manage these common problems.

NURS 663 Advanced Adult Health III

1-3 lecture hours. 1-3 credits. Prerequisites: NURS 511, NURS 501 and NURS 504 . Provides content on selected common health and illness changes encountered in acute care settings using clinical simulations. The focus of this course is on increasing students' knowledge and decision-making skills in order to accurately diagnose, prevent, and manage these common acute and chronic problems.

NURS 664 Management of Patient Problems in the Tertiary Care Setting

3 lecture hours. 3 credits. Focuses on increasing students' knowledge of the medical and nursing problems of a specialty population of patients in tertiary care. Provides an opportunity to acquire in-depth knowledge of diseases and their management within the specialty. Students will demonstrate the synthesis of knowledge gained from previous courses and practical experiences.

NURS 668 Advanced Nursing Therapeutics for Altered Immunocompetence

3 lecture hours. 3 credits. Prerequisite: NURS 504 or permission of instructor. Analyzes concepts and factors related to the phenomenon of immunocompetence. Examines the contribution of advanced nursing practice to patient outcomes in selected clinical problems such as infection, malignancy, hypersensitivity, autoimmunity, transplantation and HIV infection. Evaluates clinical problems from both a theoretical and clinical perspective, incorporating biological, psychosocial, ethical, cultural and health systems aspects.

NURS 670 Primary Care of Families

1-3 lecture hours. 1-3 credits. Prerequisites: NURS 501, NURS 503, NURS 504, NURS 511, NURS 512, NURS 647, NURS 648 and NURS 633. Addresses the synthesis of theoretical and research bases for advanced nursing practice with families. Focuses on the care of the individual and their family throughout the life span and across the health continuum, with special emphasis on the advanced evaluation of families and their health needs.

NURS 671 Practicum in Pediatric Behavioral and Mental Health

Semester course; 1 lecture hour. 1 credit. Prerequisites: NURS 650 and 672. Focuses on the application of evidence-based knowledge related to the care of children with behavioral, developmental and mental health concerns. Emphasis on refining skills in assessment and management of children with behavioral, developmental and mental health concerns who are seen in primary care and community settings using standards of care.

NURS 672 Child Practicum I

1-3 credits (45 clinical hours per credit). May be repeated. Prerequisites: NURS 501, NURS 503, NURS 504 and NURS 511. Pre- or corequisites: NURS 502, NURS 647 and NURS 648. Focuses on the synthesis of theory and application and evaluation of knowledge related to the primary care of children. Emphasis on beginning skill in assessment and management of well children and common acute problems of children and adolescents. Major focus on assessment. Student expected to be able to deliver well child care in most situations using standards of care and close preceptor involvement. Expected to develop skill in pediatric history taking, developmental assessment and physical assessment and beginning skill in management of selected conditions. Develops beginning skill in management of common well child and behavioral issues. Clinical placements with preceptor(s) made by faculty based on area of role preparation declared by student.

NURS 673 Child Practicum II

1-3 clinical hours. 1-3 credits (45 clinical hours per credit). Prerequisites: NURS 501, NURS 503, NURS 504, NURS 511, NURS 647, NURS 648 and NURS 672. Pre- or corequisite: NURS 502. Focuses on the synthesis of theory and application and evaluation of knowledge related to the primary care of children; builds on previously developed assessment skills. Adds assessment of adolescent gynecology and sexuality. Student increases ability to manage more complex behavioral and well child issues. Student is expected to manage a wide variety of acute pediatric conditions with moderate preceptor input. Clinical placements with preceptor(s) made by faculty based on area of role and preparation declared by student.

NURS 674 Child Practicum III

1-4 clinical hours. 1-4 credits (45 clinical hours per credit). Prerequisites: NURS 501, NURS 502, NURS 503, NURS 504, NURS 511, NURS 647, NURS 648, NURS 672 and NURS 673. Pre- or corequisites: NURS 508, NURS 512, NURS 601 and NURS 649. Focuses on advanced clinical management of children in a variety of care settings. Student refines both assessment and management skills, requiring minimal preceptor input by the end of the semester. Extends skills to the management of children and their families dealing with chronic illness. Manages a wide range of complex well child and behavioral issues as well as children with a wide variety of acute illnesses. Clinical placements with preceptor(s) made by faculty based on area of role preparation declared by student.

NURS 675 Adult Immunocompetence Practicum I

1-3 clinical hours. 1-3 credits. May be repeated. Pre- or corequisites: NURS 661, NURS 511, or with permission of instructor. Focuses on the synthesis, application, and evaluation of knowledge for providing primary and/or acute health care to a target population of adults with actual or potential problems associated with alternations in immunocompetence. Emphasis is on the development of research and theory based advanced nursing practice. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised clinical experiences with a preceptor. Practicum is planned in relationship to the student's area of interest and role preparation. Practicum is repeated in order to address the achievement of competencies with a designated adult population and at a more advanced level.

NURS 676 Adult Primary Practicum

Semester course; 2-6 practicum hours. 2-6 credits (45 clinical hours per credit). May be repeated. Prerequisites: NURS 502 and 511. Corequisite: NURS 661. Focuses on the synthesis of theory, its application to and evaluation of a target population in a variety of primary care settings. Provides opportunities for the achievement of competencies specific to the nurse practitioner role through faculty-supervised clinical experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest in conjunction with nurse practitioner role preparation. Focuses on the evaluation of specific competencies (outcomes) integral to the role of nurse practitioner. Provides an opportunity for practica to be repeated in order to enable students to synthesize theory and apply and evaluate knowledge within the framework of different practice models and differing populations. Also provides an opportunity for practica to be repeated in order to meet the minimum field study hours necessary for national nurse practitioner certification and nurse practitioner licensure.

NURS 677 Advanced Adult Primary Practicum

2-5 practicum hours. 2-5 credits (45 clinical hours per credit). May be repeated. Prerequisite: NURS 676. Focuses on advanced clinical management of a patient population in a variety of primary care settings. Focuses on the evaluation of specific competencies (outcomes) integral to the nurse practitioner role. Provides opportunities for achievement of final clinical competencies specific to the nurse practitioner role in order to prepare the student to practice safely as a novice nurse practitioner. These opportunities for achievement are obtained through faculty-supervised clinical experiences with a preceptor. Because this is the final practica course, performance at the advanced level is expected.

NURS 678 Adult Acute Practicum

Semester course; 2-6 practicum hours. 2-6 credits (45 clinical hours per credit). May be repeated. Prerequisites: NURS 502 and 511. Corequisite: NURS 663. Focuses on the synthesis of theory, its application to and evaluation of a target population in a variety of acute care settings. Provides opportunities for the achievement of competencies specific to the nurse practitioner role through faculty-supervised clinical experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest in conjunction with nurse practitioner role preparation. Focuses on the evaluation of specific competencies (outcomes) integral to the role of nurse practitioner. Provides an opportunity for practica to be repeated in order to enable students to synthesize theory and apply and evaluate knowledge within the framework of different practice models and differing populations. Also provides an opportunity for practica to be repeated in order to meet the minimum field study hours necessary for national nurse practitioner certification and nurse practitioner licensure.

NURS 679 Advanced Adult Acute Practicum

2-5 practicum hours. 2-5 credits (45 clinical hours per credit). May be repeated. Prerequisites: NURS 678 and advanced clinical life support certification. Focuses on advanced clinical management of a patient population in a variety of acute care settings. Focuses on the evaluation of specific competencies (outcomes) integral to the role of the nurse practitioner. Provides opportunities for achievement of final clinical competencies specific to the nurse practitioner role in order to prepare the student to practice safely as a novice nurse practitioner. These opportunities are provided through faculty-supervised clinical experiences with a preceptor. Because this is the final practica course, performance at the advanced level is expected.

NURS 680 Leading People

Semester course; 3 lecture hours. 3 credits. Prerequisite: NURS 655 or permission of instructor. Examines the effective leadership and application of management theory and skills in the development of a high performing group of both professional and support staff within health care. Examines issues related to cultural diversity and empowerment for optimal performance within the complex urban health care setting.

NURS 681 Nurses as Organizational Leaders

Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to the graduate program or permission of instructor. Explores organizational and individual factors that influence nursing leadership and administrative roles. Analyzes the relationships among major organizational variables and stakeholders and their impact on the design and management of a nursing department.

NURS 682 Women's Practicum I

Semester course; variable hours. 1-4 credits (45 clinical hours per credit). May be repeated. Prerequisite: NURS 511. Pre- or corequisites: NURS 502 and 633. Focuses on the beginning synthesis of theory and application of advanced nursing practice and evaluation of knowledge in the care of women clients, including well-women gynecologic and health promotion care, management of uncomplicated acute gynecologic needs/problems of women, and diagnosis and management of uncomplicated prenatal and postnatal care. Care of commonly encountered needs/problems of women is based on standards of AWHONN and ACOG. Provides opportunities for achievement of beginning competencies in advanced nursing practice with women through supervised clinical experiences with a qualified women's health care preceptor. Allows for the practicum to be planned in relation to the student's area of interest in women's health and role preparation (nurse practitioner or clinical nurse specialists). Graded as S/U/F.

NURS 683 Women's Practicum II

Semester course; variable hours. 1-4 credits (45 clinical hours per credit). Prerequisites: NURS 632, 633 and 682. Pre- or corequisite: NURS 634. Focuses on the intermediate and advanced synthesis of theory and application of advanced nursing practice and evaluation of knowledge in the care of women with more complex reproductive and gynecologic and more general nonreproductive needs/problems. Care for commonly encountered conditions of women is based on standards of AWHONN and ACOG. Provides opportunities for achievement of intermediate and advanced competencies in advanced nursing practice with women through supervised clinical experiences with a qualified women's health care preceptor. Allows for the practicum to be planned in relation to the student's area of interest in women's health and role preparation (nurse practitioner or clinical nurse specialist). Selected experiences will be explored focusing on teaching, case management, and leadership. Graded as S/U/F.

NURS 684 Family Practicum

1-4 clinical hours. 1-4 credits (45 clinical hours per credit). Prerequisites: NURS 647, NURS 648, NURS 633, NURS 661, NURS 502, NURS 672, NURS 676, NURS 682 and NURS 670. Pre- or corequisite: 2 credits of this practicum can be taken in the summer immediately preceding NURS 670 with the consent of the student's adviser. The remaining 2 credits must be taken concurrent with 670 in the following fall semester. Focuses on the achievement of final clinical objectives for the concentration. Provides opportunities for achievement of these competencies as an advanced nursing practice in the family concentration through faculty supervised clinical experiences with a preceptor.

NURS 685 Women's Practicum III

Semester course; 45 clinical hours per credit. 1-5 credits. May be repeated. Prerequisite: NURS 683. Prepares student for the transition to advanced practice by applying knowledge in the care of women. Care of conditions in women is based on standards of AWOHNN and ACOG. Provides opportunities for achievement of advanced competencies in advanced nursing practice with women through supervised clinical experiences with a qualified women's health care preceptor. Allows for practicum to be planned in relation to the student's area of interest and role preparation (nurse practitioner or clinical nurse specialist). Selected experiences will be explored focusing on teaching, case management and leadership. Graded as pass/fail.

NURS 686 Emerging Clinical Issues in Patient Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Admitted to the Adult Health Acute Care CNS concentration or permission of the instructor; NURS 501, NURS 508 and NURS 512. Examines the role and functions of the clinical nurse specialist in identifying and responding to emerging issues in the delivery of care to patients in the student's area of specialization.

NURS 687 Management Systems and Health Care Outcomes

Semester course; 4 lecture hours. 4 credits. Prerequisites: NURS 508 or permission of instructor. Focuses on the effective management of human, material and fiscal resources in a competitive institutional environment. Evaluates selected approaches to assessing the quality of patient outcomes using information technology. Examines issues related to obtaining and organizing clinical and administrative data to support decision making. Takes a comprehensive approach to program and business planning.

NURS 688 Perinatal Practicum

1-3 clinical hours. 1-3 credits (45 clinical hours per credit). Focuses on the application of theory and the clinical management of high risk perinatal families. Addresses the application of nursing process by the advanced practice nurse to individuals and families experiencing complex problems during the perinatal period. Provides the opportunity to augment prior clinical skills and experiences related to management of perinatal clients.

NURS 689 Integrative Systems Community Practicum

3-6 clinical laboratory hours. 3-6 credits (45 clinical hours per credit). May be repeated. Pre- or corequisite: Permission of instructor. Focuses on the application of nursing knowledge within the integrative systems specialties with a targeted population in a variety of settings. These settings may include health care and community organizations. Provides opportunities for achievement of competencies in advanced nursing practice through faculty-supervised clinical experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest and role preparation. Focuses on the evaluation of specific outcomes determined by the faculty and student. Provides an opportunity for practica to be repeated with either an additional population or at a more advanced level.

NURS 690 Application for Financial Concepts

Semester course; 4 lecture hours. 4 credits. Prerequisite: NURS 508 or permission of instructor. Provides an understanding of financial concepts for nurse leaders and includes the application of financial principles to health care organizations and the impact of these applications on patient outcomes.

NURS 691 Nursing Research Practicum

3 laboratory hours. 3 credits. Prerequisite: NURS 512. Permission of instructor required. Participates in ongoing research. Implements research with faculty direction and supervision.

NURS 692 Integrative Administrative Systems Practicum I

Semester course; 45 clinical hours per credit. 3 credits. Prerequisite: Permission of instructor. Focuses on the application of nursing knowledge in a variety of settings within the integrative systems specialty of Nursing Administrative and Leadership. Practicum focuses on the negotiation of learning objectives and the definition of a project for an organizational change to be implemented in the subsequent semesters of practica under the supervision of faculty and the preceptor. The student is required to complete an organizational assessment including plans for further data collection and analysis and delineation of personal leadership roles that the student assumes in implementing the change. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised administration and leadership experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest and role preparation. Focuses on the evaluation of specific outcomes determined by the faculty and student.

NURS 693 Integrative Administrative Systems Practicum II

Semester course; 45 clinical hours per credit. 3 credits. Prerequisite: NURS 692. Focuses on the application of nursing knowledge in a variety of settings within the integrative systems specialty of Nursing Administrative and Leadership. Practicum focuses on the analysis of primary and secondary data related to the project negotiated in Practicum I and the development of a plan to implement the selected organizational project. The student will identify the necessary skills and competencies appropriate to implementing the plan. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised administration and leadership experiences with a preceptor. Allows for the practicum to be planned in relation to the student's area of interest and role preparation. Focuses on the evaluation of specific outcomes determined by the faculty and student.

NURS 694 Integrative Administrative Systems Practicum III

Semester course; 45 clinical hours per credit. 4 credits. Prerequisite: NURS 693. Focuses on the application of nursing knowledge in a variety of settings within the integrative systems specialty of Nursing Administrative and Leadership. Practicum focuses on the execution of the plan for the organizational project. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised administration and leadership experiences with a preceptor. Student will demonstrate the synthesis of knowledge gained from previous courses and practica experiences. Focuses on the evaluation of specific outcomes determined by the faculty and student.

NURS 696 Nurse Practitioner Residency I

3 lecture and 3 laboratory hours. 6 credits. Focuses on the application of advanced practice knowledge in a variety of settings within the VCUMC. The first course in the residency focuses on the development of the beginning nurse practitioner, or experienced nurse practitioner beginning a new setting, to the phase of assuming a productive role on a patient care team. Provides opportunities for achievement of competencies in advanced nursing practice through supervised experience with nurse practitioner and physician faculty. Also provides supervision to develop increased cultural competence in dealing with patients of an ethnic background that differs from that of the student. Students will demonstrate the synthesis of knowledge gained from previous courses and practical experiences.

NURS 697 Nurse Practitioner Residency II

6 laboratory hours. 6 credits. Focuses on the application of advanced practice knowledge in a variety of setting within the VCUMC. This second course in the residency focuses on the development of the new nurse practitioner, or experienced nurse practitioner beginning a new setting, from the phase of assuming a productive role on a patient care team to producing patient care and system outcomes in relation to a larger number of patients. Provides opportunities for evidencing competencies in advanced nursing practice through supervised experience with nurse practitioner and physician faculty. Students will demonstrate the synthesis of knowledge gained from previous courses, practical experiences and Nurse Practitioner Residency I. By the completion of the course, the student will have established a valued place on the health care team.

NURS 698 Nurse Practitioner Residency III

6 laboratory hours. 6 credits. Focuses on the application of advanced practice knowledge in a variety of setting within the VCUMC. This third course in the residency focuses on the consolidation of the competencies of the nurse practitioner, or experienced nurse practitioner beginning a new setting, from the phase of producing patient care and system outcomes in relation to a larger number of patients to teaching others and providing for continuity of care and systems through changes in personnel on patient care teams. Provides opportunities for sharing competencies in advanced nursing practice through supervised experience with nurse practioner and physician faculty. Students will demonstrate the synthesis of knowledge gained from previous courses, practical experiences and Nurse Practitioner Residency I. By the completion of the course, the student will assist others to obtain a productive place on the health care team.

NURS 703 Philosophy of Human Sciences

3 lecture hours. 3 credits. Prerequisite: Admission to the doctoral program. Critically analyzes philosophic perspectives and their relationship to human sciences; emphasizes analysis of the underlying epistemology and ontological assumptions of various philosophies. Explores philosophies of science and their influence on the emergence of knowledge in the human sciences, using nursing science as an example.

NURS 704 Theoretical Structures for Nursing Knowledge

3 lecture hours. 3 credits. Pre- or corequisite: NURS 703. Analyzes the structure of nursing knowledge through the study and critique of concepts, theories and conceptual models. Explores the function of theory development in development of nursing knowledge. Evaluates the relationships among theories and forms of knowledge and evidence and explanation.

NURS 705 Theory Construction in Nursing

3 lecture hours. 3 credits. Pre- or corequisite: NURS 704. Evaluates the variety of theory construction approaches available to the nursing scholar for consideration in the design of a program of inquiry. Prepares students to select an approach for theoretical development of an individual program of scholarly inquiry. Supports the conceptual and theoretical groundwork for dissertation research.

NURS 720 Foundations of Biobehavioral Clinical Research

Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to the doctoral program or permission of instructor. Focuses on the interaction of biology and behavior. Examines conceptual models and assumptions guiding bench, exploratory and experimental approaches designed to enhance function and development, and to prevent complications. Explores biobehavioral clinical research as translational nursing research to improve nursing practice and clinical outcomes. Introduces considerations related to methodology and measurement in biobehavioral clinical research.

NURS 721 Biobehavioral Measures in Clinical Research

Semester course; 3 lecture hours. 3 credits. Focuses on the application of biobehavioral measures in clinical research. Includes understanding theoretical foundations of measures as well as assessment of accuracy and precision of measures. Particular emphasis placed on measures of function, development and outcomes. Examples include clinical, observational and biological measures.

NURS 730 Systems Science in Health Care

3 lecture hours. 3 credits. Focuses on the interrelationships among groups, organizations and communities within the larger societal context. Examines philosophies, theories, methodologies and applications as they apply to understanding systems. Provides the foundation for conceptual model building and application of systems principles to specific health care problems, situations and organizations.

NURS 740 Theoretical Perspectives in Healing

3 lecture hours. 3 credits. Critically analyzes paradigmatic and theoretical perspectives related to healing processes. Using collaborative inquiry, explores models of healing. Describes the centrality of healing in relation to individuals, communities, cultures and organizations. Offers frame of reference for students to pursue a program of inquiry within the domain of healing.

NURS 742 Unitary-transformative Dimensions of Healing

3 lecture hours. 3 credits. Presents an overview of the critical elements and assumptions of a unitary-transformative perspective and its relevance for a science and art of healing. Describes the development and evolution of the unitary-transformative paradigm through nursing theories as examples. Employs unitary science to contextualize evolving healing theory and practice. Engages students in developing conceptual and theoretical thinking to inform programs of healing inquiry.

NURS 750 Risk and Resilience Across the Life Span

3 lecture hours. 3 credits. This course explores risk and resilience from a theoretical perspective across the life span drawing on nursing and related disciplines. The emphasis is on theoretical perspectives, critical analyses of measurement strategies, and applications to research and practice.

NURS 760 Foundations of Immunocompetence

3 lecture hours. 3 credits. Provides in-depth study of immunocompetence as a phenomenon critical to the development of nursing science. Focuses on the biological and developmental basis for immunocompetence, multidimensional relationships among the immune and other physiological and psychosocial systems, and consequences of alterations in immunocompetence. Examines the theoretical basis for interventions designed to influence alterations in immunocompetence. Analyzes methodology and research design issues related to the study of immunocompetence.

NURS 761 Research and Practice in Psychoneuroimmunology

3 lecture hours. 3 credits. Prerequisites: graduate standing with at least one major course in immunocompetence, neuroscience, immunology and foundations of psychoneuroimmunology. Ph.D. in Nursing students must have completed NURS 760. This course is designed to explore psychoneuroimmunology (PNI) as a field of study and as a potential paradigm for both basic research and health-related research and practice. Emphases will include the psychophysiological processes underlying PNI, methodological issues and approaches for PNI-based research, and applications of the PNI framework within the health-related disciplines.

NURS 770 Quantitative Research Design

3 lecture hours. 3 credits. Prerequisite: NURS 773, BIOS 543 and BIOS 544. Provides advanced knowledge and skills for critical decision making in the design and implementation of quantitative health care research. Analyzes various quantitative research designs regarding ability to address phenomena of concern to nursing or health care. Presents a range of strategies and substantive knowledge for scientists to launch programs of quantitative inquiry.

NURS 771 Instrument Development

2 lecture and 1 laboratory hours. 3 credits. Prerequisites: SOCY/STAT 508 or SOCY/STAT 608 (or equivalent). This course is open to non-nursing students with permission of the instructor. Focuses on theoretical foundations underlying development and psychometric evaluation of instruments measuring psychosocial phenomena. Provides simulated experiences scale construction as well as hands-on statistical evaluation of relevant measurement properties.

NURS 772 Qualitative Research Design

3 lecture hours. 3 credits. Prerequisite: NURS 773 or permission of the instructor. Provides advanced knowledge and skills for critical decision making in the design and implementation of qualitative health care research. Provides a context for the study of phenomena of concern to the individual and discipline through scholarly debate, dialogue and reflection. Presents range of strategies and substantive knowledge for scientists to launch programs of qualitative inquiry.

NURS 773 Perspectives on Research Design

3 lecture hours. 3 credits. Pre- or corequisites: NURS 703, NURS 704, NURS 705, or permission of instructor. Analyzes philosophical foundations of a variety of research designs. Explores assumptions underlying the selection and evaluation of quantitative and qualitative designs. Focuses on the epistemological, ontological and methodological foundations of research design.

NURS 774 Qualitative Data Analysis

3 lecture hours. 3 credits. Pre- or corequisites: NURS 773 and 772. Provides advanced knowledge and skills for qualitative data analysis. Approaches qualitative analytical processes from a variety of theoretical and methodological perspectives. Provides opportunity in analyzing qualitative data.

NURS 775 The Ethnographic Approach to Knowledge Generation in Nursing

3 lecture hours. 3 credits. Pre- or corequisites: NURS 772 and 774. A critical exploration of ethnography as a qualitative approach for studying nursing phenomena and generating nursing knowledge from a cultural perspective. Includes the critique of the epistemological, philosophical and ontological understandings of ethnography and an in-depth description of the traditional method. Evolving approaches for conducting ethnographic research will be discussed.

NURS 776 Research Program Development Seminar I

Seminar course; 2 seminar hours. 1 credit. Explores the multiple roles in establishing a program of research and the various career-development stages of a scholar. Defines an area of inquiry for knowledge development within a focus area.

NURS 777 Research Program Development Seminar II

Seminar course; 2 seminar hours. 1 credit. Prerequisite: NURS 776. Explores knowledge development in a selected area of inquiry and the resources and strategies useful in establishing a program of research.

NURS 778 Research Program Development Seminar III

Seminar course; 2 seminar hours. 1 credit. Prerequisite: NURS 777. Focuses on collaboration within the research team and in the larger research community, leadership in the research team, the peer review process and knowledge dissemination.

NURS 780 Patient Care Systems and Patient Outcomes

3 lecture hours. 3 credits. Prerequisite: NURS 508 or equivalent, or permission of instructor. Examines administration concepts relevant to systems of patient care. Focuses on the approaches, including program evaluation, for measuring patients outcomes affected by nursing and multidisciplinary collaboration.

NURS 781 Organizational Analysis in Nursing

3 lecture hours. 3 credits. Prerequisite: NURS 508, 681 or equivalent (i.e., graduate course in organizational theory); or permission of instructor. Analyzes current paradigms guiding nursing systems research. Evaluates concepts and theoretical models that attempt to explain organizational functioning and that are of particular usefulness in developing a substantive body of knowledge.

NURS 782 Analysis of Health Care Policy as a Factor in Nursing Practice

3 lecture hours. 3 credits. Analyzes global and national issues in health care policy. Applies traditional and emerging models to policy issues. Examines policies having implications for nursing practice research and administration. Focuses on the environment of health care policy development, the agencies and leadership of policy development and implementation, and nursing's role in policy development, implementation, and evaluation.

NURS 791 Special Topics

3-6 credits. May be repeated. Prerequisite: Admission to doctoral program and permission of instructor. Explores specific topics in nursing.

NURS 792 Directed Study in Nursing

Variable hours. 1-6 credits. Course may be repeated. A minimum of 3 credits is required as a substitute for a required focus of inquiry course. A maximum of 6 credits is allowed. Prerequisites: Admission to doctoral program and permission of instructor. Independent study in specific area of nursing developed under the supervision of a member of the graduate faculty. Graded as pass/fail.

NURS 796 Directed Research

Variable hours. 1-6 credits. May be repeated. A minimum of 5 credits is required. Provides a mentored research experience in a selected area of inquiry or research methodology within the context of student's selected focus area. Graded as "S," "U" or "F."

NURS 797 Research Practicum

Variable clinical hours. 1-6 credits. May be repeated. A minimum of 3 credits is required. Provides a mentored research experience in areas of faculty research expertise. Graded as "S," "U" or "F."

NURS 798 Thesis

6 credits. The master's thesis constitutes carefully planned and executed research under the supervision of an adviser and in conjunction with a thesis committee. The student writes and presents the required thesis in the area of clinical nursing interest.

NURS 898 Dissertation

Variable hours. 1-12 credits. A minimum of 12 credits is required. Prerequisite: Admission to candidacy. Original research conducted under the supervision of an adviser and in conjunction with a dissertation committee.

School of Pharmacy

Medicinal Chemistry(MEDC)

MEDC 310/CHEM 310 Medicinal Chemistry and Drug Design

Semester course; 3 lecture hours. 3 credits. Prerequisite: One year of organic chemistry. This course is designed to expose undergraduate chemistry, biology and pre-medicine majors to the history, theory and practice of medicinal chemistry. The course will emphasize a combination of fundamentals and applications of drug design. In particular, the molecular aspects of drug action will be discussed. Special emphasis will also be placed on the methods used by medicinal chemists to design new drugs.

MEDC 501 Medicinal Chemistry I

Short course; 4 lecture hours per week for 8 weeks. 2 credits. This course integrates the chemical and physical properties of organic molecules with biological effects. Particular emphasis is placed on heterocyclic chemistry, mechanisms of drug decomposition, mechanisms of enzymatic reactions, and stereochemistry as they relate to drug action and biodisposition. Molecular physico-chemical phenomena are described which pertain to biological events.

MEDC 526 Research Techniques in Medicinal Chemistry

Semester course; 0-2 lecture and 2-8 laboratory hours. 1-4 credits. The theory and application of classical, instrumental, and computer techniques used in medicinal chemistry research are presented.

MEDC 532 Medicinal Chemistry for Nurse Anesthetists

Semester course; 3 lecture hours. 3 credits. A review of the principles of organic chemistry and bio-organic chemistry presented as a series of lectures covering the structure-activity relationships, metabolism, and mechanism of action of selected agents.

MEDC 541 Survey of Molecular Modeling Methods

Semester course; lecture and laboratory hour. 1 credit. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

MEDC 591 Special Topics in Medicinal Chemistry

Semester course; 1-3 credits. An elective course in which students may choose to participate in individual or group study in one or more areas of medicinal chemistry. The course can take the form of formal lectures, informal group discussions, literature research, and/or laboratory research. Students must have the permission of the individual instructor before registering for this course.

MEDC 601 Advanced Medicinal Chemistry I

Semester course; 1 lecture hour. 1 credit. Introduces the general concepts important in medicinal chemistry, including drug dynamics, drug macromolecule interactions, drug design and quantitative structure-activity relationships.

MEDC 602 Principles of Pharmaceutical Analysis

Semester course; 1.5 lecture and 1 laboratory hours. 2 credits. A study of the underlying principles and practical limitations of analytical procedures with emphasis on techniques most applicable to the qualifying of substances in biological fluids. The laboratory work usually involves the testing and evaluation of over-the-counter analytical products currently sold or used in pharmacies. Emphasis is also placed on the clinical applications and interpretations of measuring endogenous and exogenous chemicals present in biological fluids. This course includes material related to both statistics and ethics.

MEDC 603 Medicinal Chemistry II

Semester course; 2.5 lecture hours. 2.5 credits. A study of the general principles of drug action at the molecular-level. Emphasis is placed on physical, chemical, and biochemical properties of drug substances, the relationships between chemical structure and pharmacological activity, the molecular basis for drug-receptor interactions, and drug metabolism. A major goal is to prepare students so that they may more readily assimilate and apply new information about existing and future therapeutic agents.

MEDC 604 Medicinal Chemistry III

Semester course; 2.5 lecture hours. 2.5 credits. Prerequisite: MEDC 603. A study of the general principles of drug action at the molecular-level. The philosophy and goals of MEDC 603 are applied to the discussion of therapeutic classes of agents not covered in MEDC 603.

MEDC 610 Advanced Medicinal Chemistry II

Semester course; 2 lecture hours. 2 credits. Prerequisite: MEDC 601 or permission of instructor. Introduces concepts for understanding the medicinal chemistry of the central nervous system.

MEDC 614/PCEU 614/PHAR 614 Research Techniques

Semester course; variable hours. Variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time. Prerequisite: Approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail.

MEDC 620 Advanced Medicinal Chemistry III

Semester course; 2 lecture hours. 2 credits. Prerequisite: MEDC 601 or the permission of the instructor. Reviews the concepts necessary for enzyme inhibitor design. Emphasizes the design of new agents to treat disease states by enzyme inhibition.

MEDC 630 Theoretical Methods in Drug Design

Semester course; lecture and laboratory hours. 2 credits. Prerequisites: MEDC 601, MEDC 610 or MEDC 620, or permission of instructor. A study of the theoretical methods of drug structure-activity analysis, including molecular orbital theory, topological indexes and physical property correlations. Computational chemistry problems will be emphasized in the laboratory.

MEDC 642 Nucleoside, Nucleotide, Carbohydrate and Peptide Chemistry

Semester course; 1 lecture hour. 1 credit. Surveys nucleoside, nucleotide, carbohydrate and peptide chemistry with emphasis on their synthesis.

MEDC 643 Regioselective Drug Metabolism

Semester course; 1 lecture hour. 1 credit. Surveys drug biotransformation reactions. Emphasizes the molecular aspects of Phase I and Phase II drug metabolism.

MEDC 644 Asymmetric Synthesis

Semester course; 1 lecture hour. 1 credit. Reviews the major asymmetric chemical transformations, including mechanisms, scope and synthetic utility.

MEDC 645 Introduction to Heterocyclic Chemistry

Semester course; 1 lecture hour. 1 credit. Introduces the chemistry of heterocyclic compounds. Emphasizes heterocyclic nomenclature and the reactions/reactivity of heterocyclic systems.

MEDC 670 Advanced Molecular Modeling Theory and Practice

Semester course; 3 lecture/laboratory hours. 3 credits. Prerequisite: MEDC 641 or permission of instructor. Examines the principles and application of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

MEDC 690 Departmental Research Seminar

Semester course; 1 lecture hour. 1 credit. Reports presented by students, staff, and visiting lecturers, current problems and developments in pharmaceutical and medicinal chemistry are discussed.

MEDC 691 Special Topics in Medicinal Chemistry

Semester course; 1-4 lecture hours. 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as a part of the research training.

MEDC 697 Directed Research in Medicinal Chemistry

Semester course; 1-15 credits. Research leading to the M.S. or Ph.D. degree.

Pharmaceutics(PCEU)

PCEU 503 Principles of Pharmacy

Semester course; 3 lecture hours. 3 credits. A study of the chemical and physico-chemical principles fundamental to the development and use of medication dosage forms. Topics discussed include pharmaceutical calculations, prescription orders, weights and measures, theory of solutions, official waters, solution stabilizing agents and preservatives, sterile products, and ophthalmic products, and solution degradation kinetics.

PCEU 504 Biopharmaceutics and Dosage Forms

Semester course; 2.5 lecture hours. 2.5 credits. Prerequisite: PCEU 503. Describes the physico-chemical and biopharmaceutical principles fundamental to the development of pharmaceutical dosage forms including disperse systems, semi-solids, solids and novel drug delivery systems. Formulation, manufacture, control and relevant patient-pharmacist interactions will be addressed. Lectures will be presented in blocks, each of which will have associated homework.

PCEU 506 Pharmacokinetics

Semester course; 2 lecture hours. 2 credits. Major topics include the mathematical and physiological principles of pharmacokinetics related to the development and use of pharmaceutical dosage forms. Discussions will include compartmental modeling, physiological concepts of pharmacokinetics, and clearance and absorption concepts. Also includes material related to statistics.

PCEU 604 Biotechnology and Pharmacy

Semester course; 1 lecture hour and 1 self-paced DNA isolation and identification laboratory. 2 credits. The student's basic biochemistry and pharmacy education will be expanded with the newest concepts in molecular medicine, pharmacogenetics, pharmacogenomics, biochemistry, molecular biology, analytical techniques, drug development, delivery and formulation relevant to the use and development of biotechnology-derived products, including protein- and nucleic acid-based pharmaceuticals.

PCEU 605 Biopharmaceutics and Pharmacokinetics

Semester course; 2-5 lecture hours. 2-5 credits. This course describes the physico-chemical and biopharmaceutical principles, fundamental to the development of pharmaceutical principles, fundamental to the development of pharmaceutical dosage forms including disperse systems, semi-solids, solids and novel drug delivery systems. Formulation, manufacture, control and relevant patient-pharmacist interactions will be addressed.

PCEU 606 Applied Pharmacokinetics

Semester course; 2 lecture and 1 conference hours per week. 2.5 credits This course extends the concepts of pharmacokinetics as applied to dosage regimen design, pharmacokinetic variability, drug interactions, and statistical strategies for individualization of drug therapy.

PCEU 607-608 Introduction to Pharmaceutical Sciences

Continuous courses; 2 credits offered: 1 credit hour in fall and spring. Students will be introduced to the drug discovery process and learn about drug development from drug design to drug approval. Each topic will be introduced either by a faculty member of an expert from the pharmaceutical industry. Didactic sessions are followed by guided discussions. Discussion sessions may involve more than one faculty member and utilize specific examples to illustrate the topics.

PCEU 612 Advanced Physical Pharmacy and Biopharmaceutics

Semester course; 3 credits. Phase equilibria and phase transfer kinetics related to biopharmaceutics will be covered. The relationship between physiochemical properties of a drug dosage form and drug absorption, along with the correlation between in vitro tests used to evaluate dosage forms an in vitro measures of drug absorption will be covered. The course assumes that the student has a basic understanding of pharmacokinetics, physical chemistry and statistics.

PCEU 614/MEDC 614/PHAR 614 Research Techniques

Semester course; variable hours. Variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time. Prerequisite: Approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail.

PCEU 622 Clinical Pharmacokinetics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. The application of current pharmacokinetic theory to clinical problems involved in optimizing and monitoring drug use in patients. Particular attention is given to adjustment of drug dosage in individual patients with impaired drug elimination due to renal and hepatic dysfunction. (Nontraditional program)

PCEU 624 Pharmacokinetics

Semester course; 3 lecture hours. 3 credits. An advanced treatment of the kinetics of drug absorption, distribution, and elimination utilizing mathematical models, and digital computers for analysis of linear and nonlinear biologic systems.

PCEU 625 Pharmaceutical Analysis

Semester course; 1 lecture and 1 laboratory hours. 2 credits. Theory and practice of selected analytical techniques for the quantitative analysis of drugs in body fluids and other matrices. Emphasis is on method validation, and immunoassay methodologies. Laboratory sessions will provide "hands on" experience with modern methods of drug analysis.

PCEU 626 Pharmaceutical Analysis Laboratory

1 lecture hour. 1 credit. Prerequisite: PHAR 625. A continuation of PHAR 625 with emphasis on providing advanced topics for analysis of drugs and metabolites.

PCEU 690 Pharmaceutics Research Seminar

Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmaceutics. Research Seminar.

PCEU 691 Special Topics in Pharmaceutics

Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the training in research.

PCEU 697 Directed Research in Pharmaceutics

Semester course; 1-15 credits. Research leading to the M.S., Pharm.D., or Ph.D. degree.

Pharmacy(PHAR)

PHAR 201 Introduction to Pharmacy

Semester course; 1 lecture hour. 1 credit. Open to undergraduate students with an interest in pursuing pharmacy as a career. Consists of presentations related to the profession of pharmacy and the pharmaceutical sciences, preparing for admission to the School of Pharmacy and employment opportunities in the profession after graduation. Graded as pass/fail.

PHAR 504 Pharmacotherapeutics in Physical Therapy

Semester course; 1 lecture hour. 1 credit. Introduces pharmacotherapeutics for physical therapy students. Emphasizes the safe and appropriate use of drugs in the prevention and treatment of disease. Focuses on the principles and concepts of drug action and therapeutic indications for drugs and drug classes in didactic presentations. Includes the effects of medications on physical functions when appropriate.

PHAR 517 Pharmacy Skills Laboratory I

Semester course; 3 laboratory hours. 1 credit. This competency-based course includes an introduction to medication distribution systems, prescription dispensing, patient counseling and monitoring, compounding solution drug preparations and drug information retrieval. Graded as honors or pass/fail. Formerly PCEU 517.

PHAR 518 Pharmacy Skills Laboratory II

Semester course; 3 laboratory hours. 1 credit. This competency-based course includes an introduction to IV infusion systems and pumps, the preparation of sterile products, a continuation of medication distribution systems and compounding semi-solid and solid dosage forms. Graded as honors or pass/fail. Formerly PCEU 518.

PHAR 521 Pharmacy in the U.S. Health Care System

Semester course; 3 lecture hours. 3 credits. Introduces the student to the foundational concepts of the history, practice and scope of pharmacy, and reviews the structure, function and associated policy considerations of the U.S. health care delivery system. Provides a general overview and analysis of the interrelationships among health care consumers, providers, organizational arrangements, and regulatory and reimbursement mechanisms. Also includes an introduction to federal and state laws that affect pharmacy practice and the provision of pharmaceutical care.

PHAR 525 Communications in Pharmacy Practice

Semester course; 1.5 lecture hours and an average of 1 conference hour per week. 2 credits. A study of the theory and techniques of communication and counseling techniques related to pharmacy practice. Supervised practice in developing basic communication skills.

PHAR 558 Pharmacy Practicum I

Semester course; 6 conference hours, 14 experiential hours per semester. 0.5 credit. This course is the first of a five-semester sequence. Students will have direct contact with patients and practice sites to allow understanding of the effect of illness and medication on patients to prepare for pharmaceutical care services. Graded as honors or pass/fail.

PHAR 611 Health Behaviors of Pharmacy

Semester course; 3 lecture hours. 3 credits. Examines health care and drug use from an individual and societal perspective. Individuals' health behaviors result from the interplay of economic, social and cultural factors, and change does not come easily even when an individual is aware of the effects of certain behaviors on his or her own health. Rather than taking a blaming approach, this course explores to what extent interventions designed to change behavior can be adapted for and reduce the profound race, class and other social disparities in mortality and morbidity in the U.S.

PHAR 614/PCEU 614/MEDC 614 Research Techniques

Semester course; variable hours. Variable credit. Credit will be given on the basis of 1 credit per 45 hours of laboratory time. Prerequisite: Approval of research adviser. Provides new graduate student with the laboratory skills necessary to perform research in the chosen discipline. The training time required will depend upon the discipline. Graded as pass/fail.

PHAR 617 Pharmacy Skills Laboratory III

Semester course; 3 laboratory hours. 1 credit. This competency-based course includes patient counseling and analysis of patient self-monitoring self-dosing devices, detection of errors and omissions in prescription dispensing, reading patient charts and taking medication histories, taking telephone prescriptions, and compounding total parenteral nutrition solutions. Graded as pass/fail. Formerly PCEU 617.

PHAR 626 Advanced Pharmacotherapy Research Methods

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of the instructor. This course focuses on research techniques used to assess the clinical response to drug therapy, including advantages and disadvantages of different techniques. Published clinical trails are evaluated to illustrate these concepts including statistical assessment. Recent FDA New Drug Applications are reviewed when appropriate to illustrate regulatory aspects of the evaluation of clinical trials.

PHAR 627 Principles of Pharmacy Practice Management

Semester course; 4.5 lecture hours. 4.5 credits. This course describes social, behavioral, and financial theories pertinent to the management of pharmacy practices in community, hospital and other settings. Emphasis will be placed on marketing and pharmacoeconomic concepts applied to the practice of pharmacy.

PHAR 631 Advanced Pharmacy Practice Management

Semester course; 3 lecture hours. 3 credits. Classical, social, and systems views of management are introduced with emphasis on the uses of implicit control. The sociology of professions and the nature of professional work are explored; the management of the professional's work is discussed in detail. Design and operation of integrated drug information, drug distribution, and drug use control systems is explored. (Nontraditional program)

PHAR 635 Advanced Pharmacotherapeutics I

Semester course; 3 lecture and 6 laboratory hours. 5 credits. The rational therapeutic choices of drugs with respect to pathophysiological considerations of diseases are emphasized. Clinical application of biopharmaceutics, pharmacokinetics, therapeutics, drug interactions, adverse drug reactions, laboratory findings, and other factors affecting drug efficacy in the context of the total care of the patient is stressed. Detection, clinical evaluation and management of adverse drug reactions also is emphasized. Students receive advanced instruction in therapeutics and pathophysiology and learn to apply drug knowledge to problem solving using selected patient cases. (Nontraditional program)

PHAR 636 Advanced Pharmacotherapeutics II

Semester course; 3 lecture and 6 laboratory hours. 5 credits. A continuation of PHAR 635. (Nontraditional program)

PHAR 637 Introduction to Research Methods in Pharmaceutical Sciences

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Assists practicing pharmacist managers and researchers in the development, implementation, monitoring and evaluation of programs for the delivery of pharmaceutical care and the practice of pharmacy. Introduces students to the empirical method and to provide them with a fundamental knowledge base for developing salient research questions that could lead to the articulation of testable research hypotheses, accomplished by addressing those research techniques and designs most commonly used in pharmacy and health services research.

PHAR 638 Pharmaceutical Benefit Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Addresses the need for pharmacy benefit management, the types of organizations that use pharmacy benefit management and the primary tools, techniques and practices used to manage the pharmacy benefit. Presents through lectures, readings, class discussions and a research paper.

PHAR 643 Pharmacotherapy I

Semester course; 3 lecture and 0.5 conference hours. 3.5 credits. The pathophysiology, clinical presentation, clinical course, prevention, and pharmacotherapy of disease states are presented. The detection of drug-related problems in the provision of pharmaceutical care using problems or patient cases is introduced. Problem-solving and communication skills are enhanced in small group conferences.

PHAR 644 Pharmacotherapy II

Semester course; 4 lecture and 0.5 conference hours. 4.5 credits. A continuation of PHAR 643. The pathophysiology, clinical presentation, clinical course, prevention, and pharmacotherapy of disease states are presented. Clinical pharmacology, applied clinical pharmacokinetics, techniques for assessing drug-related problems, monitoring and optimizing pharmacotherapy using subjective and objective patient data are emphasized. Large group discussions are introduced. Problem-solving and communication skills are enhanced in small group conferences.

PHAR 650 Evaluation of Drug Information and Information Sources

Semester course; 2 lecture and 2 laboratory hours. 3 credits. A study, at the advanced-level, of the techniques used to retrieve and evaluate clinical drug literature. Research methods and research design are taught to better prepare the student to evaluate published research. (Nontraditional program)

PHAR 657, 658 Pharmacy Practicum III, IV

Semester courses; 6 conference hours, 14 experiential hours per semester. 0.5 credit. This course focuses on the skills needed to solve problems and deliver pharmaceutical care. Skills taught in other courses and laboratory sessions will be reinforced and refined in the experience component of this course. Graded as honors or pass/fail.

PHAR 670 Geriatric Pharmacy Practice

Semester course; 3 lecture hours. 3 credits. Students learn therapeutic aspects of providing health care to elderly people. Sociobehavioral aspects of aging related to pharmacotherapy outcomes also will be learned. Problems associated with drug use in the elderly and the importance of providing quality pharmaceutical care to ambulatory and institutionalized geriatric individuals will be emphasized.

PHAR 671 Applied Pharmacoeconomics and Outcomes Research

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Presents theoretical and practical topics relating to pharmacoeconomics and health outcomes research. Students will learn to critically appraise and discuss pharmaceutical outcomes research through lectures, readings, class participation and projects. Requires students to plan, initiate and present an outcomes research project that considers both clinical and economic issues of product or service selection.

PHAR 672 Advances in Mental Health Pharmacy Practice

Semester course; 2 lecture hours. 2 credits. Students choose the topics for discussion in this elective course. They actively learn through small group discussions of the pharmacotherapy of psychiatric disorders. Students gain experience in patient rounds, practice-based projects, interpretation of clinical practice guidelines, use of the Internet and computer presentations.

PHAR 674 Advances in Community Pharmacy Practice and Therapeutics

Semester course; 2 lecture and 1 conference hours. 3 credits. This course will enable students to enhance their community practice and patient care skills. It will address strategies for marketing and documentation of clinical services including disease management, wellness and screening programs pertinent to community pharmacy practice. Students will visit community pharmacies for the practice component of this course.

PHAR 675 The Pharmacist's Role in Alternative Medicine

Semester course; 3 lecture hours. 3 credits. With the expanding use of natural products and other alternative medicine modalities, the pharmacist is confronted with a need to be knowledgeable of these areas so that he or she may more effectively provide guidance to patients. This course is a study of commonly used natural products and other alternative therapies (e.g., homeotherapy, healing touch, osteopathic medicine).

PHAR 676 Veterinary Pharmacotherapy

Semester course; 2 lecture hours. 2 credits. This course explores the unique aspects of drug action in nonhuman species and treatment of common veterinary problems.

PHAR 677 Infectious Diseases Pharmacotherapy

Semester course; 3 lecture hours. 3 credits. This course is designed to familiarize the student with principles of the rational treatment of human infectious diseases. Emphasis will be placed on learning the pharmacology, toxicology and pharmacokinetics/pharmacodynamics of antimicrobial agents; problems of antimicrobial resistance and the role of the pharmacist in combating resistance; the methods of obtaining and evaluating culture and susceptibility reports; and familiarity with infectious diseases literature. Students will attend daily consultation rounds with the infectious diseases service and will meet with the preceptor to discuss patients and plan for contributions to patient care.

PHAR 678 Women's Health: Pharmacotherapeutic Issues and Controversies

Semester course; 2 lecture hours. 2.5 credits. This course addresses the prevention and management of disease in women. It is designed to expand upon the women's health topics presented in the pharmacotherapy course series. Problem-based learning, student presentations and clinical projects serve as the primary teaching methods.

PHAR 679 Topics in Critical Care Pharmacotherapy

Semester course; 2 lecture and 3 conference hours. 3 credits. This course consists of discussions and case presentations to familiarize the student with critical care pharmacotherapy. In addition to a discussion of various disease states, information will be provided about the critically ill patient, the environment of the intensive care unit and the role of the critical care pharmacist. The course is presented in an interactive case-based discussion format.

PHAR 680 Advanced Cardiovascular Pharmacotherapy

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHAR 643. This course offers an integrated approach to the study of cardiology. Through topic discussions, case presentations and a written assignment, students will learn treatment of various complex cardiovascular disease states and develop a greater understanding of the role of the pharmacist in the acute care setting. The course will prepare the student for an acute care rotation in cardiology.

PHAR 681 Introduction to Pharmaceutical Industry

Semester course; 3 lecture hours. 3 credits. This course provides an understanding of how the pharmaceutical industry has evolved, the issue it currently faces and career opportunities for pharmacists. Topic areas include drug discovery, clinical trials, regulatory approval, manufacturing, marketing, distribution and sales, the role of pharmaceutical representatives, the influence of disease management, and business and management trends. The course will be taught through a programmed textbook and presentations/discussion by guest lectures.

PHAR 682 Institutional Pharmacy Elective

Semester course; 3 lecture hours. 3 credits. This elective is designed to develop an understanding of hospital and health system pharmacy services, terminology and issues relating to quality of care. Case studies and current issues in health system pharmacy are used to illustrate best practices and elucidate opportunities for professional careers in institutional pharmacy practice. Class sessions focus on hospital and health system types and terminology, management decision-making, the medication use process, pharmacy administration, pharmacy services, drug distribution and clinical information, pharmacist work, role of pharmacy technicians, automation of drug distribution and clinical information, accreditation requirements and processes, professional standards, hospital and pharmacy laws and regulations, pharmacy residences, pharmacy service relationships with the medical staff and other hospital departments, and future pharmacy services issues.

PHAR 685 Contemporary Topics in Pharmacy Elective

Semester course; 3 lecture hours. 3 credits. Explores how pharmacists prepare for and respond to the issues that affect the practice of pharmacy. Contemporary issues that relate to major health care needs, government health care activities, views by health professionals, health policies, health care economics, pharmacist attitudes and behaviors, pharmacy laws and regulations, pharmacy traditional views and opinions will be examined. Discussion and debate on these issues will help to prepare students for their future in pharmacy practice.

PHAR 686 Entrepreneurial Pharmacy and Independent Pharmacy Practice

Semester course; 3 lecture hours/10 weeks. 2 credits. Provides a practical review of independent pharmacy practice from starting to running a pharmacy. Topics include financing, marketing, niche markets, store design and merchandising, technology, business relations, and contracts. The course will be taught through presentations/discussions by guest lecturers and a project.

PHAR 687 Introduction to Research in Pharmacy

Semester course; 1 lecture hour. 1 credit. A broad overview of the types of research conducted in the profession of pharmacy with a focus on clinical research. Students will achieve a broad appreciation of the research opportunities available in pharmacy and guidance in pursuit of a career in research. Format will consist of lectures, interactive discussions and demonstrations. Graded P/R.

PHAR 690 Pharmacy Research Seminar

Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmacy. Research seminar.

PHAR 691 Special Topics in Pharmacy

Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

PHAR 697 Directed Research in Pharmacy

Semester course; 1-15 credits. Research leading to the M.S., Pharm.D., or Ph.D. degree.

PHAR 701 Pharmacy Ethics

Semester course; 1.5 lecture hours and an average of 1 conference hour per week. 2 credits. This course includes an overview of basic ethical principles and relates them to the practice of pharmacy. It introduces different perspectives on approaches to addressing ethical dilemmas in pharmacy practice and presents the tools for decision making.

PHAR 718 Pharmacy Skills Laboratory IV

Semester course; 3 laboratory hours. 1 credit. This competency-based course challenges students in selected clinical applications in pharmacy practice.

PHAR 724 Pharmacy Law

Semester course; 3 lecture hours. 3 credits. A study of federal and state laws, including statutes, regulations and cases, affecting the practice of pharmacy and the distribution of drugs. This course includes material on ethics.

PHAR 743 Pharmacotherapy III

Semester course; 2.5 lecture and 0.5 conference hours. 3 credits. The pathophysiology, clinical presentation, clinical course, prevention and treatment of disease states are presented. Clinical pharmacology, applied clinical pharmacokinetics, techniques for assessing drug-related problems, and monitoring and optimizing pharmacotherapy are emphasized. Problem-solving and communication skills are enhanced in small group conferences.

PHAR 744 Integrated Therapeutics

Semester course; 2 lecture and 2 conference hours. 3 credits. Patient cases serve as the basis for active student learning of the pathophysiology, clinical presentation, clinical course, prevention, and pharmacotherapy of disease states. The rational therapeutic choice of drugs with respect to multiple disease states is emphasized. Collection of patient data, assessment of drug-related problems, development of recommendations, and establishment of monitoring parameters are emphasized. Clinical application of pharmacology, biopharmaceutics, pharmacokinetics, therapeutics, drug interactions, adverse drug reactions, laboratory findings, and other factors affecting drug efficacy in the context of disease state management are also stressed. Student participation in large and small group discussions is an essential component of this course.

PHAR 745 Drug Literature Evaluation

Semester course; 4 lecture hours. 4 credits. This course in the evaluation drug literature contains material related to biostatistics. Lecture topics include research design, concepts and principles of clinical trials, evaluation of case reports and primary literature, appropriate use of statistics, and inferential statistics (parametric and nonparametric). Exercises include efficient use of drug information resources, critique of pharmaceutical advertising and development of professional written communication skills.

PHAR 747 Physical Assessment

Semester course; 1 lecture hour per week. 1 credit. A study of basic physical assessment through lectures, audiovisual aids, readings, and hands-on practice. Emphasis is placed on patient interviewing techniques, physical examination skills, and the application of these skills to evaluating drug therapy and achieving desired therapeutic goals.

PHAR 748 Self-Medication Awareness and Community Health

Semester course; 2.5 lecture and an average of 1 conference hour per week. 3 credits. This course describes and utilizes skills for assessing the necessity of using nonprescription therapy, including alternative medicines, for the medical problems encountered. Problem solving, hands-on workshops to learn about home-monitoring, case presentation, and didactic lectures will all be used to conduct the course. The course includes material related to everyday prevention of disease and evaluation of patient data.

PHAR 757, 758 Pharmacy Practicum IV, V

Semester courses; 6 conference hours, 14 experiential hours per semester. 0.5 credit. Students will learn to integrate the patient care skills learned in PHAR 657, 658 into the pharmaceutical care services provided to assigned patients in hospital and ambulatory settings. Students identify drug-related problems, develop and execute patient care plans to address these problems, monitor and interpret the results of these plans, and document services in health records. Graded as honors or pass/fail.

PHAR 760 Acute Care Pharmacy Practice

Semester course; daily for 5 weeks. 5 credits. In this course, students will participate in the delivery of pharmaceutical care to hospitalized patients with an ongoing clinical pharmacy program. Students may participate in adult medicine, family practice or specialty medicine. Students will participate in the following types of activities: rounding, obtaining patient histories, identifying problems requiring therapeutic interventions, solving problems, consulting with physicians, monitoring patient outcomes and providing educational sessions for the professional staff. These services are expected to be integrated with the continuum of hospital pharmacy services. Graded as H/HP/P/F.

PHAR 761 Hospital Pharmacy Practice

Semester course; daily for 5 weeks. 5 credits. In this course, students will participate in the hospital pharmacy department's delivery of pharmacy services including drug preparation, dispensing, drug distribution, administration and quality assurance. Students will participate in dosage form development, IV admixtures, unit dose dispensing, documentation, quality assurance and related services.

PHAR 762 Geriatrics Pharmacy Practice

Semester course; daily for 5 weeks. 5 credits. In this course, students will participate in the delivery of care and services to patients residing in resident halls, adult homes and/or nursing homes. Student activities will include drug preparation and distribution as well as the consultant activities that include drug monitoring and review of patient care. Graded as H/HP/P/F.

PHAR 763 Primary Ambulatory Care Pharmacy Practice

Semester course; daily for 5 weeks. 5 credits. In this course, students will participate in the delivery of pharmaceutical care in a primary-care, multidisciplinary practice in which there is an ongoing clinical pharmacy program. These sites may include community pharmacies, hospital clinics, physician group practices and managed care facilities. Students will be involved in obtaining patient histories, evaluating drug therapies, assessing patient's response to therapy, identifying drug related problems, developing pharmacy care plans, monitoring the patient's therapeutic outcome, consulting with physician and non-physician providers and providing patient education. If this site offers dispensing services, the student will be involved with drug delivery to the patient. Graded as H/HP/P/F.

PHAR 764 Community Pharmacy Practice

Semester course; daily for 5 weeks. 5 credits. In this course, students will participate in all facets of pharmacy practice in the community pharmacy setting. Students will be involved in dispensing, compounding, telephone consultation, patient counseling and nonprescription drug recommendations. Students also will be involved in patient assessment, monitoring intervention and follow-up care designed to improve the outcomes of drug therapy. Graded as H/HP/P/F.

PHAR 765 Elective I

Semester course; daily for 5 weeks. 5 credits. In this course, students will be able to participate in a variety of pharmacy practice settings. Graded as H/HP/P/F.

PHAR 766 Elective II

Semester course; daily for 5 weeks. 5 credits. In this course students participate in a variety of pharmacy practice settings. Graded as H/HP/P/F.

PHAR 767 Elective III

Semester course; daily for 5 weeks. 5 credits. In this course students participate in a variety of pharmacy practice settings. Graded as H/HP/P/F.

PHAR 768 Clinical Selective

Semester course; daily for 5 weeks. 5 credits. In this course students can choose to participate in a primary ambulatory care pharmacy practice site or an advanced community pharmacy practice site.

School of Social Work

Social Work(SLWK)

SLWK 201 Introduction to Social Work

Semester course; 3 lecture hours. 3 credits. Systematic overview of the social work profession. Begins the process of professional socialization, both through class content and required service experience. Knowledge of the nature of social work, the fields of social work practice, target populations, overview of social work methods.

SLWK 230 Communication in the Helping Process

Semester course; 3 lecture hours. 3 credits. The study of the knowledge, skills and values of effective human communication and interpersonal relations. Includes observation, collection and description of data, verbal and nonverbal communication and the relevance of the above to social work practice. Integrates issues of human diversity in all course content. Emphasizes the demonstration and practice of communication through structured exercises.

SLWK 311 Social Work and Oppressed Groups

Semester course; 3 lecture hours. 3 credits. Open only to majors or minors in social welfare with junior status or by permission of program director or course instructor. Examines forces leading to individual prejudice and institutional oppression. Focuses on impact of oppression. Provides students with an understanding of diversity and a general knowledge of social work strategies to alleviate oppression and to empower the oppressed.

SLWK 313 Person in Society I

Semester course; 3 lecture hours. 3 credits. Prerequisite: ANTH 103, BIOL 101, PSYC 304 and SOCY 101. Open only to majors or minors in social welfare with junior status or by permission of program director or course instructor. First of a three-semester sequence on human behavior and the social environment. Uses theoretical concepts and research findings from the behavioral sciences as background for understanding and assessing the functioning of individuals and families in their social environment. Facilitates integration of theory and research with assessment skills associated with basic social work practice. Emphasizes the social systems approach for analyzing the impact of various social problems on individual and family dynamics.

SLWK 330 Person in Society II

Semester course; 3 lecture hours. 3 credits. Prerequisite: SLWK 313. Open only to majors or minors in social welfare with junior status or by permission of program director or course instructor. Second of three courses on human behavior in the social environment. Uses theoretical concepts from the behavioral sciences to understand the family and small groups as social institutions and social groups as context for human behavior over the life cycle. Designed to provide a theoretical foundation for practice with families and small groups.

SLWK 332 Social Work Practice: Fundamentals

Semester course; 3 lecture hours. 3 credits. Prerequisite: SLWK 313. Corequisite: SLWK 393. Open only to social work majors with junior status. First of three semester practice sequence. Introduces students to basic concepts and skills of beginning-level professional generalist social work practice. Emphasizes application of concepts to the concurrent fieldwork experience.

SLWK 380 Foundations of Social Work Research I

Semester course; 3 lecture hours. 3 credits. Open only to majors or minors in social welfare with junior status or by permission of program director or course instructor. First of two semester research sequence. Designed to provide an understanding and appreciation of a scientific, analytic approach to building knowledge for practice and for evaluating multilevel service delivery. Provides an overview of the research process, including problem formulation, sampling, design, measurement, data collection, data analysis and dissemination of findings. Presents ethical standards of scientific inquiry with special attention to research with vulnerable and oppressed populations.

SLWK 381 Foundations of Social Work Research II

Semester course; 3 lecture hours. 3 credits. Prerequisite: SLWK 380. Open only to social work majors or minors in social welfare with junior status or by permission of program director or course instructor. The content includes a review of basic statistical univariate and bivariate descriptive and inferential tools for analyzing, interpreting and presenting data for decision making in generalist social work practice. It also introduces methods for analysis of quantitative and qualitative data and further develops critical thinking skills in translating empirical research findings into generalist social work practice principles.

SLWK 391 Topics in Social Work

Semester course; variable hours. 1-3 credits. An in-depth study of a selected topic relevant for professional social work practice. See the Schedule of Classes for the specific topic to be offered each semester.

SLWK 393 Junior Field Instruction

Semester course; 3 credits. Prerequisite: SLWK 313. Corequisite: SLWK 332. Open only to majors with junior status. Fourteen hours per week (spring semester) or 20 hours per week (summer session) in a community agency under the supervision of an agency-based field instructor. Intended to facilitate student's understanding of agency structure and community context, ability to engage in professional relationships, to assess strengths, define problems, set goals and utilize beginning-level practice skills with individuals, families, groups, organizations and communities. Promotes identification as a professional social worker.

SLWK 422 Social Welfare Legislation and Services

Semester course; 3 lecture hours. 3 credits. Open only to majors or minors in social welfare with junior status or by permission of program director or course instructor. Analyzes social welfare policy as related to social values, social problems, and social structures. Examines frameworks for policy analysis and for evaluation of programmatic outcomes of policy, with application to contemporary social service and income maintenance policies and delivery systems. Considers the economic, political and ideological factors and processes that affect social welfare legislation, financing and implementation.

SLWK 431 Person in Society III

Semester course; 3 lecture hours. 3 credits. Prerequisite: SLWK 313. Open only to majors or minors in social welfare with junior status or by permission of program director or course instructor. Third of three courses on human behavior in the social environment. Builds on the theoretical concepts from the behavioral sciences discussed in SLWK 230 and 313. Focus on understanding organizations and how their purposes, auspices, structure, processes and environment affect the delivery of social services to diverse groups. The community context of social services, including that of the consumer, is emphasized from an open systems theoretical perspective. Students will be expected to integrate course content with their field experience or other agency with which they are familiar. Required of all undergraduate social work majors.

SLWK 441 Social Work Practice I

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 332, 381 and 393. Open only to majors with senior standing. Second of a three-semester practice sequence. Review of interviewing and problem solving for generalist social work practice with diverse populations. Emphasis on agency structure and function, skills of engagement and problem definition, assessment, planning for intervention, and evaluation. Use of material from concurrent fieldwork practice to facilitate integration of learning.

SLWK 442 Social Work Practice II

3 lecture hours. 3 credits. Prerequisites: SLWK 441 and SLWK 494. Open only to majors with senior standing. Third of a three-semester practice sequence. Emphasizes planning and implementing change with diverse populations, professional ethics, professional development, termination and evaluation of generalist social work practice. Use of case material from concurrent fieldwork practice to facilitate integration of learning.

SLWK 492 Independent Study

Semester course; 1, 2 or 3 lecture hours. 1, 2 or 3 credits. Prerequisites: junior or senior standing, and permission of instructor. Under supervision of a faculty adviser, whose consent is required to register, study of a topic of concern to the student. Each student must present his or her findings in writing or pass an oral examination.

SLWK 494-495 Senior Field Instruction I and II

Continuous courses; 3-3 credits. Corequisites: SLWK 441, 442. Open only to majors with senior status. Fourteen hours per week in a community agency under the supervision of an agency based field instructor. Intended to develop knowledge, values and social work practice skills appropriate to entry-level generalist practice in human service agencies.

SLWK 601 Human Behavior in the Social Environment I

Semester course; 3 lecture hours. 3 credits. First of two foundation courses on human behavior in the social environment. Includes the influences of biological, psychological, spiritual, physical and socio-cultural forces on the coping efforts of various social systems. Provides a multidimensional perspective on human behavior of these systems, based on theory and research findings. Examines contemporary challenges facing these systems; impact of mechanisms of oppression as well as racial, ethnic, class, cultural, disability, sexual orientation and gender diversity on human behavior; and the reciprocal nature of interactions of persons, dyads, families, social groups, communities, organizations and social institutions in a multicultural society. Introduces theoretical perspective on individuals and family development throughout life.

SLWK 602 Policy, Community and Organizational Practice I

Semester course; 3 lecture hours. 3 credits. Corequisite: SLWK 601. First of two foundation courses on social policy, policy practice and practice in communities and organizations. Surveys historical evolution of social welfare policy and contemporary provision of social welfare services, including the role of values in policy formulation and principles of social and economic justice. Introduces the social work role as change agent in legislative, community and organizational arenas. Uses social/behavioral knowledge and social work intervention models and applies analytical frameworks for assessing program, organizational and policy effectiveness. Develops skills in identification of need, designing strategies for change, and policy analysis.

SLWK 603 Social Work and Social Justice

Semester course; 3 lecture hours. 3 credits. Examines social work's historical and current commitment to social justice as related to oppressed groups in a multicultural society. Enhances understanding of and appreciation for diversity in self and others. Addresses issues of power, inequality, privilege, and resulting oppression. Analyzes oppression resulting from persistent social, educational, political, religious, economic, and legal inequalities. Focuses on the experiences of oppressed groups in the U.S. in order to understand their strengths, needs, and including those distinguished by race, ethnicity, gender, age, sexual orientation, disability, immigration status, and class. Considers ethical dilemmas faced by social workers in empowerment and advocacy roles.

SLWK 604 Social Work Practice with Individuals, Families and Groups I

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: SLWK 601. The first of two foundation courses on social work practice with individuals, families, and groups. Defines and describes the history, context, phases and processes of direct social work practice. Introduces basic knowledge, skills, and values necessary to provide a range of restorative, rehabilitative, maintenance and enhancement services. Emphasizes the multidimensional context in which intervention occurs. Introduces selected practice theories and models to guide intervention with an emphasis on work with individuals.

SLWK 605 Social Work Practice with Individuals, Families and Groups II

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 601 and SLWK 604. Pre- or corequisite: SLWK 610. Second of two foundation courses on social work practice with individuals, families, and groups. Extends application of beginning knowledge and skills to the phases of intervention with groups and families. Presents knowledge and skills of environmental intervention and termination. Introduces selected theories and models for social work practice with individuals, families and groups with attention to special population groups.

SLWK 606 Policy, Community and Organizational Practice II

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 601 and 602. Corequisite: SLWK 610. The second of two foundation courses on social policy, policy practice and practice in communities and organizations. Examines values and ethical dilemmas facing professional social workers in organizations, communities and policy-making arenas. Explores legislative/political processes. Develops skills in legislative lobbying, advocacy, design of change strategies and tactics, policy analysis and task group leadership. Emphasizes reciprocal effects of policy on social work practice and implications for social and economic justice.

SLWK 607 Social Work Practice with Individuals, Families and Groups for Advanced-standing Students

Summer course; 2 lecture hours. 2 credits. Prerequisites: Admission to the Advanced Standing Program; concurrent enrollment in SLWK 608, 611, 612. Reviews approaches, principles, techniques, and theories of social work practice with individuals, families, and groups. Emphasizes commonalties and differences among practice modalities, including differential assessment, intervention, and evaluation of outcomes. Focuses on the development of the professional self that incorporates the interplay of personal and professional values and social work practice with diverse populations.

SLWK 608 Social Work Practice in Organizations and Communities for Advanced-standing Students

Summer course; 2 lecture hours. 2 credits. Prerequisites: Admission to the advanced standing program; concurrent enrollment in SLWK 607, 611, 612. Presents social work theory and practice focusing on social policy, communities, agencies, and interventions in light of principles of social and economic justice. Introduces and analyzes the social work role of policy practitioner with its specific skills and tasks. Demonstrates the importance of understanding the community and the agency in social work practice. Provides skill building in advocacy, planned change, and policy and organizational analysis.

SLWK 609 Foundations of Research in Social Work Practice

Semester course; 3 lecture hours. 3 credits. Introduces the methods of social work research and the roles of the social worker as consumer and scientist/practitioner, including problem formulation, research designs, measurement, data collection, and sampling. Focuses on the application of critical thinking skills and research methods of clinical social work practice effectiveness research, the evaluation of social work programs and services, and developing the knowledge base for social work practice.

SLWK 610 Human Behavior in the Social Environment II

Semester course; 3 lecture hours. 3 credits. Prerequisite: SLWK 601. Second of two foundation courses on human behavior in the social environment, covering the life course from conception through late adulthood and/or death. Includes influences of biological, psychological, physical, spiritual and sociocultural forces on individual and family coping efforts. Provides a multidimensional, multicultural perspective on the behavior of individuals and families, based on theory and research. Examines contemporary challenges facing individuals and families at various life stages. Focuses attention on the impacts of oppression, as well as racial, ethnic, class, cultural, disability, sexual orientation and gender diversity on human behavior; and the reciprocal nature of interactions of individuals, families and other social systems in a multicultural society.

SLWK 611 Social Work Research for Advanced-standing Students

Summer course; 2 lecture hours. 2 credits. Prerequisites: Admission to the advanced standing program; concurrent enrollment in SLWK 607, 608, 612. Reviews approaches to scientific inquiry in the development of knowledge for social work practice; problem formulation; concepts and operational definitions; measurement validity and reliability; selected social work research designs; planned data collection strategies and procedures.

SLWK 612 Advanced-standing Field Instruction

Summer course; 3 days per week. 3 credits. Prerequisites: Admission to the advanced standing program; concurrent enrollment in SLWK 607, 608, 611. Reviews foundation-level knowledge, attitudes, and skills acquired through social work education at the undergraduate level. Requires application, refinement, and the active use of content from the advanced standing curriculum in supervised social work practice in a social agency. Grade of "P" required to continue in the program.

SLWK 693-694 Foundation Field Instruction I-II

Continuous courses; 2 days/14 hours per week. 3-3 credits. Pre- or corequisites: SLWK 601, 602, 604, 605, 606, 610. Provides opportunities to master essential social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the foundation curriculum. Grade of "PR" required for continuation from SLWK 693 to SLWK 694. Final grade of "P" required to continue in the program.

SLWK 695 Block Foundation Field Instruction

5 days a week for one semester. 6 credits. Prerequisites: SLWK 601, SLWK 602, SLWK 603, SLWK 604, SLWK 605, SLWK 606, SLWK 609 and SLWK 610. Option for part-time students only. Provides opportunities to master essential social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes the integration of content from all areas of the foundation curriculum. Grade of "P" required to continue in the program.

SLWK 703 Mental, Emotional and Behavioral Disorders

Semester course; 3 lecture hours. 3 credits. Prerequisites: Concentration standing. Reviews the classification, epidemiology, etiology and course of a range of mental, emotional and behavioral disorders across the life span. Emphasizes the critical analysis of existing or emerging theory, the impact of difference and diversity on the definition of dysfunction and distress, an appreciation of the "lived experience" of these disorders for clients and their families and the practical implications of this knowledge for relationship building and intervention planning in social practice settings today. Introduces knowledge of psychopharmacology related to social work interventions with mental, emotional and behavioral disorders.

SLWK 704 Clinical Social Work Practice I

Semester course; 3 lecture hours. 3 credits. Pre- and/or corequisites: M.S.W. concentration standing or permission of instructor. Prerequisite or corequisite: SLWK 703. First of two courses on advanced clinical practice with individuals, families, couples, and groups. Extends knowledge and skills obtained in foundation courses. Continues a multitheoretical orientation to intervention across fields of practice with emphasis on contemporary psychodynamic and cognitive behavioral approaches and their empirical support. Emphasizes multidimensional assessment and the differential application of therapeutic, supportive, educational, and resource management strategies to complex problems of children, youth, and adults. Examines the interdisciplinary context of practice and the impact of diversity on clinical practice.

SLWK 705 Clinical Social Work Practice II

Semester course; 3 lecture hours. 3 credits. Prerequisite: SLWK 704. Second of two courses on advanced clinical practice with individuals, families, couples, and groups. Continues a multitheoretical orientation to intervention across fields of practice with emphasis on integrated family systems theory and multidimensional family assessment. Focuses on differential application of psychodynamic, cognitive-behavioral, and family systems theories to a range of complex client problems and concerns with attention to diversity of socioeconomic status, race, ethnicity, age, poverty, gender, and sexual orientation. Introduces knowledge of pharmacology related to social work intervention.

SLWK 706 Research for Clinical Social Work Practice I

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 609 and M.S.W. concentration standing. Emphasizes further development of knowledge and skills for the scientific, analytic approach to clinical social work practice. Focuses on two parallel learning tracks: 1) application of research principles from SLWK 609 to the development of a feasible research proposal relevant to clinical social work practice; and 2) review of statistical inference and decision making, introduction to computer applications of univariate and bivariate analyses, presentation of visual and statistical techniques for single-system designs, and introduction to qualitative analytical approaches. Reviews ethical standards of scientific inquiry.
Effective Fall 2006 < p > < b > SLWK Research for Clinical Social Work Practice I < /b > < br >
Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 609 and concentration year MSW program standing. First of two courses that further develop critical thinking skills in using empirical literature related to social work practice, translating research findings into practice principles and measuring outcomes of clinical practice. Review of statistical inference and decision making using univariate and bivariate techniques, introduction to computer applications for quantitative data and methods of analysis of qualitative data. Application of ethical standards for research involving human praticipants. < /p >

SLWK 707 Research for Clinical Social Work Practice II

Semester course; 3 lecture hours. 3 credits. Prerequisite: SLWK 706. Focuses on completion of the research project approved in SLWK 706, including data collection, development of computer program files, data analysis, preparation of final report, and presentation of findings. Provides overview of multivariate statistical analyses. Emphasizes integrating project findings into knowledge base for clinical social work.
Effective Fall 2006 < p > < b > SLWK 707 Research for Clinical Social Work Practice II < /b > < br >
Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 609 and 706, and concentration year MSW program standing. Further development of critical thinking skills for translating research findings into practice principles and measuring outcomes of clinical practice introduced in SLWK 609 and 706. Data collection, data analysis, presentation of visual and statistical techniques for qualitative and quantitative research methods, and utilization of findings for improving clinical social work practice. Continue application of statistical inference and decision making. Emphasizes integration of empirical research findings into a knowledge base for clinical social work practice, translating research findings into practice principles and measuring outcomes of clinical practice. < /p >

SLWK 710 Concentration Social Policy

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Focuses on advanced policy analysis through an in-depth, focused examination of a particular social policy area or population. Extends basic knowledge and skills of policy formulation, development, and impact analysis/evaluation, as these affect practice on behalf of clients. Examines diversity of policy sources; value, political and economic determinants; policy formulation processes; the policy basis for current services; a broad range of potential need domains, and current programs and laws. Integrates knowledge of human behavior and the social environment relevant to the focal policy areas and pays special attention to issues of social and economic justice. Examines current policy issues, advocacy efforts related to these issues and practice strategies for effecting change.

SLWK 711 Strategies for Social Work Planning and Administrative Practice

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Develops leadership and planning skills that guide the implementation of policy and practice in community and organizational settings. Present problem-solving strategies for planning, administration and management of community and organizational resources. Emphasizes planning context for diverse settings. Provides knowledge and skill for human and fiscal resource responsibilities, including fund raising. Examines ethical and justice implications of planning and administrative practice.

SLWK 712 Social Work Planning and Administrative Practice I

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Presents knowledge and skills for social work leadership in administering, developing and advocating social service policies and programs that are socially and economically just. Examines underlying assumptions, political, value and ethical considerations in social service planning. Presents knowledge of organizational theories and analyzes the political context of problem solving in the internal and external environments of organizations and programs. Focuses on community and organizational planning theories and models of intervention in assessing needs, analyzing problems, determining feasibility and identifying emergent dilemmas. Emphasizes development of critical thinking and self-awareness about role responsibilities and ethical positions for organizational and community leadership at local, state, national and international levels.

SLWK 713 Social Work Planning and Administrative Practice II

Semester course; 3 lecture hours. 3 credits. Prerequisites: M.S.W. concentration standing and SLWK 712, or permission of instructor. Continues development of knowledge and skills begun in SLWK 712. Examines traditional and alternative strategies in formulating proposals to address human needs. Emphasizes multiple program designs (e.g. direct service, advocacy, staff development and training, and community empowerment programs). Incorporates understandings of policies, community, and organizational behavior and change, and leadership styles and skills. Analyzes feasibility of interorganizational partnerships and community relationships. Focuses on financial and human resource acquisition and mobilization, monitoring, accountability and evaluation.

SLWK 714 Research for Social Work Administration, Planning and Policy Practice I

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 609 and M.S.W. concentration standing. Focuses on social work program and service evaluation including needs assessment, social indicators analysis, evidenced based practices, formative and summative evaluation designs using multiple method data collection and participatory approaches. Review of statistical inference and decision making, introduction to computer applications for quantitative data and methods for analysis of qualitative data. Application of ethical standards for evaluation involving human participants.

SLWK 715 Research for Social Work Administration, Planning and Policy Practice II

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 609, SLWK 714 and second year M.S.W. program standing. Focuses on evaluation of social work programs and services including data collection, data analysis, presentation of visual and statistical techniques for qualitative and quantitative evaluation methods, and dissemination of evaluation findings. Continues review of statistical inference and decision making. Emphasizes integrating evaluation findings into a knowledge base for social work administration, planning and policy practice using participatory approaches with stakeholders.

SLWK 716 Concentration Social Policy for Social Work Administration, Planning and Policy Practice

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. SWAPPP concentration standing or permission of instructor. Extends SLWK 602 through 606 content on policy practice, organizations, communities and advocacy. Critically analyzes traditional and alternative theories and models of the policy-making process. Demonstrates how the policy process is the core principle for decision making in agencies, communities and legislatures. Develops advanced skills in policy analysis, policy formulation and place practice including advocacy. Emphasizes the relationship and impact of economic policies on clients, communities and agencies in light of principles of social and economic justice. Analyzes current regulatory and agency policies and their implications for policy practice/advocacy for effecting change.

SLWK 717 Social Work Practice in the School Setting

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Emphasizes knowledge and skills of school social work practice with diverse populations in urban and rural settings. Presents historical context of social work practice and relevancy to current social work practice models. Uses an ecological perspective to conceptualize the interdependence of school, family, and community as complex interdependent systems. Addresses social justice concerns related to the social worker's response to contemporary issues such as violence, racism, sexism, poverty and their impact on children and youth in educational settings. Critically analyzes current federal and state laws that under-gird service delivery to schools.

SLWK 718 Social Work Practice in Child Welfare

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Provides an overview of the history of child welfare practice in the United States. Identifies the major social, demographic, and economic changes in society that impact children and families today. Focuses on the knowledge and skills of direct social work practice across a continuum of child welfare services including early intervention, family preservation, child protection, and permanency planning within the context of current practice issues. Critiques current child welfare practices and identifies the roles of a practitioner in direct child welfare service delivery.

SLWK 726 Social Work Practice and Health Care

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Focuses on social work in a variety of health care settings with a range of interventions from prevention and health promotion to end-of-life care. Explores ethical and legal issues and introduces frameworks for addressing ethical dilemmas. Examines the role of the social worker on an interdisciplinary team. Examines the influence of economics, political decisions, technology, changing demographics, and cultural, social and spiritual/religious experiences on individual health care decisions, access to health care, and definitions of health and illness.

SLWK 728 The Interdisciplinary Team in Social Work Practice

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Explores definitions and analyzes interdisciplinary team approaches. Studies the roles and functions of participants on interdisciplinary teams. Emphasizes similarities and differences between social work and other disciplines as members of teams. Explores opportunities for, and obstacles to, effective service delivery by teams.

SLWK 739 Social Work and the Law

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Overview of fundamental principles of Anglo-American law; structure and function of the legal system and its professional membership; lawyers and their working relationship with social workers. Emphasizes client-centered problems encountered in the legal community and the role social workers can play in helping clients deal with those encounters. Explores issues relative to client needs such as welfare rights, consumer protection, mental health treatment, family-related law, and discrimination relative to education, housing, employment, health care. Discusses legal issues confronting social work, such as confidentiality, licensing, advocacy, witnessing.

SLWK 740 Social Work Crisis Intervention and Planned Short-term Treatment

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. The social work practice of crisis intervention and planned short-term treatment. Examines conceptual and theoretical aspects of the differential use of crisis intervention and planned short-term social work intervention. Explores direct interventions, consultation, collaboration, and service delivery issues.

SLWK 745 Social Work Practice in Community Mental Health

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Addresses the specialized knowledge, values, and skills needed by social workers in community mental health settings. Builds on a biopsychosocial model of mental health/illness. Focuses on up-to-date psychotherapeutic, psychoeducational, and skill training approaches used with individuals, families and groups experiencing or affected by a range of mental health problems. Examines roles in interdisciplinary teamwork, case management, advocacy and medication management.

SLWK 746 Social Work Practice and Psychopharmacology

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Reviews the historical, political, and ethical context of psychotropic medications in social work practice. Provides a basic overview of psychopharmacology. Identifies and debates contemporary social work roles in medication management. Presents necessary social work skills for effective collaboration with clients, families and other mental health practitioners on medication-related issues.

SLWK 747 Social Work Intervention with Children and Adolescents

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Provides students with an opportunity for concentrated study and application of a range of specific models and techniques of intervention with children, adolescents and their families. Special attention will be given to diverse practice settings, as well as providing services to children and adolescents from diverse racial, ethnic, social, and sexual orientation backgrounds.

SLWK 748 Group Methods in Social Work Practice

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Examines various approaches used by practitioners in their interventions with social work groups. Presents several models of groups, including treatment, educational, and mutual aid/self-help. Reviews topics including: agency conditions affecting practice with groups, planning a new group service, the multiple phases of work with groups, achieving individual change through the group process, tasks and techniques for working with persons from at-risk populations in groups, and the evaluation of change effort. Builds on the content in the foundation practice course SLWK 605 Social Work Practice with Individuals, Families and Groups II.

SLWK 749 Social Work Intervention in Substance Abuse

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Provides the historical influences, theoretical perspectives and requisite skills in the field of substance abuse and treatment. Familiarizes students with the physiological, emotional and behavioral manifestations of substance abuse and the role of the social worker in evaluation and intervention. Presents a variety of screening, assessment and interventive techniques applicable to a range of human/social service agencies for clinical practice in a managed care environment. Emphasizes current research and controversies in the field.

SLWK 750 Ethics and Social Work Practice

Semester course; 3 credits. Prerequisite: M.S.W. concentration or Ph.D. program standing or permission of the instructor. Examines the history and development of the values base and ethical principles of the social work profession. Investigates codes of ethics for professional practice, with special attention to the principles of human relationships, integrity, social justice and competence. Analyzes ethical dilemmas in social work practice. Considers mechanisms for the enforcement of ethical codes.

SLWK 751 Social Work Practice and AIDS

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Focuses on information, knowledge and skills needed to provide social work services to persons with ARC and AIDS and their families. Emphasizes epidemiological material, psychological and psychosocial aspects of AIDS and ARC for understanding the context of social policies and social work intervention. Addresses differential application of social work roles and functions.

SLWK 755 Social Work Practice in Organizing for Social Change

Semester course; 3 lecture hours. 3 credits. Prerequisites: SLWK 602 and 606. An advanced practice course that recognizes the central role of social action in social work practice, no matter the context, and the value of social justice, no matter what client population. Built on the idea of multiple perspectives and using the Rothman model of organizing, it assumes students already possess basic policy practice and direct practice skills in order to focus on the dimensions of social action and locality development.

SLWK 761 Interpersonal Violence

Semester courses; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Focuses on social worker's integral part in society's response to all forms of interpersonal violence at the policy and practice levels. Examines both theoretical and applied responses to rape, child abuse, spouse abuse and elder abuse and is intended to give students knowledge about the definitions, etiology and interventive processes with both victims and perpetrators. Investigates the social work role with the other major actors in the family violence field, such as police, attorneys, judges and other mental health professionals.

SLWK 765 Supervision

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Explores task components and responsibilities in supervision of the social worker. Emphasizes a conceptual framework for supervision, including knowledge base, methods, and skill in supervision. Attention to affirmative action programs in social service delivery systems.

SLWK 769 Women's Issues and Social Work Practice

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Explores new perspectives on women and their changing roles as these affect social work practice; direct and indirect ways sexist attitudes are acquired and conveyed; effects of changing female roles of human behavior theory and its application, development of new life styles; social work theories and their relevance to today's world; current women's issues; and the social worker's role as counselor and advocate.

SLWK 770 International Social Work Study Abroad

International study course; 3 credits. Prerequisite: M.S.W. program standing. Examines social work clinical and policy practice, social pedagogy and the social welfare system of another country that includes a field trip to the country. Examines a range of issues pertaining to the country, including: society, culture and history; social work education; the social welfare system; selected social programs; social work clinical and policy practice; and comparisons of these topics between the country and the United States. Requires completion of several course units before the study abroad program.

SLWK 773 Program Evaluation

Semester course; 3 lecture hours. 3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Presents methods, problems, and research findings related to the evaluation of social welfare programs. Examines research design options and methodologies available for program evaluation. Explores organizational and administrative contexts in which evaluation activities are initiated, supported, disseminated, and utilized. Presents data processing and the roles of data analysis and the computer in the evaluation of social welfare programs.

SLWK 791 Topical Seminar

1.5-3 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Presents and analyzes current social work practice issues in specialized areas of interest to social work.

SLWK 792 Independent Study

1-4 credits. Prerequisite: M.S.W. concentration standing or permission of instructor. Open with faculty approval. A maximum of four independent study courses may be included in a student's educational program. The student will be required to submit a proposal for investigating some area or problem in social work not ordinarily included in the regular social work curriculum. The results of the student's study will be presented in a report.

SLWK 793-794 Concentration Field Instruction

Continuous courses; 21 hours per week. 3-3 credits. Prerequisite: M.S.W concentration standing; pre or corequisites: SLWK 703, 704-705, 706-707, 710 or SLWK 711, 712-713, 714-715, 710. Provides opportunities to master advanced social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the concentration curriculum. Grade of "P" required for graduation. Grade of "PR" required for continuation in second semester of the practicum.

SLWK 795 Concentration Block Field Instruction

Semester fieldwork; block field instruction (option for part-time students only) 5 days a week for one semester. 6 credits. Prerequisite: M.S.W. Concentration standing; pre or corequisites: SLWK 703, 704-705, 706-707, 710 and electives, or SLWK 711, 712-713, 714 -715, 710 and electives. Provides opportunities to master advanced social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the concentration curriculum. Grade of "P" required for graduation.

Social Work-Doctorate(SWKD)

SWKD 701 Quantitative Research Methods and Analysis I

Semester course; 4 credits. Prerequisite: Master's level course work in research methods and introduction to statistics; graduate standing in social work or permission of program director. First semester of a two semester course sequence focused on concentrated study of principles of the quantitative, scientific method for knowledge building, and practice and policy related research. Special emphasis on the different stages of research methods, including problem formulation, sampling, measurement, design and data collection within the context of professional values, ethics and commitment to social justice.

SWKD 702 Quantitative Research Methods and Analysis II

Semester course; 4 credits. Prerequisite: Master's level course work in research methods and introduction to statistics; graduate standing in social work or permission of program director. Second of a two-semester course sequence focused on concentrated study of principles of quantitative, scientific method for knowledge building, and practice and policy related research. Special emphasis is placed on the application of descriptive and inferential statistical techniques within the context of applied social work research.

Effective Fall 2006 < p > < b > SWKD 702 Quantitative Research Methods and Analysis II < /b > < br >

Semester course; 3 credits. Prerequisites: master's-level course work in research methods and introduction to statistics, graduate standing in social work or permission of program director. Second of a two-semester course sequence focused on concentrated study of principles of quantitative, scientific method for knowledge building, and practice- and policy-related research. Special emphasis on the application of descriptive and inferential statistical techniques within the context of applied social work research. < /p >

SWKD 703 Philosophical Issues in Social Work Knowledge Building

Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to Ph.D. in social work or permission of program director. This seminar focuses on assisting seminar participants to develop and refine their understanding of the logical foundations and the underlying meta-framework for modes of inquiry in science. Of particular focus will be the social sciences including social work. Using a paradigm perspective, the seminar will investigate the epistemological, ontological and methodological implications for knowledge building for social work.

SWKD 704 Multiparadigmatic Qualitative Methods and Analysis

3 credits. Focuses on assisting participants to develop and refine their understanding of and skills in qualitative research from multiple paradigmatic perspectives. Investigates a variety of qualitative strategies that allow for examination, exploration and/or description of phenomena by theory building, theory testing or constructing meaning. Emphasis will be on a range of qualitative methods for collecting empirical material and methods for the analysis of those data, including the use of computer analysis.

Effective Fall 2006 < p > < b > SWKD 704 Multiparadigmatic Qualitative Methods and Analysis < /b > < br >

4 credits. Focuses on assisting participants to develop and refine their understanding of and skills in qualitative research from multiple paradigmatic perspectives. Investigates a variety of qualitative strategies that allow for examination, exploration and/or description of phenomena by theory building, theory testing or constructing meaning. Emphasis on a range of qualitative methods for collecting empirical material and methods for the analysis of those data, including decisions about the use of computer analysis. < /p >

SWKD 705 Multivariate Analysis in Social Work and Human Services Research

Semester course; 3 lecture hours. 3 credits. Prerequisites: master's-level course work in research methods and introduction to statistics, graduate standing in social work or permission of program director, and SWKD 701 and 702. The third of a three-semester course sequence focused on concentrated study of principles of the quantitative, scientific method for knowledge building and practice- and policy-related reseach. Using algebra, geometry and conceptual description , the course provides an introduction to the application and interpretation of selected multivariate statistical techniques for social work and social science research.

SWKD 708 Social and Behavioral Science Foundations for Social Work

Semester course; 3 credits. Prerequisite: Admission to the Ph.D. program in social work or permission of program director. This doctoral seminar focuses on theories and conceptual approaches used as the knowledge base of social work. Emphasis is given to developing the abilities of students in identifying the essential elements of theory, determining the knowledge building purposes of theory, and articulating the rationale for selection of theories as a basis for scholarly inquiry. In addition, theories are critically evaluated for their implicit assumptions, values, empirical support and potential usefulness. Theories covered will be drawn from the social and behavioral sciences with an emphasis on those appropriate for the social change and social justice concerns of social work.

SWKD 710 Social Work, Social Welfare and Social Thought

Semester course; 3 lecture hours. 3 credits. Prerequisite: Doctoral program admission or permission of instructor. Required seminar for social work doctoral students. Examines social work and its roles and functions in relation to contemporary social problems, social policy and social work practice interventions that provide solutions to these problems. Analysis of issues of social welfare and the social work profession relating to structure, functions and history from the perspective of social work values, ethics, professional standards and concern for social justice. Designed to foster a critical perspective on the profession in its environment and provide grounding in the historical and cultural traditions and major streams of social thought influencing the profession, its development, and the American system of social welfare.

SWKD 715 Development and Evaluation of Social Work Practice Theories and Models

Semester course; 3 lecture hours. 3 credits. A required seminar for first year doctoral students that is sequential to and builds upon prerequisite first year theory and research courses. Focuses on the nature of theories, models and perspectives that guide social work practice. Includes historical and philosophical foundations of practice theories and frameworks to evaluate practice theory through the lens of social justice. Practice theories include all social work theories that aim at change. The focus of change may be at the individual, diad, family, group, community, organizational, policy and systems levels. Criteria for the selection of the level of the focus of change will be explored.

SWKD 722 Evaluation of Human Service Programs

Semester course; 3 lecture hours. 3 credits. Prerequisite: Ph.D. program standing or permission of instructor. Designed to equip doctoral-level students in a range of evaluation strategies that can be applied to human service programs. Particular attention is paid to participatory types of evaluation in addition to traditional consultant approaches. An in-depth examination of quantitative and qualitative evaluation approaches is included, in addition to the ethics of evaluation research, accessing underserved populations, data collection techniques, evaluation instrument design and the dissemination of findings.

SWKD 723 Social Work Education: Issues in Teaching

Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in social work or permission of the program director. Focus is on two central and integrated components of professional education: (1) examination of the development and dimensions of social work education and (2) exploration of theories of learning and teaching within the framework of professional social work education.

SWKD 724 Constructivist Inquiry

Semester course; 3 lecture hours. 3 credits. Course will: 1) contrast interpretive and functionalist inquiry paradigms and note the conditions under which each is the paradigm of choice for research; 2) clarify the relationship between constructivist and qualitative methodologies; 3) acquaint the student with some of the more common constructivist methods and offer opportunities in applying those methods; 4) prepare the student to act as a peer reviewer or auditor in a constructivist inquiry. Major topics include a discussion of positivist versus constructivist inquiry and paradigm revolution; the primary assumptions in constructivism; doing constructivist inquiry; processing constructivist data; and establishing the quality of the research process and product.

SWKD 791 Topical Seminar

Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Study of the current state of knowledge and research within a specialized area of concern to social policy and social work.

SWKD 792 Independent Study

Semester course; 1, 2 or 3 credits. May be repeated for a maximum of 6 credits, that count toward the 36 required credits. May then be taken for an additional 1-12 credits to accommodate the need for continuous enrollment required of all students between completion of required course work and passage of the comprehensive examinations. Prerequisite: Permission of the program director. Independent reading and study in selected areas under the supervision of a member of the faculty.

SWKD 797 Directed Research

Semester course; 3 credits. Pre-dissertation research project under faculty supervision.

SWKD 898 Dissertation Research

Semester course; 1-18 credits. May be repeated for credit. May be taken for additional credits until dissertation is accepted formally. Prerequisite: Successful completion of comprehensive examinations or permission of program director. Students are required to complete 18 credit hours.

Graduate School

Graduate School(GRAD)

GRAD 601 The Academic Profession

Short course (eight weeks); 1 lecture hour. 1 credit. Designed to introduce graduate students to the roles and responsibilities of faculty members in institutions of higher education. Through readings, discussion and conversations with faculty members from a variety of settings, students will learn about the changing social expectations for higher education, the diverse settings in which faculty work and strategies for developing and presenting marketable academic skills. Graded as pass/fail.

GRAD 602 Seminar in College Teaching

Short course (eight weeks); 1 lecture hour. 1 credit. Prerequisite: GRAD 601. Focuses specifically on the act of teaching. Graduate education in this country has only recently begun to address college teaching issues. While mastery of the discipline and of the research skills necessary to contribute to that discipline have long been a staple of graduate training, mastery of the knowledge and skills necessary for teaching the discipline are often neglected. Graded as pass/fail.

GRAD 604 Seminar in Teaching the Professions

Short course (eight weeks); 1 lecture hour. 1 credit. Prerequisites: GRAD 601 and 602. Designed for students planning to enter careers as faculty in professional schools. Covers the pedagogical methods common to the professions but distinct from liberal arts disciplines. Topics include: teaching and learning professional expertise; teaching styles appropriate to clinical, field or studio settings; and evaluating students' professional skills. Graded as pass/fail. Students must be within three years of receiving a terminal degree.

GRAD 605 Professional Specialty Seminars

Seminar course; 1 credit. Prerequisites: GRAD 601, 602 and 604. Seminars will focus on the teaching profession itself and will be organized into four sections, one for each of the following professional clusters: fine arts (such as painting, sculpture, drama, music); applied social sciences (such as social work, education, business); applied physical sciences (such as engineering and environmental sciences); and health sciences (such as medicine, pharmacy, nursing). Unlike GRAD 604, which will focus almost exclusively on pedagogy in the professions, the GRAD 605 sections will include an emphasis on preparation for the full range of faculty responsibilities. Graded as pass/fail.

GRAD 606 Internship/Externship in Professional Teaching

Intern course; 1-3 credits. Prerequisites: GRAD 601, 602, 604 and 605. Students will gain experience and practice in clinical/field or studio instruction under the tutelage of a senior faculty mentor at a local institution that most likely mirrors the institution of interest to the student. A proposal approval agreement must be signed by the faculty mentor who will direct the project and assign the final grade and must be submitted to the director of the PFF Program before the student enrolls or begins the internship/externship. The proposal must define the project and the intended outcomes, must specify the learning goals and the agreed-upon methods for evaluation of those goals and must identify the institution where the project will take place. At the end of the project, the student must submit to the faculty mentor a report describing the experience and the extent to which the student was able to accomplish the stated learning objectives. The faculty mentor will submit the student report, along with a faculty evaluation of the project and the grade to be awarded, to the director of the PFF program. Each internship/externship credit requires approximately 50 contact hours in the form of preparing for and carrying out the project. The student's role is to be one of "junior faculty member" and the faculty member's as guide and mentor. Graded as pass/fail. Students working toward certificates of achievement in the Preparing Future Faculty in the Professions module must complete three hours of GRAD 606.

GRAD 691 Topics in the Preparing Future Faculty Program

Semester course; 1 lecture hour. 1 credit. A course for the examination of specialized issues, topics, readings, problems or areas of interest for graduate students interested in becoming future faculty. This course is open to all graduate students, with priority given to students pursuing Preparing Future Faculty certificates of achievement. Graded as P/F.

Academic Affairs

Honors College(HONR)

HONR 190 Freshman Seminar

Semester course; 1 lecture hour. 1 credit. Restricted to freshmen in the Honors College. This course develops a learning paradigm for students appropriate to university education. Students are expected to gain a willingness to take intellectual risks, to engage in their own learning actively and to take responsibility for their own education. A thorough orientation to the library and other university resources is included. The students will hone critical thinking skills while examining selected topics from a perspective that emphasizes critical interpretation rather than mastery of information. Students will engage in collaborative projects on specified topics. Attendance at certain Honors College events is required.

HONR 198 Freshman Honors

Semester course; 3 lecture hours. Variable credit. Maximum total of 8 credits. May be repeated once under different topic. Prerequisite: Permission of the dean of the Honors College. An interdisciplinary course that will provide an intensive study of selected topics.

HONR 298 Sophomore Honors

Semester course; 3 lecture hours. Variable credit. Maximum total of 8 credits. May be repeated once under different topic. Prerequisite: Permission of the dean of the Honors College. Appropriate prerequisite or corequisites may be demanded. An interdisciplinary course that will provide an intensive study of selected topics.

HONR 398 Honors Topics

Semester course; 3 lecture hours. Variable credit. May be repeated with different topics. Prerequisite: Permission of the dean of the Honors College. Appropriate prerequisite or corequisites may be demanded. An in-depth study of selected topics. May be cross listed with departmental courses. See the Schedule of Classes for specific topics to be offered each semester.

HONR 399 Honors Module

Five-week course; 3 lecture hours. 1.5 credits per module. Nine credits must be taken in honors modules to complete the honors core curriculum. Prerequisite: Permission of the dean of the Honors College. Intensive studies of topics from a wide spectrum of disciplines are undertaken. Each module is a self-contained unit. See the Schedule of Classes for specific topics to be offered each semester.

HONR 492 Honors Independent Study

Semester course; variable hours. Variable credits. Maximum of 4 credits per semester. Maximum total of 9 credits over all semesters. Prerequisites: junior or senior standing, and approval of Honors College dean and instructor/tutor. Intensive study under supervision of a faculty member in an area not covered in depth or contained in the regular curriculum.

Public Policy and Administration(PPAD)

PPAD 711 Seminar in Public Policy and Administration I

Semester course; 3 lecture hours. 3 credits. Doctoral students only. Provides a critical and comparative review of public policy and administration focusing on the empirical and theoretical literature in the field. Emphasizes the development of the policy studies field and its epistemological foundations. Includes alternative approaches to policy analysis, the place of analysis in the decision-making environment, and the role of policy in shaping administrative institutions.

PPAD 712 Seminar in Public Policy and Administration II

Semester course; 3 lecture hours. 3 credits. Prerequisite: PPAD 711. Doctoral students only. Examines the key intellectual paradigms in public administration and their historical development. Pays particular attention to the influence of institutional and organizational design on establishing and achieving public purposes; includes the role of administration in formulating and implementing public policy. Continuation of PPAD 711.

PPAD 713/PHIL 713 Ethics and Public Policy

Semester course; 3 lecture hours. 3 credits. Doctoral students only. An examination of the main theories of morality and justice. These theories' implications for public policy will be discussed.

PPAD 715 U.S. Political Processes and Institutions

Semester course; 3 lecture hours. 3 credits. This course examines the operation of the major national political institutions in the United States, the processes that help to define and shape those institutions, and the contexts in which these entities operate. The course familiarizes students with a broad range of scholarship and with the principal theoretical debates about U.S. politics.

PPAD 716 Public Policy Economics

Semester course; 3 lecture hours. 3 credits. This course is designed to introduce students to a set of applied micro-economic models that can be used to understand and evaluate important policy issues. Students will be shown how these models can be used as tools to design, to predict the effects of and to evaluate public policies. Specific models used in this course will include consumer theory, production theory, cost theory and the theory of economic organization. Discussions of policy analysis and evaluation will rely upon theoretical approaches to welfare economics.

PPAD 717 Law and Public Policy

Semester course; 3 lecture hours. 3 credits. An introduction to basic lega and constitutional issues that shape and limit the creation of public policy. An examination of court cases leads the student to examine the interaction between legislative policy makers, courts, and administrative implementers, and how the law may be used both to support the role of policy makers as well as to constrain them. Issues to be examined include health care, regulation of commerce, First Amendment issues, the environment, and educational policy.

PPAD 721 Survey of Applied Research Methods in Public Policy and Administration

Semester course; 3 lecture hours. 3 credits. Prerequisites: PADM 623 and PADM 624, or equivalent. Doctoral students only. Research designs including assumptions, applications and limits of various research methodologies. Includes quantitative and qualitative methods, including focus groups; probability and nonprobability sampling; mail, telephone and in-person interviewing; design of instruments; evaluation research, experiments and quasi-experiments; content analysis; observational and unobtrusive methods; cost-benefit and forecasting models; sources for secondary data analysis; and ethics of research.

PPAD 722 Survey of Data Analysis Techniques for Public Policy and Administration

Semester course; 3 lecture hours. 3 credits. Prerequisites: PADM 623, PADM 624 and PPAD 721, or equivalents. Doctoral students only. Levels of measurement and selection of appropriate analytical tools; creation of indexes and scales; reliability and validity of measures; univariate, bivariate and multivariate analysis; the nature of causality and statistical control; the elaboration of relationships and the logic of survey analysis; graphical presentation of data; and analysis of qualitative data. Focus will be kept on integrating data and analysis into decisions regarding research design. SPSS/PC computer software will be used to illustrate analysis techniques on General Social Survey (GSS) or other relevant data sets.

PPAD 723 Survey Research Methods

Semester course; 3 lecture hours. 3 credits. Overview of survey research methods with an emphasis on hands-on training in how to evaluate, conduct and analyze survey research.

PPAD 726 Advanced Research Design

Semester course; 3 lecture hours. 3 credits. Covers skills needed to develop independent research projects including all aspects of research design, measurement design, data analysis planning and interpretation, and report writing.

PPAD 730 Seminar in Health Policy

Semester course; 3 lecture hours. 3 credits. Examines key issues and alternative policy responses in health. Presents a framework for understanding health policy in terms of the regulatory environment, developing initiatives and emerging trends. Designed to assist students to build a program of research in health policy.

PPAD 740 Seminar in Public Management

Semester course; 3 lecture hours. 3 credits. Doctoral students only. Examines key theoretical and empirical literature in public sector administration with an emphasis on state and local government. Covers the management of human resource, financial and information systems. Includes the impact of leadership, organizational design and policy on the conduct of public activities. Designed to assist students to build a program of research in public management.

PPAD 750 Seminar in Urban Policy

Semester course; 3 lecture hours. 3 credits. Doctoral students only. Examines key issues in urban policy. Explores public policy as it relates to the natural, built, social, economic and political environments of urban life. Designed to assist students to build a program of research in urban policy.

PPAD 791 Topical Seminar

Semester course; 1-3 credits. May be repeated for a maximum of 6 credits. Prerequisites: Doctoral standing and permission of program director and instructor. An in-depth study of a selected topic in public affairs, policy or administration.

PPAD 792 Independent Study

Semester course; 1, 2 or 3 credits. May be repeated for a maximum of 6 credits. Prerequisites: Doctoral standing and permission of program director and instructor. Independent study and research in selected areas of public affairs, policy and administration under the guidance of a graduate faculty member.

PPAD 898 Dissertation Research

Semester course; 1-12 hours. May be repeated for credit. Prerequisite: Admittance to doctoral candidacy. Research on an approved dissertation subject.

Division of Student Affairs and Enrollment Services

Cooperative Education(COOP)

COOP 298 Cooperative Education Experience

Semester course; the student works a maximum of 20 hours per week, completes all off-campus/on-campus assignments. No credit. Open to students who have been placed in an approved co-op position with an agency, business, industry or institution.

COOP 398 Cooperative Education Experience

Semester course; the student works a maximum of 40 hours per week, completes all off-campus/on-campus assignments. No credit. Open to students who have been placed in an approved co-op position with an agency, business, industry or institution.

VCU Life Sciences

Bioinformatics(BNFO)

BNFO 292 Independent Study

Semester course; variable hours. 1-2 credits. May be repeated for a maximum total of 6 credits. Prerequisites: BNFO 301 and an overall GPA of 3.0; permission of instructor and adviser. Determination of the amount of credit and permission of the instructor and adviser must be obtained prior to registration for this course. A course designed to provide an opportunity for independent readings of the bioinformatics literature under supervision of a staff member.

BNFO 301/BIOL 351 Introduction to Bioinformatics

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 218 and MATH 200. Corequisite: CHEM 301. Introduction to the basic concepts, tools and possibilities of bioinformatics, the analysis of large bodies of biological information. The course stresses problem solving and integrative projects, making extensive use of exercises in class that draw on bioinformatics resources on the Web and on local servers.

BNFO 420 Applications in Bioinformatics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Course coordinator will identify and assign to student teams different parts of a variety of current research problems, with input from other VCU faculty and industry researchers affiliated with the Bioinformatics Program. Course includes explicit instruction in the conduct of research as well as a review of applicable strategies, methods and technologies. Oral presentation in large and small groups is emphasized, with systematic feedback and practice opportunities provided. Students also will study representative bioinformatics research going on at VCU and area industrial labs through researcher and graduate student presentations, and through tours of research laboratory. This course satisfies the Life Sciences General Education "oral communication" requirement.

BNFO 440 Computational Methods in Bioinformatics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: CMSC 255 and 256; BNFO 301, or permission of instructor. An introduction to mathematical and computational methods in bioinformatics analysis. Topics include but are not limited to operating systems, interfaces, languages, SQL, search algorithms, string manipulation, gene sequencing, simulation and modeling, and pattern recognition. Students will be exposed to Maple, Matlab, SPSS, E-cell, BioPerl, Epigram and C as part of the requirements of this course.

BNFO 491 Special Topics in Bioinformatics

Semester course; variable hours. 1-4 credits. Prerequisites: permission of instructor and adviser. An introductory, detailed study of a selected topic in bioinformatics unavailable as an existing course. Students will find specific topics and prerequisites for each special topics course listed in the Schedule of Classes. If multiple topics are offered, students may elect to take more than one. Adviser's approval is required for counting each special topics course toward meeting specific requirements of the B.S. program.

BNFO 492 Independent Study

Semester course; variable hours. A minimum of three hours of supervised activity per week per credit is required. 1-4 credits. May be repeated for a maximum total of 6 credits. Prerequisites: BIOL 218, CHEM 301, CMSC 256, STAT 314, BNFO 301, and permission of instructor and adviser. A proposal acceptable to the supervising faculty member and adviser is required. Determination of the amount of credit and permission of the instructor and adviser must be obtained prior to registration of this course. Projects should include data collection and analysis, learning bioinformatics-related research techniques, and mastering experimental procedures, all under the direct supervision of a faculty member. A final report must be submitted at the completion of the project. Graded as pass/fail.

BNFO 497 Research and Thesis

Semester course; variable hours. A minimum of three hours of supervised activity per week per credit is required. 1-4 credits. May be repeated for a maximum total of 6 credits. Prerequisites: BIOL 218, CHEM 301, CMSC 256, STAT 314, BNFO 301, junior or senior status, and permission of instructor and adviser. A proposal acceptable to the supervising faculty member and adviser is required. Determination of the amount of credit and permission of the instructor and adviser must be obtained prior to registration of this course. Projects should include data collection and analysis, learning bioinformatics-related research techniques, and mastering experimental procedures, all under the direct supervision of a faculty member. A written thesis of substantial quality is required at the completion of the research.

BNFO 505 Essentials of Statistics in Bioinformatics

Semester course; 2 lecture hours. 2 credits. Prerequisites: STAT 212 and permission of instructor. An intensive course designed for graduate students in either the biology/genomics or the computational science tracks of the bioinformatics program, aimed at providing the background in statistical concepts necessary for them to participate in graduate-level courses involving statistics. The course will focus on areas of particular interest in bioinformatics, including probability, combinatorics and linear models.

BNFO 507 Essentials of Molecular Biology in Bioinformatics

Semester course; 2 lecture hours. 2 credits. Prerequisites: CHEM 101 and 102, BIOL 218 and permission of instructor. Corequisite: CHEM 301 or permission of instructor. An intensive course designed for graduate students in either the quantitative/statistics or the computational science tracks of the bioinformatics program, aimed at providing the background in molecular biology necessary for them to participate in graduate-level courses involving molecular biology. The course will focus on areas of particular interest in bioinformatics, including DNA, RNA and protein synthesis, gene structure, function and regulation, protein structure, activity and regulation, and the tools by which formation in these areas has been discovered.

BNFO 508 Introduction to Bioinformatics Research

Semester course; lectures and 4 laboratory hours. 3 credits. Prerequisite: Permission of instructor. Required of all first year students pursuing the thesis option (M.S.). Introduction to all active research programs in bioinformatics. Presentations of research programs by investigators and rotation of students through track-appropriate faculty labs to gain direct exposure to individual research projects. Graded as "S," "U" or "F."

BNFO 540/BIOL 540 Fundamentals of Molecular Genetics

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 310 or consent of instructor. The basic principles and methodologies of molecular biology and genetics are applied to genome organization, replication, expression, regulation, mutation and reorganization. Emphasis will be placed on a broad introduction to and integration of important topics in prokaryotic and eukaryotic systems.

BNFO 541/BIOL 541 Laboratory in Molecular Genetics

Semester course; 1 lecture and 4 laboratory hours. 2 credits. Pre- or corequisite: BNFO 540 Fundamentals of Molecular Genetics or equivalent. Experiments are designed to apply advanced techniques and concepts of molecular biology and genetics using prokaryotic and eukaryotic systems. Emphasis will be placed on experimental design, integrating results throughout the semester, making use of relevant published literature, scientific writing and providing hands-on experience with advanced equipment and methodologies.

BNFO 591 Special Topics in Bioinformatics

Semester course; variable lecture hours. 1-4 credits. Adviser's approval is required for counting each special topics course toward meeting specific requirements of the master's program. An introductory, detailed study of a selected topic in bioinformatics unavailable as an existing VCU course. If multiple topics are offered, students may elect to take more than one. Graded as "S," "U" or "F." Students will find specific topics and prerequisites for each special topics course listed in the Schedule of Classes.

BNFO 592 Independent Study

Semester course; variable lecture hours. Variable credits. Determination of the amount of credit and permission of instructor, adviser and curriculum committee must be obtained prior to registration for this course. Designed to provide an opportunity for independent study at an introductory graduate level in a bioinformatics-related area of interest and significance to the student outside what is available through the courses and other options in the Bioinformatics Program. Graded as "S," "U" or "F."

BNFO 601/BIOL 601 Integrated Bioinformatics

Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Presents major concepts in bioinformatics through a series of real-life problems to be solved by students. Problems addressed will include but not be limited to issues in genomic analysis, statistical analysis and modeling of complex biological phenomena. Emphasis will be placed on attaining a deep understanding of a few widely used tools of bioinformatics.

BNFO 620 Bioinformatics Practicum

Semester course; 3 lecture hours. 3 credits. Prerequisite: BNFO 601 or permission of instructor. Restricted to students pursuing the professional (M.Biof.) option. Practical application of bioinformatics to genomic, proteomic and pharmacogenomic analyses. Students will work in small groups to plan, develop and execute a project designed to solve practical challenges in the realm of bioinformatics. Proficiency in various aspects of bioinformatics will be developed.

BNFO 650 Sequence Analysis in Biological Systems

Semester course; 1 lecture and 2 laboratory hours. 3 credits. This course will treat the computational theory behind algorithms that are used for nucleic acid and protein sequence analysis. Students will be exposed to the theory and methodology of computational biology that has led to the development of current sequence analysis software. The objective of the course is to provide students with a basic knowledge of how current software tools have been developed and how they function, which will permit them to then apply this knowledge to the development of new algorithms and technology.

BNFO 653/MICR 653 Advanced Molecular Genetics: Bioinformatics

Semester course; 3 lecture hours. 3 credits. Prerequisites: MICR/BIOC 503, MICR/BIOC 504 and permission of instructor. An advanced course on contemporary bioinformatics. Topics covered include the principles and practice of DNA, RNA and protein sequence analysis, computational chemistry and molecular modeling, expression array analysis and pharmacogenomics. The course includes lectures, reading, computer lab, homework problem sets and projects.

BNFO 690 Seminars in Bioinformatics

Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research topics of current interest in the field of bioinformatics. Graded as "S," "U" or "F."

BNFO 691 Special Topics in Bioinformatics

Semester course; variable hours. 1-4 credits. Adviser's approval is required for counting each special topics course toward meeting specific requirements of the master's program. An advanced, detailed study of a selected topic in bioinformatics unavailable as an existing VCU course. If multiple topics are offered, students may elect to take more than one. Students will find specific topics and prerequisites for each special topics course listed in the Schedule of Classes.

BNFO 692 Independent Study

Semester course; variable hours. Variable credit. Determination of the amount of credit and permission of the instructor, adviser and curriculum committee must be obtained prior to registration for this course. A course designed to provide an opportunity for independent study in a bioinformatics-related area of interest and significance to the student outside what is available through the courses and other options in the Bioinformatics Program.

BNFO 697 Directed Research in Bioinformatics

Semester course; variable hours. 3-9 credits. May be repeated for credit. Directed research leading to the M.S. degree in bioinformatics. Graded as "S," "U" or "F."

BNFO 700 Externship in Bioinformatics

Semester course; variable hours. 6 credits. Prerequisites: BNFO 601 and BNFO 620, or permission of instructor. Typically off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a professional setting under supervision of an approved professional. Externship activities monitored and evaluated by university faculty. Plan of experience designed by extern and external adviser with prior approval of department. An externship class will meet weekly using online technology to accommodate students doing out-of-town summer externships. Each externship will be a defined project leading to a required final report or product and offering real potential benefits to the sponsoring company/lab. Subsequent to the externship, a presentation to program faculty and students is required.

Environmental Studies(ENVS)

ENVS 103/BIOL 103 Environmental Science

Semester course; 3 lecture and 1 online recitation hours. 4 credits. Students are required to participate in the classroom lecture and in the online recitation via high-speed connection. Basic scientific principles of environmental processes. Draws together aspects of biology, chemistry, geology, physics and sociology. Among the topics covered are ecology, natural resources, air and water resources, energy and recycling, population biology and sustainable global societies. Not applicable for credit toward the B.S. in Biology. Not applicable as a prerequisite for any biology course at the 200 level or above.

ENVS 105/GEOG 105 Physical Geology

Semester course; 3 lecture hours. 3 credits. A descriptive approach to physical geology dealing with the history and structure of the earth, catastrophic events and geology as it relates to the contemporary environment. An optional laboratory may be taken with this course. See GEOZ/ENVZ 105L.

ENVS 311/POLI 311 Politics of the Environment

Semester course; 3 lecture hours. 3 credits. An exploration of the current controversy about environmental politics and the issues and crises it centers on. Special attention will be given to the constitutional, political and geographical factors in the development of environmental policy and the organized effort to deal with governmental actions and inaction and its impact on policy outcomes.

ENVS 314/BIOL 315/INTL 314 Man and Environment

3 lecture hours. 3 credits. Not applicable to the biology major. A comparative study of the ecology and natural history of human populations, including the environments as determining factors in the evolution of human institutions and technology, resources management, and population crises; cultural traditions as mechanisms of population control; basic theory of population biology.

ENVS 315/PHYS 315 Energy and the Environment

Semester course; 3 lecture hours. 3 credits. Prerequisite: Junior or senior standing. Open to non-physics majors; not applicable to the physics major. A study of society's demand for energy, how it is currently being met, the environmental consequences thereof and some discussion of alternatives.

ENVS 330/BIOL 332 Environmental Pollution

Semester course; 3 lecture hours. 3 credits. Prerequisites: Eight credits in biology. Not applicable to the biology major. The study of pollution in the environment with emphasis on the procedures for detection and abatement.

ENVS 332/URSP 332/GEOG 332 Environmental Management

Semester course; 3 lecture hours. 3 credits. An interdisciplinary review of domestic and international environmental problems and their underlying causes, current management frameworks, alternative management approaches and strategies, and barriers to their implementation. Other topics include: environmental history and economics, population growth, natural resources use, biodiversity, pollution.

ENVS 335/GEOG 335 Environmental Geology

Semester course; 3 lecture hours. 3 credits. Corequisite: ENVZ/GEOZ 335L. The relationship between humankind and the physical environment, Earth materials and processes, geological hazards, water, mineral and energy resources, land use and environmental health and law.

ENVS 385/ENGL 385 Nature Writing

3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). A study of the literary genre of nature writing in English.

ENVS 401/GEOG 401 Meteorology and Climatology

Semester course; 3 lecture hours. Prerequisite: GEOG 203 or a physical science sequence or permission of instructor. A basic, semiquantitative course in the elements of weather and climate, their driving forces and their spatial and temporal distribution and variability. Atmospheric motions and circulation, weather forecasting, human impact on weather and climate.

ENVS 411/GEOG 411 Oceanography

Semester course; 3 lecture hours. 3 credits. Prerequisite: GEOG 203 or PHYS 101 or a natural science sequence or permission of instructor. Designed for earth science teachers. A basic course in the physical, chemical and geological properties of oceans and ocean basins. Origin and character of ocean basins, properties of oceanic waters, oceanic circulation, land-sea interactions, marine environments and ecology.

ENVS 490 Research Seminar in Environmental Studies

Semester course; 3 lecture hours. 3 credits. Prerequisites: senior standing and at least 12 hours of approved environmental studies course work. An interdisciplinary examination of problems and issues central to environmental studies. Environmental research of VCU faculty will be reviewed, and selected local environmental problems will be studied. Each student will complete a research project focusing on a specific environmental question.

ENVS 491 Topics in Environmental Studies

Semester course; variable hours. 1-3 credits per semester. May be repeated with different topics for a maximum of 6 credits. Prerequisites vary by topic. An in-depth study of a selected environmental topic. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

ENVS 492 Independent Study

Semester course; variable hours. Variable credit. Maximum of 3 credits per semester; maximum total of 6 credits for all topics courses. Open generally to juniors or seniors who have declared environmental studies as a minor. Determination of the amount of credit and permission of instructor must be procured prior to registration for the course.

ENVS 493 Environmental Studies Internship

Semester course; variable hours. 1-3 credits per semester. Maximum total of 6 credits. Open to students of senior standing who have had some background in environmental studies. Students receive credit for work on environmental projects with approved agencies. Participation requires the approval of both a faculty member and an agency. Graded as pass/fail.

ENVS 521/URSP 521/GEOG 521 Introduction to Geographic Information Systems

Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental analysis and planning. Includes geographic and remote sensing data structures, global positioning systems, spatial analysis, geographic data standards, public domain software and data resources, and principles of cartography design. Lab exercises in the use of geographic information systems software tools.

ENVS 550 Ecological Risk Assessment

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in ecology, statistics, geology, chemistry or permission of instructor. Ecological risk assessment provides an introduction to the concepts and practice of risk assessment as applied to ecological applications, focusing on the United States. The course will examine the history of risk assessment in U.S. environmental regulation and policy, development and practice of ecological risk assessment and application to regional issues. All students will conduct a risk assessment for a regional case study.

ENVS 556/ANTH 556 Historical and Cultural Landscapes

Semester course; 3 lecture hours. 3 credits. Open only to seniors who have completed ANTH 302 or 303 and graduate students with permission of instructor. Students will study historical and contemporary landscapes as the products of the producers of human culture, with particular attention to riverine landscapes. Focus will be on the ways in which humans shape and respond to their ecosystems. Students will participate in an active field research program, including the archaeological recovery and analysis of historical landscapes.

ENVS 590 Research Seminar in Environmental Studies

An interdisciplinary examination of problems and issues related to environmental studies.

ENVS 591 Topics in Environmental Studies

Variable hours. 1-3 credits per semester. May be repeated with different topics for a maximum of 6 credits. An in-depth study of a selected environmental topic. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

ENVS 601 Survey in Environmental Studies

Provides a foundational understanding of issues central to environmental studies. Lectures will address the theoretical and scientific basis for a variety of pertinent issues, including: and water quality and quantity, pollution prevention, environmental law and policy, population growth, global climate change, conservation, and human and ecological health.

ENVS 602 Environmental Technology

This course gives students the opportunity to develop skills not available in the traditional academic setting. Students take two to four workshops offered by the Center for Environmental Studies in its Environmental Technology Training Workshop series. Students will complete an additional project related to each workshop or series of workshops for evaluation purposes.

ENVS 603 Environmental Research Methods

Provides students with an understanding of statistical and research methods as they apply to environmental research. Students will complete projects on available data sets. This course emphasizes the application of current data analysis methodologies, including the graphical display of summary data, statistical modeling and prediction, and Geographic Information Systems (GIS).

ENVS 628/PADM 628 Environmental Policy and Administration

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. This course explores the relationship between environmental policy and its implementation within a democratic political system. It includes an investigation of basic concepts that underlie environmental policy and the difficulties encountered when attempting to apply them in a real-world setting. It also surveys a variety of tools and methodologies that may be useful in attempting to develop and implement environmental policy.

ENVS 650 Pesticides, Health and the Environment

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in toxicology, chemistry or permission of instructor. This course is a balanced overview of the benefits and adverse effects of pesticides in the environment and as related to human health. The class provides an interdisciplinary study of pesticide use, fate, exposure, transport and effects.

ENVS 654/URSP 654/BIOL 654 Environmental Remote Sensing

Semester course; 3 lecture hours. 3 credits. Prerequisite: URSP/ENVS 521 or equivalent. This course provides a basic and applied understanding on the use of digital remote sensor data to detect, identify and characterize earth resources. Students are required to demonstrate an understanding of the spectral attributes of soils, vegetation and water resources through various labs involving both image- and non-image-based optical spectral data.

ENVS 655 Hydrogeology

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENVS 355 or equivalent, or permission of instructor. Focuses on the fundamental concepts of groundwater flow and contaminant transport with an emphasis toward environmental issues such as waste disposal, surface water hydrology, groundwater hydrology and wells, environmental impacts and hydrogeological systems. Allows students to understand and interpret the basic environmental hydrogeologic characteristics of a site and to use that knowledge to provide an informed opinion on protection and remediation.

ENVS 660 Virginia Environmental Law

Semester course; 3 lecture hours. 3 credits. Prerequisites: ENVS/PADM 628 or permission on instructor. An overview of relevant Virginia environmental law and regulations in the fields of environmental planning, management and policy. Provides students with working knowledge of documentation necessary for compliance with state environmental programs.

ENVS 670 Pollution Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: Course work in: ecology, toxicology or animal physiology; or permission of instructor. Courses provides an in-depth presentation of the physiology of animals in polluted habitats and examines the responses of aquatic organisms exposed to pollutants and other environmental stressors, including: thermal and salinity changes, anoxia and hypoxia, hypercapnia, chemical contamination, sedimentation and microbial contamination. The course takes a comparative approach and focuses on non-human systems. Both laboratory and field experiences are provided.

ENVS 691 Topics in Environmental Studies

Provides an in-depth study of a selected environmental topic.

ENVS 692 Independent Study

Variable hours. 1-3 credits per semester. May be repeated with different topics for a maximum of 6 credits. An in-depth study of a selected environmental topic.

ENVS 693 Internship in Environmental Studies

Each credit hour represents 60 clock hours of work. Provides students with a workplace experience in a public or private agency related to Environmental Studies.

ENVS 697 Research

Planning, preparation, completion, and presentation of research in environmental studies.

ENVS 698 Thesis

Planning, preparation, completion, and presentation of research in environmental studies.

Environmental Studies Lab(ENVZ)

ENVZ 103L/BIOZ 103L Environmental Science Laboratory

Semester course; 2 hours. 1 credit. Pre- or corequisite: ENVS/BIOL 103. Intended for anthropology, criminal justice, English, foreign language, history, mass communications, philosophy, religious studies, political science, psychology, sociology, urban studies, majors and programs in other schools requiring science courses. Not intended for other College of Humanities and Sciences majors. Laboratory exercises correlated with ENVS/BIOL 103.

ENVZ 105L/GEOZ 105L Physical Geology Laboratory

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: GEOG/ENVS 105. An optional laboratory course consisting of experiments and activities related to GEOG/ENVS 105.

ENVZ 335L/GEOZ 335L Environmental Geology Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: GEOG/ENVS 335. Required for environmental science majors enrolled in ENVS/GEOG 335; optional for other majors. Attendance on one Saturday morning field trip required. Laboratory exercises coordinated with GEOG/ENVS 335 lectures.

ENVZ 401L/GEOZ 401L Meteorology and Climatology Laboratory

Semester course; 3 laboratory hours. 1 credit. Pre- or corequisite: GEOG/ENVS 401. A series of laboratory and field experiments designed to quantify the elements of weather and climate and to interpret their local temporal and spatial variations.

Life Sciences(LFSC)

LFSC 101 Introduction to Life Sciences

Semester course; 2 lecture and 1 recitation hours. 3 credits. Introduction to theoretical, empirical and applied concepts of biological complexity linking various life sciences disciplines. Provides an overview of the scope of activities within life sciences. Allows students to refine particular areas of interest within the field and identify undergraduate research opportunities. Provides a foundation for further study in any life science major.

LFSC 307/PSYC 307 Community Solutions: Multiple Perspectives

Semester course; 3 lecture hours. 3 credits. Prerequisite: PYSC 101. Explores possibilities for addressing social concerns of the Richmond community by understanding the complex nature of social issues as essential to their successful amelioration via perspectives of life and social sciences. Toward this end, expertise from the social sciences, the life sciences and the community are integrated. Includes a service-learning experience (a 20-hour volunteer requirement).

LFSC 401/RELS 401 Faith and Life Sciences

Semester course; 3 lecture hours. 3 credits. Prerequisites: sophomore standing and ENGL 200. Open to students of any school or program. Explores the complex relationships between faith traditions and the life sciences. Topics include epistemology, impact of life sciences on ideas of fate and responsibility, limits of science and technology, and scientific and religious perspectives on human origins, consciousness, aggression, forgiveness, health, illness and death.

LFSC 510/BIOL 545 Biological Complexity

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: BIOL 310 and 317, CHEM 302, PHYS 202, MATH 200 or equivalents or permission of the instructor. Opened to qualified seniors and graduate students only. An introduction to the basis of complexity theory and the principles of emergent properties within the context of integrative life sciences. The dynamic interactions among biological, physical and social components of systems are emphasized, ranging from the molecular to ecosystem level. Modeling and simulation methods for investigating biological complexity are illustrated.

LFSC 520/BIOL 548 Bioinformatic Technologies

Semester course; 2 lecture hours. 2 credits. Prerequisite: BIOL 545/LFSC 510 or permission of instructor. Introduction to the hardware and software used in computational biology, proteomics, genomics, ecoinformatics and other areas of data analysis in the life sciences. The course also will introduce students to data mining, the use of databases, meta-data analysis and techniques to access information.

LFSC 591 Special Topics in Integrative Life Sciences

Semester course; variable hours. 1-4 credits. A 500-level study of a selected topic in integrative life sciences. Students will find specific topics and prerequisites for each Special Topics course listed in the Schedule of Classes. If multiple topics are offered, students may elect to take more than one.

LFSC 610 Analytical Methods in Biocomplexity Analysis

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: LFSC 510 or equivalent, or permission of the instructor. An introduction to mathematical and computational methods in biocomplexity analysis and the mathematical and computational simulation of biological systems. Topics include methods for dynamical systems analysis, nonlinear systems analysis, gene sequencing, fractals and chaos, and pattern recognition. Students will be exposed to Maple, Matlab, SPSS, E-cell, BioPerl, Epigram, and C.

LFSC 630 Integrative Life Sciences Research

Semester course; 2 lecture hours. 2 credits. An introduction to integrative research in the life sciences from the molecular to ecosystem level. The course will include presentations on ongoing interdisciplinary and systems-oriented life sciences research by faculty members and discussion and analysis of classic interdisciplinary research projects.

LFSC 690 Research Seminar in Integrative Life Sciences

Semester course; 1 lecture hour. 1 credit. May be repeated for credit. Presentation and discussion of research topics of current interest in the life sciences. Graded as "S," "U" or "F."

LFSC 691 Special Topics in Integrative Life Sciences

Semester course; variable hours. 1-4 credits. Prerequisite: Permission of instructor required. Advanced graduate study of a selected topic in integrative life sciences. Students will find specific topics and prerequisites for each Special Topics course listed in the Schedule of Classes. If multiple topics are offered, students may elect to take more than one.

LFSC 697 Directed Research in Integrative Life Sciences

Semester course; variable lecture/laboratory hours. 1-15 credits. May be repeated for credit. Directed research leading to the Ph.D. degree in Integrative Life Sciences.