



2011

Virginia Commonwealth University Undergraduate Bulletin Courses

Virginia Commonwealth University

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University College

University College

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; 1-3 lecture hours. 1-3 credits. May be repeated for a total of 3 credits. An education- and career-planning course focusing on the process of researching and selecting a major. Through course work, research, guest speakers and informational interviewing, students will discover various educational and career options. Topics will include interest, abilities and work-values assessments, decision-making models and career development theories. One- and two-credit versions of the course are offered with correspondingly reduced meeting schedules.

UNIV 111 Focused Inquiry I

Semester course; 3 lecture hours. 3 credits. Utilizes contemporary themes to give students opportunities and practice in writing, critical thinking, oral presentation, collaborative learning, information retrieval and evaluation, and social and civic responsibilities. Incorporates common reading materials and course activities across all sections.

UNIV 112 Focused Inquiry II

Semester course; 3 lecture hours. 3 credits. Prerequisite: UNIV 111 or equivalent. Builds on skills introduced in UNIV 111 by providing practice in expository essays, argument and contextual analysis. Focuses on practice in writing in a variety of genres, framing writing according to both purpose and audience and identifying academically valid sources. This course is writing intensive.

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 200 Writing and Rhetoric

Semester course; 3 lecture hours. 3 credits. Prerequisite: UNIV 112 with a minimum grade of C. 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.

UNIV 211 Food for Thought

Semester course; 3 lecture hours. 3 credits. An interdisciplinary exploration of food using analytical lenses from sociology, anthropology, philosophy, art, literature, history, political science, psychology, economics and religious studies.

UNIV 217 Finding Your Voice in Contemporary Society

Semester course; 3 lecture hours. 3 credits. Prerequisites: UNIV 111 and 112. Focuses on strategies for expression in contemporary society. This course examines the messages that are conveyed in our society and how people decode and understand those messages. Course will focus on popular culture themes and practical problem solving.

UNIV 250 Undergraduate Teaching Assistant Program

Semester course. 1 credit. May be repeated for up to 2 credits. Prerequisites: successful completion of UNIV 111 and 112 with minimum grades of B. Utilizes classroom practice to further the core skills developed in UNIV 111 and 112 (writing, critical thinking, oral presentation, collaborative learning, information retrieval and evaluation, and social and civic responsibilities) as well as exposing students to the practice, possibilities, rewards and responsibilities of the act of teaching.

UNIV 251 Undergraduate Teaching Assistant Program

Semester course; 1 credit. May be repeated for up to 2 credits. Prerequisites: instructor permission; successful completion of UNIV 200 with minimum grade of B. Utilizes classroom practice to further the core skills developed in UNIV 200 (including writing, critical thinking, collaborative learning, information retrieval and evaluation) as well as exposing students to the practice, possibilities, rewards and responsibilities of the act of teaching.

UNIV 270 Introduction to Leadership Studies

Semester course; 3 lecture hours. 3 credits. Open only to students participating in the Emerging Leaders Scholarship Program. Introductory study of leadership theory, group dynamics and human relationships used in volunteer organizations and leisure delivery systems. Foundations of leadership/follower behavior, advanced facilitation techniques and techniques of decision making, problem solving, conflict management and program evaluation will be examined.

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 350 Peer Leadership Program

Semester course; 3 credits. May be repeated for up to 6 credits. Prerequisite: 2 credits of UNIV 250 with a minimum grade of B. Building on skills introduced in UNIV 250, this course gives students hands-on experience in the practice of creating and maintaining student engagement.

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 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/ANTH/INTL 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 309/ANTH 309/INTL 309/WMNS 309 Global Women's Health

Semester course; 3 lecture hours. 3 credits. Explores issues in women's health from a national and international perspective with an emphasis on the experiences of women in the African diaspora. Theories in medical anthropology are employed to examine key themes.

AFAM 310 African American Health: Health Disparities

Semester course; 3 lecture hours. 3 credits. Examines health and health disparities among African Americans in the U.S. Explores the primary health concerns and issues in the African American community. Topics include impacts of infant mortality, cardiovascular disease, AIDS, violence and cancer on the overall health status of African Americans.

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. Prerequisite: ECON 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 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.

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/ARTH 342 African-American Art

Semester course; 3 lecture hours. 3 credits.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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. Prerequisite: MHIS 243 or MHIS/AFAM 250. 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: 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.

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 394 Service-learning in African American Health

Semester course; 3 lecture hours. 3 credits.
Prerequisite: AFAM 310. Open to African American studies majors only. Provides an overview of critical public health issues and intervention strategies that may influence life chances and disease susceptibility among African Americans through a service-learning format.

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; completion of 24 credits in African American studies courses; senior standing. 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.
Prerequisite: ARTH 390 with a minimum grade of C. 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 474/MASC 474 Minorities and the Mass Media

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MASC 101. 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. Prerequisites: completion of 12 credits in African American studies courses; junior or senior standing.

AFAM 494 Internship in African American Health

Semester course; 150 clock hours in appropriate organization. 3 credits. Prerequisites: AFAM 310, either AFAM 309 or AFAM 322, and AFAM 394. Applicants must be approved by the internship coordinator. Open to African American studies majors of senior standing only. Students are placed in organizations that offer supervised work or research experience in a health setting appropriate to their interests. A final report must be submitted upon completion of the internship.

American Studies**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 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: UNIV 200 with a minimum grade of C. 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.

ANTH 302 Archaeological Theory

Semester course; 3 lecture hours. 3 credits.
Prerequisites: ANTH 105 and UNIV 200 with a minimum grade of C. 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 UNIV 200 with a minimum grade of C. 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 309/AFAM 309/INTL 309/WMNS 309 Global Women's Health

Semester course; 3 lecture hours. 3 credits. Explores issues in women's health from a national and international perspective with an emphasis on the experiences of women in the African diaspora. Theories in medical anthropology are employed to examine key themes.

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 UNIV 200 with a minimum grade of C. 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 UNIV 200 with a minimum grade of C. 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 UNIV 200 with a minimum grade of C. 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 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.

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: ANTH 103. 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 103 or 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.

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 UNIV 200 with a minimum grade of C. 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 448/FRLG 448/ENGL 448/LING 448 Language, Culture and Cognition

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Introduces theoretical and methodological foundations for the study of language from sociocultural perspectives. The perspectives include linguistic, philosophical, psychological, sociological and anthropological contributions to the understanding of verbal and nonverbal communication as a social activity embedded in cultural contexts. No prior training in linguistics is presupposed.

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: Completion of 15 credits in anthropology at the 300 or 400 level; senior standing. 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 457/INTL 457 Comparative Perspectives on Cultures and Societies

Semester course; 3 lecture hours. 3 credits. Examination of the theoretical, methodological and ethical problems that arise from anthropological comparisons of cultures.

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 Anthropology Internship

Semester course; variable hours. 1-3 credits (40 clock hours per credit). May be repeated for a maximum of 6 credits for majors and 3 credits for minors. Prerequisites: completion of 9 credits in anthropology courses at the 300 level or above, and permission of the internship coordinator. Student must be in good academic standing with a minimum major GPA of 2.25. Designed for the advanced student to gain workplace experience in a local, national or international business or agency offering opportunities in anthropological field methods or research.

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; senior standing. Pre- or corequisite: ANTH 454. 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.

Arabic

ARBC 101-102 Elementary Arabic

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

ARBC 201 Intermediate Arabic I

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

ARBC 202 Intermediate Arabic II

Semester course; 3 lecture hours. 3 credits. Prerequisite: ARBC 201 or the equivalent. Continuation of the essentials of grammar with emphasis on achieving proficiency in aural comprehension, speaking, reading and writing skills.

ARBC 205 Intermediate Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisite: ARBC 201. Designed to increase student proficiency in the spoken language through audio-oral exercises, dialogues and conversation.

ARBC 301 Arabic Creative Expression

Semester course; 3 lecture hours. 3 credits. Prerequisite: ARBC 202 or 205. 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

Courses at the 500 level listed in this bulletin 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 major in biology.

BIOL 103/ENVS 103 Environmental Science

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Basic scientific principles of environmental processes with correlated laboratory exercises. Draws together aspects of biology, chemistry, geology, physics and sociology. Among the topics covered are ecology, evolution, natural resources, air and water resources, energy and recycling, population biology, and sustainable global societies. Not applicable as a prerequisite for any biology course at the 200 level or above, nor for credit toward the major in biology.

BIOL 151 Introduction to Biological Science I

Semester course; 3 lecture hours. 3 credits. Prerequisites: Placement into MATH 151; and a minimum grade of C 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 minimum grade of C 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 2 laboratory hours, plus online component. 4 credits. Prerequisites: BIOL 101 and BIOZ 101 with minimum grades of C. 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 209 Medical Microbiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 101 and BIOZ 101 with minimum grades of C. 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. Prerequisite: Minimum grade of C in BIOL 101 or BIOL 103. 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: BIOL 151 and 152, and BIOZ 151 and 152, with minimum grades of C. Pre- or co-requisites: CHEM 102 and CHEZ 102. A study of the molecular biology of the cell as it relates to gene expression, cell signaling, and cell growth and differentiation.

BIOL 220 Biology Major Workshop

Semester course; 1.25 workshop hours. 1 credit. Prerequisites: BIOL 151 and 152, and BIOZ 151 and 152, with minimum grades of C. Workshop course for biology majors of sophomore or junior standing that focuses on the requirements for a degree in biology, development of an advising portfolio and increasing awareness of potential career opportunities in biological sciences. Graded as Pass/Fail.

BIOL 291 Topics in Biology

Semester course; variable hours. Variable credit. Prerequisites: BIOL 151, 152 and BIOZ 151, 152, with minimum grades of C. 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: BIOL 151, 152 and BIOZ 151, 152, with minimum grades of C, and an overall GPA of 3.0. Designed to allow students to accomplish independent readings of biological literature under the supervision of a staff member.

BIOL 301 Comparative Vertebrate Anatomy

Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisite: BIOL 218 with a minimum grade of C. 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: BIOL 218 with a minimum grade of C. 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: BIOL 218 with a minimum grade of C. 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 317, CHEM 102 and CHEZ 102, with minimum grades of C. 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: BIOL 218 with a minimum grade of C. 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; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: BIOL 151, 152 and BIOZ 151, 152, with minimum grades of C. A field-based course that focuses on insect diversification, identification, natural history and basic biology.

BIOL 310 Genetics

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 218 and UNIV 200 with minimum grades of C. 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: BIOL 218 with a minimum grade of C. 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 151, 152, with minimum grades of C. 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 151, 152, with minimum grades of C. The natural history of vertebrates with emphasis on the species native to Virginia.

BIOL 317 Ecology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151, 152 and BIOZ 151, 152, and UNIV 200, with minimum grades of C. 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. Prerequisite: BIOL 218 with a minimum grade of C. The physiology, structure and adaptation of seed plants.

BIOL 321 Plant Development

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 218 with a minimum grade of C. 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 322 Economic Botany

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151 and 152 and BIOZ 151 and 152, or equivalents, with minimum grades of C. This class focuses on plant morphology, anatomy, phytochemistry, growth and reproduction through an examination of the biology of economically and culturally important plants, including crops used for foods and beverages, medicines and drugs, fibers, and timber.

BIOL 323 Plant Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 151 and 152, BIOZ 151 and 152, and BIOL 218, or equivalents, with minimum grades

of C. An introduction to basic plant physiology, including transport processes, energy production and secondary metabolism with emphasis on adaptations to stress.

BIOL 332/ENVS 330 Environmental Pollution

Semester course; 3 lecture hours. 3 credits. Prerequisites: Eight credits in biology. The study of pollution in the environment with emphasis on the procedures for detection and abatement.

BIOL 341/ANTH 301 Human Evolution

Semester course; 3 lecture hours. 3 credits. Prerequisite: UNIV 200 with a minimum grade of C. 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.

BIOL 351/BNFO 301 Introduction to Bioinformatics

Semester course; 3 lecture hours. 3 credits. 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. Prerequisites: BIOL 151, 152 and BIOZ 151, 152, with minimum grades of C. Pre- or corequisite: BIOL 218. An introduction to biomedical research projects.

BIOL 380/BNFO 380/MATH 380 Introduction to Mathematical Biology

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisites: MATH 200 and BIOL 151, or permission of instructor. An introduction to mathematical biology. Various mathematical modeling tools will be covered and implemented in a range of biological areas. Additionally, the collaborative research process will be presented and discussed.

BIOL 391 Topics in Biology

Semester course; variable hours. Variable credit. Prerequisites: BIOL 151, 152 and BIOZ 151, 152, with minimum grades of C. 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: UNIV 200; STAT 210; BIOL 310; BIOL 317; one of the following laboratory experiences: BIOZ 310, BIOZ 317 or BIOZ 476; all with minimum grades of C. 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: BIOL 218 with a minimum grade of C. 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.

BIOL 413 Parasitology

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 218 with a minimum grade of C. The epidemiology and pathological effects of eukaryotic parasites, including parasite life cycles and host-parasite relationships.

BIOL 416 Ornithology

Semester course; 3 lecture hours. 3 credits. Prerequisite: BIOL 317 with a minimum grade of C. Provides an integrative study of birds, including avian evolution and diversity, general anatomy and physiology, behavior, and ecology.

BIOL 417 Mammalogy

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: BIOL 218 and 317 with minimum grades of C. 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 317, CHEM 102 and CHEZ 102, with minimum grades of C. An introduction to physical, chemical and geological oceanography and a more detailed treatment of the organisms and biological 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. Prerequisite: BIOL 317 with a minimum grade of C. 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 or equivalent; CHEM 302 and CHEZ 302. Provides an understanding of molecular biology testing methodologies as applied to analysis of forensic samples. Current topics in forensic DNA analysis will include quality assurance, DNA databanking, contemporary research and population genetics.

BIOL 445 Neurobiology and Behavior

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: BIOL 317 with a minimum grade of C. 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. Prerequisites: BIOL 218 with a minimum grade of C; 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. Prerequisite: BIOL 310 with a minimum grade of C. A comprehensive introduction to the immune system of higher animals, emphasizing the molecular and cellular basis for antibody-mediated immunity.

BIOL 475 Biology Capstone Seminar: _____

Semester course; variable hours. Variable credit. Prerequisites: Completion of the Biocore with minimum grades of C and 90 hours of undergraduate course work. Students read assigned topical papers before class, prepare critical analyses, discuss and debate selected positions. See Schedule of Classes for specific topics.

BIOL 477 Biology Capstone Experience

Semester course; variable hours. 0 credits. Prerequisites: Completion of the Biocore with minimum grades of C and 90 hours of undergraduate course work. The following courses qualify as a capstone experience if taken as a co-requisite with this course: BIOL 492 Independent Study, BIOL 493 Biology Internship, BIOL 495 Research and Thesis or BIOL 497 Ecological Service Learning.

BIOL 490 Research Seminar

Semester course; 1 credit. Prerequisites: Completion of the Biocore with minimum grades of C. Pre- or corequisites: BIOL 492 or 495, and senior standing. 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 151, 152, with minimum grades of C. 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: Minimum grade of C in one of the following courses: BIOZ 310, BIOZ 317 or BIOZ 476; and permission of the chair of the Department of Biology. 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 493 Biology Internship

Semester course; variable hours. Variable credit. Maximum of 3 credits per semester; maximum total of 6 credits for all independent study and internship courses. 1 credit awarded for each 100 hours of work experience in professional biology setting. Prerequisites: BIOL 310 or 317 with minimum grades of C; and permission of the chair of the Department of Biology and of the agency, company or organization in which internship will be held. Internship designed to provide laboratory or field experience in an off-campus professional biology setting. A final report must be submitted upon completion of the internship. 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; 2 credits. May be repeated with a different course for a maximum of 4 credits. Prerequisites: Completion of the relevant course with a minimum grade of B and a minimum cumulative GPA of 3.0. Permission of instructor and departmental chair required prior to registration. Preceptors assist instructors in lecture (BIOL) or laboratory (BIOZ) courses. Responsibilities vary and may include, but are not limited to, attending class, conducting review sessions and preparing course study/review materials. Graded as pass/fail.

BIOL 497 Ecological Service Learning

Semester course; 1 lecture hour. 1 credit. Prerequisite: BIOL 317 with a minimum grade of C. A service-learning course coupled to course content and material taught in BIOL 317. Students will seek out ecologically relevant opportunities with local, state and federal community partners who will provide experiences to enhance academic enrichment and personal growth and will help foster a sense of civic responsibility. Students must complete a minimum of 20 service-learning hours with community partner(s).

Biology Lab**BIOZ 101 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 103/ENVZ 103 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 151 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 152 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 201 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 209 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 303 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 307 Aquatic Ecology Laboratory

Semester course; 3 laboratory hours. 1 credit. Prerequisites: BIOL 317, CHEM 102 and CHEZ 102, with minimum grades of C. Pre- or corequisite: BIOL 307. Laboratory and field studies of the biota of aquatic habitats and their relationship with the environment.

BIOZ 310 Laboratory in Genetics

Semester course; 1 lecture and 3 laboratory hours. 2 credits. Prerequisites: BIOL 218 and UNIV 200 with minimum grades of C. Prerequisite or corequisite: BIOL 310. Demonstrates the laws and molecular basis of heredity through exercises and experiments that use a variety of organisms.

BIOZ 312 Invertebrate Zoology Laboratory

Semester course; 3 laboratory hours. 1 credit. Prerequisites: BIOL and BIOZ 151 and 152, with minimum grades of C. 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 313 Vertebrate Natural History Laboratory

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

BIOZ 317 Ecology Laboratory

Semester course; 4 laboratory hours. 2 credits.
Prerequisites: BIOL and BIOZ 151 and 152, and UNIV 200; all with minimum grades of C. 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 321 Plant Development Laboratory

Semester course; 4 laboratory hours. 2 credits.
Prerequisite: BIOL 218 with a minimum grade of C. 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 391 Topics in Biology Laboratory

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

BIOZ 416 Ornithology Laboratory

Semester course; 3 laboratory hours. 1 credit.
Prerequisite: BIOL 317 with a minimum grade of C. Pre- or corequisite: BIOL 416. Field identification of birds by sight and sound; basic avian anatomy; and adaptations for flight and sexual selection.

BIOZ 438/FRSZ 438 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 and the techniques for human identification in forensic casework. Students also will explore and practice both scientific writing and writing of DNA case reports.

BIOZ 476 Biology Capstone Laboratory

Semester course; 1 lecture and 3 laboratory hours. 2 credits. Prerequisite: BIOL 310 with a minimum grade of C, and 90 credit hours of undergraduate course work. Application of basic methods used in cellular and molecular biology to the investigation of topics of current biological interest. Emphasis on experimental design, data collection and analysis, communication skills, critical thinking, and ethical and social responsibility. Formerly BIOL 300.

BIOZ 491 Topics in Biology Laboratory

Semester course; variable hours. Variable credit.
Prerequisites: BIOL and BIOZ 151 and 152, with minimum grades of C. Laboratory investigations in a selected topic of biology. See the Schedule of Classes

for specific topics to be offered each semester and prerequisites.

Chemistry

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, CHEM 302, and CHEM 309. 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.
Prerequisite: CHEM 102 with a minimum grade of C. Prerequisite for CHEM 302: CHEM 301 with a minimum grade of C. 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 102 and CHEM 309 with minimum grades of C, PHYS 201-202 or PHYS 207-208, 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 303 with a minimum grade of C.

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 301-302 and CHEM 309 with minimum grades of C; 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/CLSE 306 Industrial Applications of Inorganic Chemistry

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CHEM 302 and CHEZ 302. Chemical engineering students: EGRC 201 and EGRC 205. 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 102 with a minimum grade of C, and MATH 151. 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: CHEM 302. 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 with minimum grades of C. 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: CHEM 101-102 with minimum grades of B. 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 101, 102. 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 302 and CHEZ 302. 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 Biochemistry I

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 302 with a minimum grade of C. A presentation of structural biochemistry, enzymology, biophysical techniques, bioenergetics and an introduction to intermediary metabolism.

CHEM 404 Biochemistry II

Semester course; 3 lecture hours. 3 credits. Prerequisite: CHEM 403 with a minimum grade of C. A presentation of metabolism and its regulation as integrated catabolism and anabolism of molecules that are essential to life.

CHEM 406 Inorganic Chemistry II

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 304, 309 and 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 302, 304 and 309, and CHEZ 309, all with minimum grades of C. 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 102 and CHEZ 101 and 102. 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 102 and CHEZ 101 and 102. 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 102 and CHEZ 101 and 102. 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.

Chemistry Lab

CHEZ 101 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 102 General Chemistry Laboratory II

Semester course; 1 lecture and 2 laboratory hours. 1 credit. Prerequisite: CHEZ 101 with a minimum grade of C. 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 110 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 301 Organic Chemistry Laboratory I

Semester course; 4 laboratory hours. 2 credits. Prerequisites: CHEM 102 and CHEZ 102 with minimum grades of C. 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 302 Organic Chemistry Laboratory II

Semester course; 4 laboratory hours. 2 credits. Prerequisites: CHEM 301 and CHEZ 301 with minimum grades of C. 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 303 Physical Chemistry Laboratory I

Semester course; 4 laboratory hours. 2 credits. Prerequisites: CHEM 102 and CHEZ 102. Pre- or corequisites: CHEM 303, 309 and CHEZ 309. 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 304 Physical Chemistry Laboratory II

Semester course; 4 laboratory hours. 2 credits. Prerequisites: CHEM 303, 309 and CHEZ 303, 309. 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 309 Quantitative Analysis Laboratory

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

CHEZ 406 Inorganic Chemistry Laboratory

Semester course; 1 lecture and 3 laboratory hours. 2 credits. Prerequisites: CHEM 320 and CHEZ 102. 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 409 Instrumental Analysis Laboratory

Semester course; 4 laboratory hours. 2 credit. Prerequisites: CHEM 302, 304 and 309 with minimum grades of C; CHEZ 303 and 309 with minimum grades of C. Pre- or corequisite: CHEM 409. Practice of electrochemical, spectroscopic and chromatographic methods of analysis.

Chinese

CHIN 101-102 Elementary Chinese

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

CHIN 110 Intensive 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. Prerequisite: CHIN 102. 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.

CHIN 300 Chinese Vocabulary and Reading

Semester course; 3 lecture hours. 3 credits.
Prerequisite: completion of Chinese courses through the intermediate level or equivalent. Designed to increase written vocabulary and reading skills through an examination and discussion of literary works by famous Chinese writers. Conducted in Chinese.

CHIN 301 Practical Chinese Writing

Semester course; 3 lecture hours. 3 credits.
Prerequisite: completion of Chinese courses through the intermediate level or equivalent. Designed to develop students' writing techniques and skills in several types of technical writing in Chinese (business, financial and law documents, memos and resumes). Conducted in Chinese.

CHIN 391 Topics in Chinese

Semester course; variable hours. 1-4 credits. May be repeated with different topics for a maximum of 16 credits. Prerequisite: CHIN 202 or 210. An in-depth study of selected topics in Chinese. See the Schedule of Classes for specific topics to be offered each semester.

Criminal Justice**CRJS 181 Introduction to Criminal Justice**

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 Juvenile Justice

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CRJS 181 or permission of instructor. Examines 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.
Prerequisites: UNIV 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.

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 Corrections

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CRJS 181 or permission of instructor. 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 Criminological Theory

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CRJS 181 or permission of instructor. Examines the intellectual underpinnings of the criminal justice system. Includes 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 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 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 â the collection, analysis, sharing and dissemination of information within and between local, state and federal governmental agencies â is a special focus.

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 Gender, Crime and Justice

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CRJS 181 or permission of instructor. Examines the role of gender as it relates to crime and justice. Special attention will focus on the gendered experiences of practitioners, offenders and victims within the criminal justice system in terms of processing, adjudication and institutional responses.

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. 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 Criminal Procedure

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CRJS 181 or permission of instructor. Analyzes criminal procedure regarding the courts and their supervisory role over prosecutions and the use of testimonial and non-testimonial evidence. Examines 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.
Prerequisite: CRJS 181 or instructor's permission. Restricted to seniors in criminal justice with at least 85 credit hours taken toward the degree. 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.

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.

English

UNIV 112 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 114 English Grammar and Usage

Semester course; 3 lecture hours. 2 credits.
Prerequisite: UNIV 112 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 UNIV 111, 112 or 200, and these credits may not be used to satisfy the College of Humanities and Sciences degree requirements in composition and rhetoric.

ENGL 201 Western World Literature I

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112. 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: UNIV 112. 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: UNIV 112. 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: UNIV 112. 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: UNIV 112. 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: UNIV 112. 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: UNIV 112. A study of selected literature published in the last 25 years and chosen from a number of different nations and cultures.

ENGL 215 Textual Analysis

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112. An inquiry into literary texts, emphasizing critical thinking and close reading. Individual sections will focus on a unifying question or problem. Students will study selected texts and their times with an emphasis on developing skills in one or more of the following areas: reading, writing, research and/or oral communication.

ENGL 216 Readings in Narrative

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112. 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: UNIV 112. An introduction to literature by and/or about women.

ENGL 241 Shakespeare's Plays

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112. 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: UNIV 112. 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 295 The Reading and Writing of Fiction and Poetry

Semester course; 3 lecture hours. 3 credits. An introduction to the basic elements of writing poetry and fiction, using published examples of contemporary fiction and verse as guides in the study of literary form and the production of original creative writing. Students will be offered a practitioner's perspective on genre conventions and the process of revision.

ENGL 300 Practical Writing Workshop

Semester course; 3 workshop hours. 5, 10 or 15 weeks. 1-3 credits. Prerequisites: UNIV 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: UNIV 200 and three credits in a 200-level literature course (or equivalent). 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: UNIV 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: UNIV 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: UNIV 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: UNIV 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 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.

Prerequisites: 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 369/SCTS 301 Illness Narratives

Semester course; 3 lecture hours. 3 credits.

Prerequisite: UNIV 200. An overview of the history, interpretations and practices of reading and writing illness narratives -- through case studies and theoretical perspectives, in fictionalized and nonfiction accounts, from the viewpoint of various actors (doctors, patients, patient families and their caregivers). Students will further examine the role of narrative knowledge in health care.

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 Chesnut.

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 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.
Prerequisites: ENGL 301 with a minimum grade of C, and at least 3 additional credits of English at the 300 level. For English majors only. 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.
Prerequisites: ENGL 301 with a minimum grade of C, and at least 3 additional credits of English at the 300 level. For English majors only. 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.
Prerequisites: ENGL 301 with a minimum grade of C, and at least 3 additional credits of English at the 300 level. For English majors only. 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. Prerequisites: ENGL 301 with a minimum grade of C, and at least 3 additional credits of English at the 300 level. For English majors only. 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. Prerequisites: ENGL 301 with a minimum grade of C, and at least 3 additional credits of English at the 300 level. For English majors only. 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. Prerequisites: ENGL 301 with a minimum grade of C, and at least 3 additional credits of English at the 300 level. For English majors only. 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 305, 317 or comparable drama course, or permission of instructor. A practical approach 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. 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. Prerequisites: Three credits in a 200-level literature course (or equivalent) and ENGL 305 (fiction). Study of 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 440 Writing and Social Change:

Semester course; 3 lecture/workshop hours. 3 credits. May be repeated once for credit with a different topic. Prerequisite: Three credits in a 200-level literature course (or equivalent). A focused study of the literatures of underserved communities such as those

of prisoners, recovering addicts, inner-city teens or immigrants. Students will collaborate with one such community on an original writing project.

ENGL 448/FRLG 448/ANTH 448/LING 448 Language, Culture and Cognition

Semester course; 3 lecture hours. 3 credits.
Prerequisite: Three credits in a 200-level literature course (or equivalent). Introduces theoretical and methodological foundations for the study of language from sociocultural perspectives. The perspectives include linguistic, philosophical, psychological, sociological and anthropological contributions to the understanding of verbal and nonverbal communication as a social activity embedded in cultural contexts. No prior training in linguistics is presupposed.

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.
Prerequisites: UNIV 200 and 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.
Prerequisite: ENGL 301 with a minimum grade of C. Restricted to seniors in English with at least 85 credit hours taken toward the degree. 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 Writing

Semester course; 3 lecture hours. 3 credits. Maximum of 12 credits in all topics courses at the upper level.
Prerequisite: UNIV 200 and three credits in a 200-level literature course (or equivalent). Intensive study and practice of writing in a specific genre or application. 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.

European Cultures

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 Languages

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. 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. Designed to increase the student's proficiency through the study of selected cultural and literary texts. Course may be repeated with different languages.

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 448/ANTH 448/ENGL 448/LING 448 Language, Culture and Cognition

Semester course; 3 lecture hours. 3 credits.
Prerequisite: Three credits in a 200-level literature course (or equivalent). Introduces theoretical and methodological foundations for the study of language from sociocultural perspectives. The perspectives include linguistic, philosophical, psychological, sociological and anthropological contributions to the understanding of verbal and nonverbal communication as a social activity embedded in cultural contexts. No prior training in linguistics is presupposed.

FRLG 493 World Languages Internship

Semester course; variable hours. 1-3 credits (40 clock hours per credit). May be repeated for a maximum of 6

credits, however only 3 credits can count toward the major concentration. Prerequisites: Prior completion of 9 credits in the respective foreign language at the 300 level, with a course in advanced grammar and composition, one in conversation and one in civilization. Designed for the advanced student to gain workplace experience in the target foreign language in internationally oriented public and private organizations and agencies. All course work must be completed in the target language.

Foreign Literature in English Translation

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.

Forensic Science

FRSC 202 Crime and Science

Semester course; 3 lecture hours. 3 credits. Introduces the scientific theory, concepts and practices used in any physical science by relating them to the analysis of physical evidence performed in forensic laboratories and the fundamentals of crime scene investigation, and their relationship to the criminal justice system and

criminal investigations. Not applicable for credit toward B.S. in Forensic Science.

FRSC 300 Survey of Forensic Science

Semester course; 3 lecture hours. 3 credits. Pre- or corequisites: BIOL 152, BIOZ 152, CHEM 301, CHEZ 301 and UNIV 200. Open only to forensic science majors or by permission of instructor. 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. Formerly FRSC 350.

FRSC 309 Scientific Crime Scene Investigation

Semester course; 3 lecture/laboratory hours. 3 credits. Pre- or co-requisite: FRSC 300. Open only to forensic science majors or by permission of instructor. 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 365 Forensic Microscopy

Semester course; 4 lecture hours. 4 credits. Prerequisite: FRSC 300. 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. Pre- or co-requisites: FRSC 300 and CRJS 181. Open only to forensic science majors or by permission of instructor. The law of criminal procedure and rules of evidence as applied to forensic science. Topics will include scientific versus legal burdens of proof, legal terminology and trial procedure.

FRSC 385 Forensic Serology

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: FRSC 300. 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 identification 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. Prerequisite: FRSC 300. 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 401 Forensic Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: FRSC 300, CHEM 409 and CHEZ 409. 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.

Effective fall 2011

FRSC 400 Forensic Chemistry

Semester course; 3 lecture hours. 3 credits. Prerequisites: FRSC 300, CHEM 409 and CHEZ 409. Provides an understanding of presumptive and confirmatory chemical analyses used in a forensic laboratory for the characterization and identification of physical evidence, such as accelerants and explosives, paints and polymers, suspected drug substances, and toxicology. Chemical analyses as pertaining to firearms, toolmarks and glass will also be explored.

FRSC 438/BIOL 438 Forensic Molecular Biology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 310 or equivalent; CHEM 302 and CHEZ 302. Provides an understanding of molecular biology testing methodologies as applied to analysis of forensic samples. Current topics in forensic DNA analysis will include quality assurance, DNA databanking, contemporary research and population genetics.

FRSC 445/PATH 445 Forensic Toxicology

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 301-302 and CHEZ 301. 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. Prerequisites: FRSC 300 and one additional forensic science course. Restricted to seniors in forensic science with at least 85 credit hours toward the degree. 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 credits. May be repeated for a maximum of 6 credits. Prerequisite: FRSC 300. Open only to forensic science majors with junior or senior standing and a minimum GPA of 2.5. 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.

Forensic Science Lab

FRSZ 391 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. Prerequisite: FRSC 300. Laboratory investigations in a selected topic in forensic science. See the Schedule of Classes for specific topics to be offered each semester and additional prerequisites.

FRSZ 400 Forensic Chemistry Laboratory

Semester course; 4 laboratory hours. 2 credits. Pre- or corequisite: FRSC 400. Practical laboratory application 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.

FRSZ 438/BIOZ 438 Forensic Molecular Biology Laboratory

Semester course; 3 laboratory hours. 1 credits. 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 and the techniques for human identification in forensic casework. Students also will explore and practice both scientific writing and writing of DNA case reports.

French

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

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. Prerequisite: FREN 102. 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. 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: 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. Prerequisite: FREN 202 or 205. 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. Prerequisite: FREN 202 or 205. 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 307 French Conversation and Film

Semester course; 3 lecture hours. 3 credits. Prerequisite: FREN 202 or 205. The course is designed to develop the student's conversational skills, oral comprehension ability and knowledge of contemporary culture through discussion of selected French films. Emphasis is also placed on vocabulary development and writing practice.

FREN 320 French Civilization and Culture I

Semester course; 3 lecture hours. 3 credits. Prerequisite: FREN 202 or 205. 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. Prerequisite: FREN 202 or 205. 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. Prerequisite: FREN 202 or 205. 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: Nine credits of French courses at the 300 level. 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: Nine credits of French courses at the 300 level including FREN 320 or 321. 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: Nine credits of French courses at the 300 level including FREN 320 or 321. 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: Nine credits of French courses at the 300 level including FREN 320 or 321. Conducted in French. Tracing French cinema from les Frores Lumiere 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: Nine credits of French courses at the 300 level including FREN 305. 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 426 Pop France

Semester course; 1-3 lecture hours. 1-3 credits. Prerequisite: Nine credits of French courses at the 300 level including FREN 300 or 301. Conducted in French. Explores contemporary French popular culture, put in a wider historical context. Discusses mainstream media, new media, commercial cinema, comic strips, pulp fiction and food, while devoting several weeks to music. Investigates the complex sociolinguistics of argot (slang), with a special interest in the banlieues' (suburbs') multicultural subculture and multifaceted codes. Also questions the possibility of a "pop philosophy" in French thought.

FREN 430 Great Poets and Their Times

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different topics up to a total of 6 credits. Prerequisite: Nine credits of French courses at the 300 level including FREN 300 or 301. Conducted in French. Poetry of select major poets of a select century or centuries within a context of the historical, artistic and broad cultural setting of the poets' times. 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: Nine credits of French courses at the 300 level including FREN 300 or 301. 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: Nine credits of French courses at the 300 level including FREN 300 or 301. 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 Bruyere, 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: Nine credits of French courses at the 300 level including FREN 300 or 301. 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: Nine credits of French courses at the 300 level including FREN 300 or 301. 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 Contemporary French Literature

Semester course; 1-3 lecture hours. 1-3 credits. Prerequisite: Nine credits of French courses at the 300 level including FREN 300 or 301. Conducted in French. An overview of French literature from 1900 to the present. Discusses texts that have particular resonance in relation to contemporary issues, including literary works that have contributed most saliently to French culture over this time period.

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: Nine credits of French courses at the 300 level including FREN 300 or 301. 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. Prerequisite: Nine credits of French courses at the 300 level including FREN 300 or 301. 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 nine 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.

Geography

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 and Infrastructure Planning

Semester course; 3 lecture hours. 3 credits. Prerequisite: Any 100-level (or higher) URSP or GEOG course. Explores how the integration of land use, transportation and other infrastructures (e.g. water supply, waste water and storm water) in urban and regional planning can improve development patterns to ensure sustainability and livability. The historical development of land use, urban form and the various transportation modes that have shaped American cities are also studied.

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 Economic Geography

Semester course; 3 lecture hours. 3 credits. Explores the workings of regional economies through analysis of industries and occupations. Studies the reasons for variation in regional economic characteristics and examines policies and strategies for enhancing regional economic conditions. Course relies heavily on the use of Microsoft Excel; proficiency with using this program is required.

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 Research and Field Methods in Urban and Regional Studies

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 331 Geography of Latin America and the Caribbean

Semester course; 3 lecture hours. 3 credits. Examines the physical and human geography of Latin America and the Caribbean from an interdisciplinary perspective. A systems approach is used to concentrate on particular topics, themes and patterns that have broader relevance to the overall region or subregions (e.g. Central America, the Lesser Antilles, the Andes, Amazonia) rather than on the details of each country. However, in relation to some topics, case studies are used that may focus on a particular country.

GEOG 332/ENVS 332/URSP 332 Environmental Management

Semester course; 3 lecture hours. 3 credits.

Prerequisite: GEOG 204 or permission of instructor. 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. 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: PHYS 201. 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.

Prerequisites: BIOL 151, BIOL 152, and CHEM 102. 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 420/URSP 420 Regional Planning and Sustainable Development

Semester course; 3 lecture hours. 3 credits.

Prerequisite: GEOG 102 or permission of instructor. Explores the factors, both historical and contemporary, that influence the socioeconomic and environmental characteristics of national and sub-national regions, mainly in the developing world. Analyzes development problems and strategies from various theoretical perspectives, and examines the impacts of policy and planning interventions on regional conditions.

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.

Geography Lab**GEOZ 105/ENVZ 105 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 203, 204 Physical Geography Laboratory

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

GEOZ 335/ENVZ 335 Environmental Geology Laboratory

Semester course; 2 laboratory hours. 1 credit. Corequisite: GEOG/ENVS 335. Required for

environmental science majors enrolled in ENVZ/ GEOG 335; optional for other majors. Attendance on one Saturday morning field trip required. Laboratory exercises coordinated with GEOG/ENVS 335 lectures.

GEOZ 401/ENVZ 401 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

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 110 Intensive Elementary German

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

GRMN 201 Intermediate German

Semester course; 3 lecture hours. 3 credits. Prerequisite: GRMN 102. 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. 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. Designed to increase the student's proficiency in the spoken language through audio-oral exercises, dialogues and free conversation.

GRMN 300 Composition and Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisite: GRMN 202 or 205. Development of written and oral skills through review of selected aspects of German grammar, writing practice and conversational activities based on a variety of situations. Conducted in German.

GRMN 301 Grammar and Writing

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: GRMN 300. A study of key aspects of advanced German grammar with emphasis on the elements of style and vocabulary building.

GRMN 305 German Conversation

Semester course; 3 lecture hours. 3 credits. Prerequisite: GRMN 202 or 205. Conducted in German. Practice in the spoken language with emphasis on discussions relating to topics of current interest.

GRMN 307 German Conversation and Film

Semester course; 3 lecture hours. 3 credits.
Prerequisite: GRMN 202 or 205. The course is designed to develop the student's conversational skills, oral comprehension ability and knowledge of contemporary culture through discussion of selected German films. Emphasis is also placed on vocabulary development and writing practice.

GRMN 311 German through the Media

Semester course; 3 lecture hours. 3 credits.
Prerequisite: GRMN 202 or 205. 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: GRMN 202 or 205; and six credits of German courses at the 300 level. 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.
Prerequisite: GRMN 202 or 205. 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.
Prerequisite: GRMN 202 or 205. 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.
Prerequisite: GRMN 202 or 205. 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: Nine credits of German courses at the 300 level including GRMN 300 or 301. 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: Nine credits of German courses at the 300 level including GRMN 300 or 301. 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: Nine credits of German courses at the 300 level including GRMN 300 or 301. 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: Nine credits of German courses at the 300 level including GRMN 300 or 301. Study 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: Nine credits of German courses at the 300 level including GRMN 300 or 301. 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.
Prerequisites: Nine credits of German courses at the 300 level including GRMN 300 or 301. 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: Nine credits of German courses at the 300 level, with a course in advanced grammar and composition, a course in conversation, and a course in civilization. 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.

Government and Public Affairs

GVPA 399/HIST 399/SCTS 300 Introduction to Science and Technology Studies

Semester course; 3 lecture hours. 3 credits. An introduction to the study of science, technology and medicine from political, sociological and historical perspectives, focusing on case studies that illustrate the methods and theories used to examine the structure and behavior of the scientific community and the role of scientific knowledge in shaping public culture.

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; variable hours. 1-6 credits. (50 hours per credit.) May be repeated for a maximum of 6 credits. Permission of internship coordinator required.

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.

History

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 201 The Art of Historical Detection:

Semester course; 3 lecture hours. 3 credits. Introduces non-history majors to the methods of the discipline by undertaking a series of case studies in historical inquiry. Each case study will consist of a close examination of a single historical question, covering the general background to that question and exploring relevant primary and secondary sources. Students will then use this evidence to propose well-reasoned solutions to the question at hand.

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 preliterate period to that of the Archaemenid Empire of the Persians. First semester: preliterate 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, Mycenaean, 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. Prerequisite: ECON 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 upon 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 in 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 103 or 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 395, 396 Revolutions in Science

Semester courses; 3 lecture hours. 3, 3 credits. A survey of the history of science from the ancient Greeks to the present, focusing on the development of scientific ideas, practices and institutions in Western society. First semester: to 1800. Second semester: 1800 to the present.

HIST 397 Genetics and Society: 1865 to the Present

Semester course; 3 lecture hours. 3 credits. An investigation of the science and technology of heredity in its historical, cultural and political contexts, emphasizing the ways in which genetic theories have been applied in attempting to solve social and biological problems.

HIST 399/GVPA 399/SCTS 300 Introduction to Science and Technology Studies

Semester course; 3 lecture hours. 3 credits. An introduction to the study of science, technology and medicine from political, sociological and historical perspectives, focusing on case studies that illustrate the methods and theories used to examine the structure and behavior of the scientific community and the role of scientific knowledge in shaping public culture.

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.

Homeland Security and Emergency Preparedness

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 â the collection, analysis, sharing and dissemination of information within and between local, state and federal governmental agencies â 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. Prerequisites: HSEP 301 and HSEP 302. 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: Completion of all HSEP core 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 independent study 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 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 202 Choices in a Consumer Society

Semester course. 1 credit. Corequisite: UNIV 112. Provides a framework for understanding the nature of choices made in a consumer society, with an emphasis on the financial consequences of those choices. Students will gain the practical knowledge needed to make informed personal financial decisions as they address immediate, short-term and long-term consumer choices. Administered primarily as a self-paced, computer-aided instructional course.

HUMS 250 Reading Film

Semester course; 3 lecture hours. 3 credits. Prerequisite: UNIV 111 or equivalent. Develops students' visual literacy by exploring and analyzing the various elements of film (cinematography, lighting, editing, art direction, acting and sound, among others). Examples will be drawn from both U.S. and world cinema and from all eras of filmmaking.

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 300 Great Questions of the Social Sciences

Semester course; 3 lecture hours. 3 credits. The social sciences explore human aspects of the world in fields of study that include anthropology, criminology, economics, education, geography, law, political science, psychology and sociology. This course explores fundamental questions of social science and examines their historical and contemporary relevance.

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.

Humanities and Sciences Interdisciplinary

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 201 Energy!

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 131 or STAT 208 or higher equivalent. A study of global energy demands, how they are being met, environmental consequences and alternative energy sources.

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 101 Human Societies and Globalization

Semester course; 3 lecture hours. 3 credits. An interdisciplinary inquiry into how societies around the world are organized and how they are interrelated on social, economic, political and cultural dimensions. The course is organized around themes that are important to prominent globalization processes -- topics such as human rights, global inequalities, cultural globalization, global crime, globalization and religion, the global mass media, and environmental issues. Students also explore the implications of rapid social change for international issues and interpersonal interaction.

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 Global Communications

Semester course; 3 lecture hours. 3 credits. Explores how communication media and globalization drive each other and how they both impact the nation-state as well as international institutions. Examines how technology, the global economy and international media corporations influence culture, politics, business, law and other institutions in countries around the world. Explores the relationship between media systems and governments and how both are affected by technology and globalization.

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 201 Introduction to the Middle East and North Africa

Semester course; 3 lecture hours. 3 credits. An interdisciplinary introduction to the region of the Middle East and North Africa, its peoples and cultures. Covers the geography, climate, economy, language, religious and social systems, as well as other social systems and cultural features that are traditional to the peoples of the region.

INTL 202 Identities in a Global Community

Semester course; 3 lecture hours. 3 credits. An introduction to intercultural communication. Designed to help students develop an understanding of cultures, to appreciate the opportunities and challenges that each culture presents to people and to learn how individuals have dealt with those opportunities and challenges.

INTL 203/WRLD 203 Cultural Texts and Contexts: _____

Semester course; 3 lecture hours. 3 credits. Through the analysis and interpretation of literary, cinematic and other cultural texts, this course explores the ways cultural and national identities have been shaped, imagined and contested in various regions of the world. While responding to the readings and films as artistic manifestations or social documents, students will also become familiar with the aesthetic, political and social contexts in which the works were and are produced. 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: UNIV 112. 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 306/RELS 306 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.

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 309/AFAM 309/ANTH 309/WMNS 309 Global Women's Health

Semester course; 3 lecture hours. 3 credits. Explores issues in women's health from a national and international perspective with an emphasis on the experiences of women in the African diaspora. Theories in medical anthropology are employed to examine key themes.

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/ENVS 314 Man and Environment

Semester course. 3 lecture hours. 3 credits. 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. Prerequisite: ECON 211. 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 320/MKTG 320 International Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). Designed to help students develop an understanding of international marketing policies and the differences among foreign marketing environments. Students compare and contrast domestic and international marketing and examine recent changes in the international marketing environment. Formerly MKTG 378/INTL 378.

INTL 327/MGMT 329 Introduction to Intercultural Communication

Semester course; 3 lecture hours. 3 credits. 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. Prerequisite: ECON 211. 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: SPAN 202 or 205. 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 UNIV 200 with a minimum grade of C. 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 UNIV 200 with a minimum grade of C. 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 UNIV 200 with a minimum grade of C. 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. Prerequisites: 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 or MHIS/AFAM 250. 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 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. Prerequisite: FIRE 311. This course is restricted to students who have completed at least 54 credit hours (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. Prerequisite: FIRE 311. This course is restricted to students who have completed at least 54 credit hours (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. Prerequisites: Completion of nine credits of Spanish at the 300 level including SPAN 300 or 301. 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 UNIV 200 with a minimum grade of C. 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, MGMT 418, ECON 329 or INTL 418. 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 448/MKTG 448 Internet Marketing
Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours

(junior standing). Examines Internet marketing as a necessary ingredient to successful worldwide marketing strategy. Students analyze markets using Web-based techniques for market evaluation, competitive analysis, market comparison and selection. Discussion includes comparison of e-business versus traditional business perspectives on marketing strategies and tactics. Formerly MKTG 478/INTL 478.

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. Prerequisite: Nine credits of French courses at the 300 level including FREN 300 or 301. 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 457/ANTH 457 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 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 480/POLI 480 China in Transition

Semester course; 3 lecture hours. 3 credits. Traces how China is making the transition from a planned to market economy, and what implications this transition has on the political, social and urban landscape. Class discussions are grounded on a basic understanding of China's modern history and regional geography.

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. Prerequisites: Completion of 18 INTL credits at the 300- or 400-level; senior standing. Pre- or corequisite: INTL 490, 492, or 493. 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.

Italian

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.
Prerequisite: ITAL 102. 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. 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. 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.
Prerequisite: ITAL 202 or 205. 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. Prerequisite: ITAL 202 or 205. 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. Prerequisite: ITAL 202 or 205. 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 and Cultural Competence

LGCC 101 Introduction to Language and Culture for Professionals I:

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit with a different language. Designed for anyone concerned about the effectiveness of communicating with diverse linguistic communities. The communication focus includes an introduction to basic structures and target terminology used in the professions. This course cannot be used to fulfill requirements of general education in the college or the foreign language major or minor.

LGCC 102 Introduction to Language and Culture for Professionals II:

Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit with a different language. Prerequisite: LGCC 101 or the equivalent. Designed for anyone concerned about the effectiveness of communicating with diverse linguistic communities. The communication focus includes continued practice with basic structures and target terminology used in the professions. This course cannot be used to fulfill requirements of general education in the college or the foreign language major or minor.

LGCC 197 Basic Cultural Competence Training

Semester course; 1-3 hours. 1-3 credits. Designed for anyone concerned about the effectiveness of people working and living in multicultural societies. Bridges theory and practice through a series of hands-on exercises, simulations, stories and real-world examples to optimize the learners' skill development necessary for effective intercultural communication. Graded as Pass/Fail.

LGCC 201 Intermediate Language and Culture for Professionals I:

Semester course; 1-3 lecture hours. 1-3 credits. Prerequisite LGCC 102 or the equivalent. Designed for anyone concerned about the effectiveness of communicating at an intermediate level with diverse linguistic communities. Delves further into grammatical structures, cultural concepts and target terminology used in the professions. This course cannot be used to fulfill requirements of general education in the college or the foreign language major or minor.

LGCC 202 Intermediate Language and Culture for Professionals II:

Semester course; 1-3 lecture hours. 1-3 credits. Prerequisite LGCC 201 or the equivalent. Designed for students concerned about the effectiveness of communicating at an advanced intermediate level with diverse linguistic communities. Offers continued instruction in cultural concepts, basic structures and target terminology used in the professions. This course cannot be used to fulfill requirements of general education in the college or the foreign language major or minor.

LGCC 297 Cultural Competence for Health Care Professionals

Semester course; 1-3 hours. 1-3 credits. Designed for health care, social work, public health and related providers who work with the growing number of immigrants, refugees and minorities in the U.S. Focus is on the basics of intercultural-communication competence for health care settings to help health care providers build deeper knowledge and understanding of patients/clients' cultural values and beliefs and how they may influence clients' attitudes and behaviors. Graded as Pass/Fail.

LGCC 405-406-407 Spanish Language and Culture for Health Care Providers

Continuous courses; 2 lecture hours. 2-2-2 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. These courses cannot be used to fulfill requirements for the Spanish major or minor, nor can they fulfill the general education language requirement. Formerly SPAN 405-406.

Language Skills

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 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. Prerequisite: LATN 102. 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: LATN 202. 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: LATN 202. 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 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 including SPAN 300 or 301. 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 including SPAN 300 or 301. 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 448/ANTH 448/ENGL 448/FRLG 448 Language, Culture and Cognition

Semester course; 3 lecture hours. 3 credits. Prerequisite: Three credits in a 200-level literature course (or equivalent). Introduces theoretical and methodological foundations for the study of language from socio-cultural perspectives. The perspectives include linguistic, philosophical, psychological, sociological and anthropological contributions to the understanding of verbal and nonverbal communication as a social activity embedded in cultural contexts. No prior training in linguistics is presupposed.

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. Prerequisites: UNIV 200 and three credits in a 200-level literature course (or equivalent). 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.

Mass Communications

MASC 101 and MASC 203 are prerequisites for all 300- and 400-level MASC courses.

MASC 101 Mass Communications

Semester course; 3 lecture hours. 3 credits. Open only to mass communications majors or media studies minors, or by permission of School of Mass Communications. A comprehensive overview of mass media which examines its history and evolution. Emphasis is given to the ways in which 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. Includes discussion of 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 Global Communications

Semester course; 3 lecture hours. 3 credits. Explores how communication media and globalization drive each other and how they both impact the nation-state as well as international institutions. Examines how technology, the global economy and international media corporations influence culture, politics, business, law and other institutions in countries around the world. Explores the relationship between media systems and governments and how both are affected by technology and globalization.

MASC 201 Curiousness

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Study and practice of the first attribute for success in creativity: curiosity. Students engage in practical applications, readings, lectures, demonstrations and in-class exercises that build curiosity and help students identify and trust their natural curious nature. Provides advertising and non-advertising majors with rigorous and provocative challenges to stimulate further interest in creating for media.

MASC 203 Journalism Writing

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 101, UNIV 112 and minimum cumulative GPA of 2.5. Study and practice in fact gathering and development of basic writing skills for print, broadcast and online journalism. Focuses on journalistic storytelling, grammar, Associated Press style and knowledge of current affairs.

MASC 204 Story

Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: MASC 101 and 201, UNIV 112 and minimum cumulative GPA of 2.5. Focuses on writing for advertising and consumer communications (the best advertising tells stories to which consumers can relate). Students study the parts of a story, what makes a story interesting and how to find those things. Practice includes looking for, finding and constructing a story. A survey of many different ways storytelling is involved in making advertising. Practice in applying storytelling skills to several advertising and communication projects.

MASC 290 Ethical Problems in Mass Media

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 101. 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 291 Topics in Communications

Semester course; variable hours. 1-3 credits. May be repeated once with different content. A study of a specialized topic in mass communications. See the Schedule of Classes for specific topics to be offered.

MASC 300 Technical Prowess

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 101 and 201. For advertising students only. Examines the functions of visual and graphic communication in the print and electronic media. Focuses on mastery of graphics software and basic design principles used in advertising. Students gain hands-on experience with state-of-the-art computer graphics and layout programs. (May not be taken if student has taken MASC 301 or 334.)

MASC 301 Graphics for Journalism

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 203. For journalism students only. Examines 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 used in newspaper and magazine journalism. (May not be taken if student has taken MASC 300 or 334.)

MASC 303 Reporting for Print and Web

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 203 and UNIV 200. Detailed study in reporting and writing news stories for print publications and Web sites. Focus on interviewing, writing news and features and preparing for entry-level reporting assignments. Students also will learn online presentation skills, including photos, audio, video and interactive elements.

MASC 305 Copy Editing

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 301. Instruction and practice in basic newspaper and online 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, and potential legal problems for copy editors. Attention also will be paid to layout and design for newspapers and online.

MASC 323 Public Relations

Semester course; 3 lecture hours. 3 credits. Prerequisite: MASC 203 or 204. 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 323 and UNIV 200. 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 334 Public Relations Graphics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 203. For public relations students only. Study of the functions of visual and graphic communication for public relations practice. Focuses on basic design principles and skills in editing, graphic creation, digital-image manipulation, Web and interactive content. Students gain hands-on experience with state-of-the-art computer graphics, Web and layout programs. (May not be taken if student has taken MASC 300 or 301.)

MASC 335 Public Relations Production

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MASC 333 and 334. For public relations students 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.

Prerequisite: MASC 303 or 363. 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. Prerequisite: MASC 101 or 151. 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 Journalism

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 203 or 204. An examination of the regulatory, technical, economic and creative foundations of print, broadcast and Web-based journalism. Historical, contemporary and ethical issues are also addressed.

MASC 363 Introduction to Broadcast Writing

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 203. Corequisite: MASC 367. 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 367 Audio and Video Journalism

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 203. Corequisite: MASC 363. Open to mass communications majors only.

Focuses on the purpose, function and execution of basic techniques of audio and video field and studio production operations, especially as they relate to news. Emphasizes the production of broadcast-quality media content. Fieldwork production, remote production and live production, along with audio and video recording and editing, are covered.

MASC 380 History of Advertising

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 203 or 204. A foundation survey, from prehistoric to present day. What is advertising? How did it get to be that way and what might it become? Advertising's place in society through several eras, with emphasis on U.S. advertising history, but attention also paid to the role of advertising in other countries. An overview of the creation of the ad agency, a summary of its parts, an explanation of its workings and its place in society. Understanding advertising as practiced from various viewpoints including the agency, public, clients and social and political groups.

MASC 381 Great Advertising

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 380. Explores the practitioner-oriented approach to the creation, preparation and evaluation of advertising, branding and communications. Views great advertising from the perspective of integrated marketing communication and utilizes case studies of advertising and branding campaigns for some of the world's best-known brands.

MASC 382 Acumen

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 380. Focuses on excelling in the business aspects of advertising, branding and communications. To understand an advertising client's business needs, one must understand how the client does business. Students will learn about advertising from within the context of marketing, business and commerce.

MASC 392 Perspicuousness

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 204 and UNIV 200.

Intensive practice in choosing the right word for the right occasion. Study of the different types of advertising copy used by both local and national advertisers. Focuses on creative thinking and inspired writing for advertising, branding and communications.

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 Imagination

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 204 and 300. Study of art direction: practice in visualizing and utilizing media

space aesthetically. Students complete assignments each week, ranging from traditional advertising to alternative media venues. Results are presented in front of the class for critique by faculty and fellow students.

MASC 397 Ubiquity

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 204. Using media to help achieve the client's ad objective. An intensive problem-based course on using mass, personal and social media to engage the consumer, to help communicate the brand's message and to add impact to a communications campaign. Students will study media planning and buying of all types of media (TV, radio, newspapers, magazines, outdoor, online and nontraditional).

MASC 398 Awareness

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 204. Understanding what advertisers can look for in their research and how they use research to connect with consumers. Through this intensive research practicum focused on account planning, students will learn to research consumers, competition and brands. Students will use quantitative (such as online surveys) and qualitative (such as focus groups, panel studies, one-on-one interviews) methods to research consumers and target audiences. Students will conduct competitive market research on brands.

MASC 399 Empathy

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 204. Focuses on managing client accounts, team management, group dynamics, negotiating and presentation skills. Students learn how to persuade through understanding of others, including how to make smarter decisions, spark innovation and solve problems more quickly, and how to create a culture of candor, trust, resilience and accountability in clients and in coworkers.

MASC 403 Advanced Reporting

Semester course; 2 lecture and 2 laboratory hours. 3

credits. Prerequisite: MASC 303. For mass communications majors only. Capstone course for print journalism students. 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. Emphasis on fast-paced deadlines. This course may not be taken simultaneously with MASC 404, MASC 475 or MASC 496 without permission from the instructor.

MASC 404 Specialized Project Reporting

Semester course; 2 lecture and 2 laboratory hours. 3

credits. Prerequisite: MASC 303. For mass communications majors only. Capstone course for print journalism students. Provides 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. This course may not be taken simultaneously with MASC 403, MASC 475 or MASC 496 without permission from the instructor.

MASC 408 Communications Ethics and Law

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MASC 203 or 204. Study of ethical and legal issues affecting the practice of journalism and public relations. 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.

MASC 409 Truth and Honor

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MASC 204 and 380. For mass communications majors only. A survey of laws pertaining to the creation of advertising, such as trademark and copyright, and to the effects of advertising in the culture. A discussion of ethical questions pertaining to persuasion, communication and the effects of advertising in the culture.

MASC 415 Advanced Video Journalism

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 363 and 367. Corequisite: MASC 460. 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.
Prerequisite: MASC 323. 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 431 Digital Public Relations

Semester course; 1 lecture hour. 1 credit. Prerequisite: MASC 323. For mass communications majors only. Focuses on how to maximize digital technologies to improve public relations efforts. Focusing on both technique and theory, students will learn some of the most in-demand skills, including how to increase traffic at a website and how to promote a product, event or company online; media strategy, including digital press releases and online news rooms; content syndication; digital chat tours; online seminars; online newsletters; blogs; and mobile phone applications.

MASC 432 Media Relations

Semester course; 1 lecture hour. 1 credit. Prerequisite: MASC 323. Explains the role of the news media, how they operate and the unwritten rules that govern interaction with the news media. Students will learn how to construct an effective media relations strategy, how to be interviewed with skill and assurance and how to evaluate media relations within the organization's public relations plan.

MASC 433 Public Relations and Special Events

Semester course; 1 lecture hour. 1 credit. Prerequisite: MASC 323. Students learn the theory and organizational strategies of special events as a function of public relations. Topics include client consulting, objective setting, budgeting, sponsorships, vendor negotiations and follow-up procedures.

MASC 434 Public Relations and Risk Communication

Semester course; 1 lecture hour. 1 credit. Prerequisite: MASC 323. For mass communications majors only. Provides a framework of principles, approaches and

channels for the communication of risk information to diverse publics. Risk communication provides the opportunity to understand the public's concerns related to risks generated by organizations, to engage in a dialogue to address differences and concerns, to carry out appropriate actions that can reduce perceived risks and to create a climate of participatory discourse to reduce friction and increase harmony and mutuality. Risk communication sectors include environment, medical, public health, product recall and others.

MASC 435 Public Relations and Crisis Communication

Semester course; 1 lecture hour. 1 credit. Prerequisite: MASC 323. Students learn techniques for dealing with sudden and unexpected situations that have a negative impact on organizations and their images to key constituencies. Through case studies and crisis simulation exercises, students develop strategic solutions for crisis situations. Students are provided with the insights, confidence and practical expertise needed to manage the consequences of a wide range of possible crises in ways that maintain, or even enhance, their employer's reputation.

MASC 436 Public Relations and Reputation Management

Semester course; 1 lecture hour. 1 credit. Prerequisite: MASC 323. For mass communications majors only. Focuses on the management skills needed to forge and maintain sound organizational reputations. Drawing on case studies to explore a variety of reputation management strategies, students evaluate different ways of engaging with stakeholders and of shaping their expectations and perceptions. A simulation exercise is used to challenge students to think strategically about managing reputation and then to relate their insights to the work environment.

MASC 437 Public Relations and Integrated Brand Promotion

Semester course; 1 lecture hour. 1 credit. Prerequisite: MASC 323. For mass communications majors only. Students learn the major communications tools available to promote a brand with its products or services, to target customers, and the central role of public relations in the integrated customer communication process. Through case studies and a simulation, students develop strategic solutions for brand promotion.

MASC 438 Public Relations and Employee Communication

Semester course; 1 lecture hour. 1 credit. Prerequisite: MASC 323. For mass communications majors only. Focuses on the tools to communicate with employees, volunteers and special organizational internal publics, and how those internal messages are used to achieve the goals and objectives of organizations. Students learn the theories of organizational communication and the techniques used to conduct an internal audit of the communication climate in an organization.

MASC 439 Public Relations Campaigns

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MASC 335 and 425. 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 Style

Semester course; 3 lecture hours. 3-3 credits.
Prerequisites: MASC 392 and 394. For mass communications majors only. An advanced, intensive study of advertising style, forming one's own sense of style and the creative process. 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 451 Invention

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MASC 450. For mass communications majors only. An advanced, intensive study of inventiveness in the creative process. Emphasis on strategic and creative development of advertising campaigns that builds on what students learned about advertising style in MASC 450. Prepares students for post-graduate work or study. Students will conceptualize and produce advertising campaigns and assemble a final portfolio. Culminates in a formal portfolio review with professionals from the advertising industry.

MASC 459 Judgment

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MASC 398, 399 and 6 additional credits of MASC electives. For mass communications majors only. Application and demonstration of inspiration, innovation, advertising knowledge and skills. Designed to help students in the strategic concentration compile a strong, comprehensive body of work used in brand communications. Students will develop competence in evaluating communication concepts, market situations and client and agency concerns.

MASC 460 Advanced Television Newsgathering

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 363 and 367. Corequisite: MASC 415. Television news practicum. Using the university and the city of Richmond as their classroom, students will report, write and produce television and multimedia news stories. Electronic newsgathering and editing equipment will be utilized to create professional-caliber projects. Formerly MASC 464.

MASC 461 The Documentary

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 415 and 460. 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 462 Photojournalism

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MASC 363 and 367. 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 (both still and video) and its application in converged media. Students must have their own manually operable 35 mm film or digital (minimum 3.2 megapixels) single lens reflex cameras with at least a 50 mm lens or a zoom lens capable of

50 mm shooting. Students will use departmental video cameras.

MASC 463 Advanced Radio Newsgathering

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MASC 363 and 367. 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 465 Newscasting

Semester course; 1 lecture and 4 laboratory hours. 3 credits. May be repeated once for a total of 6 credits. Prerequisites: MASC 415 and 460. 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. Prerequisite: MASC 203 or 204. 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 467 Nonprofit Project Development

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MASC 323 or 380. Students will be selected to work with area nonprofit clients to create and produce a wide variety of advertising and promotional materials. Students will develop strategy, write creative briefs, recruit teams to work with them during CreateAthon on Campus (a 24-hour creative event held during Spring Break), present work to clients and follow any deliverables through production. Strong emphasis on leadership and a commitment to working with nonprofits.

MASC 474/AFAM 474 Minorities and the Mass Media

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MASC 101. 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; 3 lecture hours. 3 credits.
Prerequisite: MASC 303. For mass communications majors only. Capstone course for print journalism students. 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. This course may not be taken simultaneously with MASC 403, MASC 404 or MASC 496 without permission from the instructor.

MASC 480 Touch

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MASC 398 and 399. For mass communications majors only. Designing advertising strategies that touch the target audience and engage

them in the brand. Students learn to understand the research, the consumer, the competition and the client's brand so that they can develop a strong communication strategy. This is an advanced study of the strategic side of advertising.

MASC 481 Completeness

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: creative advertising concentration: MASC 392 and 394; strategic advertising concentration: MASC 398 and 399. For mass communications majors only. Intensive study in the planning and preparation of advertising campaigns. Students develop complete advertising plans including research, media and creative strategies, sales promotion plans and merchandising plans.

MASC 485 Web Site Design

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 300, 301 or 334. 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. Prerequisite: MASC 203 or 204. 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. Prerequisite: MASC 203 or 204. 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 203 or 204, and permission of internship coordinator. 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 496 Multimedia Journalism

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MASC 303, 363 and 367. Capstone course for print journalism students. Requires students to produce stories simultaneously on multiple platforms -- broadcast, print and Web -- in conjunction with a local newsroom. Students will plan, research and report news stories for a converged media platform and produce multimedia content to supplement these stories. This course may not be taken simultaneously with MASC 403, MASC 404 or MASC 475 without permission from the instructor.

Mathematics and Applied Mathematics

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.

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 121 Perspective Geometry

Short course (5 weeks); 3 lecture hours. 1 credit. Students will examine ways in which Renaissance artists who developed linear perspective in geometry in order to paint scenes realistically influenced the development of mathematics and geometry. Topics covered will include the foundations of projective geometry. Pascal's mystic hexagram, Brianchon's Theorem and duality. A need for higher mathematics will also be introduced and explained. MATH 121-122-123 fulfills the math requirement for art students. The sequence can be taken in any order.

MATH 122 Tessellations

Short course (5 weeks); 3 lecture hours. 1 credit. Students will examine ways in which mathematics is rooted in both natural philosophy and art by examining tiling theory. Course topics include Penrose tilings, symmetries and various other tessellations. MATH 121-122-123 fulfills the math requirement for art students. The sequence can be taken in any order.

MATH 123 Visualization

Short course (5 weeks); 3 lecture hours. 1 credit. Students will examine ways in which mathematics has been visualized artistically and will develop their own way to express a mathematical idea. Topics covered will include fractals, knots, minimal surfaces, non-Euclidean geometry and the fourth dimension. MATH 121-122-123 fulfills the math requirement for art students. The sequence can be taken in any order.

MATH 131 Introduction to Contemporary Mathematics

Semester course; 3 lecture hours. 3 credits. Prerequisite: 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. 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 within the one-year period immediately preceding the beginning of the course. 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 230 Mathematics in Civilization

Semester course; 3 lecture hours. 3 credits. For Honors College students only. The growth, development and far-reaching applications of trigonometry, navigation, cartography, logarithms and algebra through ancient, medieval, post-Renaissance and modern times are explored. Will include methods to solve mathematical problems using various historical procedures and will involve collaboration through group projects.

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; 3 lecture hours. 3 credits.
Prerequisites: MATH 255 (or knowledge of a programming language/mathematical software package) and MATH 201, or permission of the instructor. An introduction to numerical algorithms for solving systems of linear equations, finding zeroes, numerical differentiation and definite integration, optimization.

MATH 303 Investigations in Geometry

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: MATH 361. Restricted to students majoring in the liberal studies for early and elementary education in the Bachelor of Interdisciplinary Studies program. 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.

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; 4 lecture hours. 4 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.
Prerequisite: 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: TEDU 101 and either 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 students majoring in the liberal studies concentration for early and elementary education in the Bachelor of Interdisciplinary Studies program.

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 380/BNFO 380/BIOL 380 Introduction to Mathematical Biology

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisites: MATH 200 and BIOL 151, or permission of instructor. An introduction to mathematical biology. Various mathematical modeling tools will be covered and implemented in a range of biological areas. Additionally, the collaborative research process will be presented and discussed.

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 407 Advanced Calculus

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 300. Theoretical aspects of calculus. Topics include properties of real numbers, countable and uncountable sets, sequences and series, limits, continuity, derivatives, and Riemann integration.

MATH 490 Mathematical Expositions

Semester course; 2 lecture hours. 2 credits. Prerequisites: UNIV 200. Restricted to seniors in mathematical sciences with at least 85 credit hours taken toward the degree. Required for all majors in the Department of Mathematics and Applied Mathematics. A senior capstone course in the major designed to help students attain proficiency in expository mathematical writing and oral presentation, which require the efficient and effective use of mathematics and the English language. Students will learn a variety of topics in mathematics, write reviews of selected award-winning mathematics papers and write a senior paper.

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 533 Partial Differential Equations I

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 300, 301, 307 and 310, or permission of instructor. Parabolic (heat), hyperbolic (wave) and elliptic (steady-state) partial differential equations are studied. Solution techniques such as separation of variables, reflection methods, integral transform methods and numerical methods are

demonstrated. Practical problems and applications are emphasized.

Military Science**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: 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: 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: 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 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: 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 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: Developing Adaptive Leaders

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.

MILS 402 Military Science and Leadership: Leadership in a Complex World

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.

Operations Research

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 427 Deterministic Operations Research

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CMSC 245 or 255, MATH/OPER 327 and MATH 310. Introduction to topics in optimization including linear programming, network models and integer programming. Focuses on constructing sound models and on solving them using appropriate software. Algorithms and model properties are also discussed. Students may not receive degree credit for both OPER 427 and OPER 527.

OPER 428 Stochastic Operations Research

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CMSC 245 or 255, MATH/STAT 309 and MATH 310. Introduction to topics in discrete-event and Monte Carlo simulation including the application of probabilistic models in real-world situations, random number generation, random variate generation and Monte Carlo integration. Students may not receive degree credit for both OPER 428 and OPER 528.

OPER 490/STAT 490 Developing Professional Skills in Operations Research and Statistics

Semester course; 3 lecture hours. 3 credits.
Prerequisites: UNIV 200; either STAT 314 and STAT 321, or OPER 427 and OPER 428. Capstone course designed to help students apply analysis techniques and attain proficiency in professional and academic communication in the context of statistics and operations research. Focuses on the discipline-specific skills necessary to excel in careers or graduate studies in these disciplines.

Philosophy

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 201 Critical Thinking About Moral Problems

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112 or equivalent. Focuses on the development of sound critical-thinking skills and their application to a range of topics in moral philosophy, including questions about the nature of morality and whether we have reason to be moral, and also to various topics in applied ethics such as the morality of abortion, animal rights, world hunger, pornography, capital punishment, sexual behavior, environmental ethics and reverse discrimination. Credit toward graduation may be received for only one of PHIL 201, 212, 213 or 214.

PHIL 211 History of Ethics

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112 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.
Prerequisite: UNIV 112 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. Credit toward graduation may be received for only one of PHIL 201, 212, 213 or 214.

PHIL 213 Ethics and Health Care

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112 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. Credit toward graduation may be received for only one of PHIL 201, 212, 213 or 214.

PHIL 214 Ethics and Business

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112 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. Credit toward graduation may be received for only one of PHIL 201, 212, 213 or 214.

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 230 Reason, Science and the Self

Semester course; 3 lecture hours. 3 credits. Open to Honors College students only. The reasonableness of a belief often depends on the arguments that support it. One primary goal of this course is to sharpen the abilities to identify, analyze and assess arguments. Another primary goal is to show how to apply critical reasoning skills to philosophical explorations of the nature of science, knowledge and personal identity.

PHIL 250 Thinking About Thinking

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 112 or equivalent. An interdisciplinary course about thinking. Covers the development of the principles of reasoning, such questions as how thinking relates to behavior and brain activity and how to think about specific areas of our lives, such as science, morality, religion, the arts and the law.

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 201, 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 322/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.

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 201, 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 201, 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 knowledge? 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. Must be taken at least once as a senior (i.e., after the completion of at least 85 credit hours toward the degree) to satisfy the capstone requirement.

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, 302, 303, 320, 327, 335, 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.

Physics

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. Prerequisite: MATH 200 or permission of instructor. 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 215 Science, Technology and Society

Semester course; 3 lecture hours. 3 credits. Prerequisite: MATH 131 or STAT 208 or higher. Examination of scientific breakthroughs that have led to transformational technologies that are continuing to impact society today. Topics include a historical perspective, an understanding of scientific principles and technologies and an examination of how such discoveries have changed society.

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 307. Corequisite: MATH 301. 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 301. 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 307. Corequisite: MATH 301. Foundations of modern physics including special relativity, thermal radiation and quantization, wave-particle duality of radiation and matter, Schrodinger 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. Prerequisite: 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 301. Microscopic theory of temperature, heat and entropy, kinetic theory, multicomponent systems, and quantum statistics. Mathematical relationships of thermodynamics.

PHYS 351 Guided Inquiry for University Physics I

Semester course; 1 lecture and 1 recitation hour. 1.5 credits. Prerequisites: PHYS 207 and permission of instructor. Student learning assistants aid in recitation sections of PHYS 207 University Physics I using guided inquiry and group-based activities. Further develops the core skills of PHYS 207. Introduces students to the principles of active and collaborative learning in physics through practical, hands-on problem-solving, class discussions and demonstrations.

PHYS 352 Guided Inquiry for University Physics II

Semester course; 1 lecture and 1 recitation hour. 1.5 credits. Prerequisites: PHYS 208 and permission of instructor. Student learning assistants aid in recitation sections of PHYS 208 University Physics II using guided inquiry and group-based activities. Further develops the core skills of PHYS 208. Introduces students to the principles of active and collaborative learning in physics through practical, hands-on problem-solving, class discussions and demonstrations.

PHYS 376 Electromagnetism

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 301 and MATH 301. 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 301, or permission of instructor. Brief introduction to the correspondence between classical and quantum mechanics, Schrodinger 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 340 and 380. Corequisite: PHYS 376. 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 and 320, and PHYZ 320. 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 301 and 320, and PHYZ 320. Corequisites: PHYS 340, 376 and 380. 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.

Physics Lab

PHYZ 101 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 103 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 320 Modern Physics Laboratory

Semester course; 3 laboratory hours. 1 credit. Pre- or corequisite: PHYS 320. Experimental work correlated with PHYS 320.

Political Science

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 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.

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 370 Nonprofit Organizations and Society

Semester course; 3 lecture hours. 3 credits. Examines the history and foundations of the nonprofit agency in the U.S. and abroad. Compares and contrasts relationships between business, government and the nonprofit sector. Discusses requirements for formalizing and managing nonprofit organizations from the perspectives of the volunteer board and employees. Examines issues of accountability, policy, research and resource development.

POLI 372 Ethics, Law and Governance

Semester course; 3 lecture hours. 3 credits. Examines how legal, legislative and public policy issues affect the development and growth of nonprofit organizations. Examines ethical principals and legal issues related to personnel and employment, as well as the goals of advocacy and its importance to nonprofit practitioners.

POLI 374 Financial Management for Nonprofits

Semester course; 3 lecture hours. 3 credits. Examines how nonprofit organizations are influenced by prices, distribution of goods and services and the distribution of income and wealth. Topics include financial-statement analysis, time-value of money, budgeting concepts and techniques, securities valuation, long- and short-term financial planning issues and working capital management. Designed to develop skills in decision making in financial management of the nonprofit organization.

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 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 480/INTL 480 China in Transition

Semester course; 3 lecture hours. 3 credits. Traces how China is making the transition from a planned to market economy, and what implications this transition has on the political, social and urban landscape. Class discussions are grounded on a basic understanding of China's modern history and regional geography.

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.

Portuguese

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. Designed to increase the student's proficiency through the study of selected cultural and literary texts.

PORT 391 Topics in Portuguese

Semester course; variable hours. 1-3 credits. May be repeated with different topics for a maximum of 12 credits. Prerequisite: PORT 202. An in-depth study of selected topics in Portuguese. See the Schedule of Classes for specific topic to be offered each semester.

Psychology

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 well 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 either 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.

Religious Studies**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 108 Human Spirituality

Semester course; 3 lecture hours. 3 credits. A study of the manifestations of one or more of the themes of religious studies in a diverse group of religious communities. The themes may include such wide-ranging topics as the sacred and profane, the epistemology of faith and knowledge, creation stories, human identity, the nature of the divine, the possibility of liberation or salvation, mythology, ritual, ethics, religion and art, religion and law, and religion and politics.

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 Hebrew Bible

Semester course; 3 lecture hours. 3 credits. A survey of the Hebrew Bible 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 305 Hebrew Prophets

Semester course; 3 lecture hours. 3 credits. 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 306/INTL 306 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 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 310 Mediterranean Religions

Semester course; 3 lecture hours. 3 credits. Explores the earliest evidence of religious practice and belief in the Mediterranean region and probes the ways that the ancient traditions shaped the religions that still endure today. Also investigates the effect of religion in the Mediterranean region on related issues of intercultural relations, peace and conflict, and migration.

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/PHIL 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. 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.

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 391 Topics in Religious Studies

Semester course; 3 lecture hours. 3 credits. May be repeated with different topics for a maximum of 6 credits. A study of a 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 and prerequisites.

RELS 401/LFSC 401 Faith and Life Sciences

Semester course; 3 lecture hours. 3 credits.
Prerequisites: sophomore standing and UNIV 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 422 Religion and Film

Semester course; 3 lecture hours. 3 credits. May be repeated with different themes for a total of six credits. Explores central themes present in all global religious traditions, such as ritual, faith, myth, suffering, redemption, the religious quest/pilgrimage, the nature of good and evil and perceptions of the sacred. Using readings from sacred texts and contemporary film critiques, the course juxtaposes ancient story and wisdom with contemporary narratives in film. Possible themes would include women and religion in world cinema, Christology in world cinema, and violence and redemption in film.

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

Semester course; 3 lecture hours. 3 credits.
Prerequisites: ANTH 103 and UNIV 200 with a minimum grade of C. 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 442 Seminar in Hinduism

Semester course; 3 lecture hours. 3 credits. A survey of Hinduism, taking up the earliest origins of Hinduism, the Hindu creation myth, the various conceptions of the divine, the speculation regarding human nature, the stages of life, development of family and monastic codes, the great epics of Hinduism including the Bhagavad-Gita, the six schools of Hindu philosophy and modern Hinduism as it has developed in response to Western influences.

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. 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 493 Religious Studies Internship

Semester course; variable hours. 1-3 credits (40 clock hours per credit). May be repeated for a maximum of 6 credits, however only 3 credits can count toward the major. Prerequisites: completion of 9 credits of upper-level (300- or above) course work in religious studies, and permission of the internship coordinator. Student must be in good academic standing with a minimum major GPA of 2.25. Designed for the advanced student to gain workplace experience in a local, national or international organization offering opportunities in religious studies.

RELS 499 Senior Seminar

Semester course; 1 lecture hour. 1 credit. Prerequisites: Completion of 18 RELS credits at the 300- or 400-level; senior standing. Pre- or corequisite: RELS 490, 491 or 492. 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.

Russian

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. Prerequisite: RUSS 102. 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. 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. Designed to increase the

student's proficiency in the spoken language through audio-oral exercises, dialogues and free conversation.

RUSS 311 Conversation and Media

Semester course; 3 semester hours. 3 credits. May be repeated for up to six credits with permission of the instructor. Prerequisite: RUSS 202 or 205. Conducted in Russian. An introduction to everyday life in Russia and topics of current interest. Students will explore diverse media to develop skills in listening, speaking, reading and writing.

RUSS 330 Literature and Culture: _____

Semester course; 3 lecture hours. 3 credits. May be repeated for up to six credits with different topics. Prerequisite: RUSS 202 or 205. Conducted in Russian. Students will examine salient themes in Russian culture as expressed in a range of classic and contemporary texts. This course develops skills in reading, writing, speaking and listening. See the Schedule of Classes for specific topic to be offered each semester.

RUSS 422 Russian Film

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits with the permission of the instructor. Prerequisite: Completion of six credits of Russian at the 300-level. Conducted in Russian. While the course is designed to develop the student's conversational skills in Russian, it will also provide practice in reading, listening and writing. Discussions will center on films from the Soviet and post-Soviet periods.

RUSS 491 Topics in Russian

Semester course; variable hours. 1-3 credits. May be repeated with different topics for maximum of 9 credits. An in-depth study of selected topics in Russian. See the Schedule of Classes for specific topics to be offered each semester.

Science, Technology and Society**SCTS 200 Science in Society: Values, Ethics and Politics**

Semester course; 3 lecture hours. 3 credits. An interdisciplinary introduction to the ethical, social and political dimensions of science, technology and medicine examined through case studies and debates.

SCTS 300/GVPA 399/HIST 399 Introduction to Science and Technology Studies

Semester course; 3 lecture hours. 3 credits. An introduction to the study of science, technology and medicine from political, sociological and historical perspectives, focusing on case studies that illustrate the methods and theories used to examine the structure and behavior of the scientific community and the role of scientific knowledge in shaping public culture.

SCTS 301/ENGL 369 Illness Narratives

Semester course; 3 lecture hours. 3 credits. Prerequisite: UNIV 200. An overview of the history, interpretations and practices of reading and writing illness narratives -- through case studies and theoretical perspectives, in fictionalized and nonfiction accounts, from the viewpoint of various actors (doctors, patients, patient families and their caregivers). Students will further examine the role of narrative knowledge in health care.

Social Sciences

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 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 major 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 well 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 406 Sociology Senior Seminar

Semester course; 3 lecture hours. 3 credits.

Prerequisite: 21 credit hours in sociology. Course must be taken in the student's last 30 hours at VCU. Senior capstone class; provides students the opportunity to synthesize, integrate and apply their sociological knowledge and skills.

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.

Spanish

Nine credits of 300-level courses in Spanish (including those specifically required for certain courses) are prerequisites to all the following courses.

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. Prerequisite: SPAN 102. 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. 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. 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. Prerequisite: SPAN 202 or 205. Prerequisite for SPAN 301: SPAN 300. 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. Prerequisite: SPAN 202 or 205. Conducted in Spanish. Practice in the spoken language with emphasis on discussions relating to topics of current interest.

SPAN 307 Spanish Conversation and Film

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisite: Spanish through the intermediate level or the equivalent. Designed to develop the student's conversational skills, oral comprehension ability and knowledge of contemporary culture through discussion of selected Spanish and Latin American films. Emphasis is also placed on vocabulary development and writing practice.

SPAN 311 Spanish Through the Media

Semester course; 3 lecture hours. 3 credits. Prerequisite: SPAN 202 or 205. 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. Prerequisite: SPAN 202 or 205. 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. Prerequisite: SPAN 202 or 205. Conducted in Spanish. A treatment of salient manifestations of Latin American culture and civilization from pre-Columbian times to the present.

SPAN 322 Hispanic Immigrants in the U.S.

Semester course; 3 lecture hours. 3 credits. Prerequisite: SPAN 202 or 205. Conducted in Spanish. Analysis, research and discussion of the life and history of Hispanics in the U.S. Topics such as identity, assimilation, immigration laws, education, jobs, housing, health, religion and politics will be covered. Students will apply their course learning through 15 hours of community service for Hispanics.

SPAN 330 Survey of Spanish Literature

Semester courses; 3 lecture hours. 3 credits. Prerequisite: SPAN 202 or 205. 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. Prerequisite: SPAN 202 or 205. Conducted in Spanish. An introduction to major authors and trends up to the present.

SPAN 332 Latino Writers in the U.S.

Semester course; 3 lecture hours. 3 credits. Prerequisite: SPAN 202 or 205. Conducted in Spanish. Explores Latino cultural identity and the Latino contribution to U.S. cultural life through a variety of works in the different literary genres produced by Latino writers, both immigrants and those raised in the U.S.

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 including SPAN 300 or 301. 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 including SPAN 300 or 301. 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 including SPAN 300 or 301. 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 including SPAN 300 or 301. 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. Prerequisites: Completion of nine credits of Spanish at the 300 level including SPAN 300 or 301. 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 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 including SPAN 300 or 301. 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 300 or 301. 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 300 or 301. 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 422 Spanish and Latin American Cinema

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different themes, up to a total of six credits. Prerequisites: Completion of nine credits of Spanish at the 300 level including SPAN 300 or 301. Conducted in Spanish. Spanish and/or Latin American cinema from the 1940s to the present, including the works of important directors, such as Bunuel, Saura, Almodovar, Emilio Fernandez, Glauber Rocha, Solanas or Gutierrez-Alea. The formal and aesthetic issues of cinematic texts and the historical, cultural and social contexts of their production. See the Schedule of Classes for the specific theme 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 including SPAN 300 or 301. 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 including SPAN 300 or 301. 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 432 Hispanic Culture Through Literature

Semester course; 3 lecture hours. 3 credits. Prerequisites: Completion of nine credits of Spanish at the 300 level including SPAN 300 or 301. Conducted in Spanish. An in-depth analysis of Hispanic texts dealing with cultural topics such as love relationships, death, family, religion, politics, gender and ethnicity, as well as their relationships to cultural values, behaviors, ideologies, beliefs and the histories of Spain and Spanish America.

SPAN 485 Spanish Study Abroad

Semester course; variable hours. Variable credit. Prerequisites: Completion of nine credits of Spanish at the 300 level including SPAN 300 or 301. 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. Prerequisites: Completion of nine credits of Spanish at the 300 level including SPAN 300 or 301. 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 including SPAN 300 or 301. 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: SPAN 300 or 301; 305; 320 or 321; 400; and 404. 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. Pre- or corequisites: Completion of nine credits of Spanish courses at the 400 level; senior standing. 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.

Statistical Sciences

Students may receive credit toward graduation for only one of STAT 208, 210, 212, 312 or MGMT 301.

STAT 208 Statistical Thinking

Semester course; 2 lecture and 1.5 laboratory hours. 3 credits. Prerequisite: satisfactory score on the VCU Mathematics Placement Test within the one-year period immediately preceding the beginning of the course, or a grade of C or better in MATH 131 or higher. 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. Students may receive credit toward graduation for only one of STAT 208, 210, 212, 312 or MGMT 301.

STAT 210 Basic Practice of Statistics

Semester course; 3 lecture 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 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. Students may receive credit toward graduation for only one of STAT 208, 210, 212, 312 or MGMT 301.

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. Students may receive credit toward graduation for only one of STAT 208, 210, 212, 312 or MGMT 301.

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, 312 or MGMT 301.

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 MATH 200 or their equivalents. The application of computers to statistical practice using SAS, R or similar statistical software. Topics include data storage and retrieval, data

modification and file handling, statistical and graphical data analysis, and simulation.

STAT 391 Topics in Statistics

Semester course; 1-3 lecture hours. 1-3 credits.
Prerequisite: Because of the changing subject matter to be treated in this course, permission of the instructor is required. 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 MATH 310, and CMSC 245 or CMSC 255 or STAT 321 plus permission of instructor, or their equivalents. Introduction to computational issues in statistics through the exploration of the major topics in machine learning and statistical pattern recognition. Students will be exposed to basic algorithms used in learning systems such as supervised and unsupervised learning, theoretical issues such as computational learning theory, and applications of machine learning such as text classification. Students will be required to program in a higher-level language.

STAT 422 Structured Problem Solving Using Statistics

Semester course; 3 lecture hours. 3 credits.
Prerequisite: STAT 314, PSYC 214 or MGMT 302, or permission of instructor. Focuses on using analytic frameworks and applying statistics to solve problems in a real-world environment. Topics include discussion of analytical frameworks, problem restatement, divergent/convergent thinking, causal flow diagramming, the matrix method, decision tree analysis, review of sampling, confidence intervals, regression, ANOVA, chi squared tests, as well as applications of these concepts to solve case studies.

STAT 435 Industrial Statistics

Semester course; 3 lecture hours. 3 credits.
Prerequisite: STAT 314. Introduction to statistical methods for quality control and process improvement. Topics include special versus common causes of variation, statistical thinking in industrial settings, Shewhart control charts, capability analysis, components of variation, design of experiments and response surface methods. Incorporates use of statistical software.

STAT 445 Analyses of Dependent Data

Semester course; 3 lecture hours. 3 credits.
Prerequisite: STAT 314. Introduction to the analysis of dependent data including the areas of multivariate statistical analysis and time series analysis. Topics include multivariate normal distribution, principal components analysis, factor analysis, cluster analysis, linear discriminant analysis, smoothing methods for time series data, ARIMA and SARIMA models for time series data, and regression with dependent error structures.

STAT 490/OPER 490 Developing Professional Skills in Operations Research and Statistics

Semester course; 3 lecture hours. 3 credits.
Prerequisites: UNIV 200; either STAT 314 and STAT 321, or OPER 427 and OPER 428. Capstone course designed to help students apply analysis techniques and attain proficiency in professional and academic communication in the context of statistics and operations research. Focuses on the discipline-specific 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.

University Studies

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 108 Uncovering Richmond

Semester course; 3 lecture hours. 3 credits. An introduction to the dramatic changes Richmond has undergone in recent decades and how those changes mirror trends in cities across the country. The student will discover the role of politics, public safety, education and other important issues in the development of the city through course lectures, readings, discussion and presentations by guest speakers.

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 120 Urban Issues in Film

Semester course; 3 lecture hours. 3 credits. Introduces students to a variety of themes in urban studies through the medium of film. Focusing on a selection of films and related readings, the course exposes students to critiques of the socioeconomic, historical, political and structural aspects of cities and regions.

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 and Infrastructure Planning

Semester course; 3 lecture hours. 3 credits.
Prerequisite: Any 100-level (or higher) URSP or GEOG course. Explores how the integration of land use, transportation and other infrastructures (e.g. water supply, waste water and storm water) in urban and regional planning can improve development patterns to ensure sustainability and livability. The historical development of land use, urban form and the various transportation modes that have shaped American cities are also studied.

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 Economic Geography

Semester course; 3 lecture hours. 3 credits. Explores the workings of regional economies through analysis of industries and occupations. Studies the reasons for variation in regional economic characteristics and examines policies and strategies for enhancing regional economic conditions. Course relies heavily on the use of Microsoft Excel; proficiency with using this program is required.

URSP 310 Introduction to Urban and Regional Planning

Semester course; 3 lecture hours. 3 credits.
Prerequisite: any 100- or 200-level URSP course. Introduction to theory and practice of governmental planning in the U.S. with emphasis on urban and regional planning. Surveys the history of planning, current planning practice and the ethical responsibilities of planners.

URSP 313/GEOG 313 Research and Field Methods in Urban and Regional Studies

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.
Prerequisite: ECON 203 with a minimum grade of B or ECON 210. 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.
Prerequisite: GEOG 204 or permission of instructor. 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 360 Community and Regional Analysis and GIS

Semester course; 3 lecture hours. 3 credits. Introduces students to the core functions and applications of geographic information systems. Trains students in the management, modeling, analysis and visualization of urban and regional georeferenced data. The GIS techniques covered include the classification and symbolization of geographic features, data querying, table and spatial joining, spatial selection, projections, creation and editing of spatial features, geocoding, spatial analysis, and mapping.

URSP 391 Special Topics in Urban Studies

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. 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.
Prerequisite: 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.
Prerequisite: 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 420/GEOG 420 Regional Planning and Sustainable Development

Semester course; 3 lecture hours. 3 credits.
Prerequisite: GEOG 102 or permission of instructor. Explores the factors, both historical and contemporary,

that influence the socioeconomic and environmental characteristics of national and sub-national regions, mainly in the developing world. Analyzes development problems and strategies from various theoretical perspectives, and examines the impacts of policy and planning interventions on regional conditions.

URSP 440 Senior Capstone Seminar in Urban and Regional Studies

Semester course; 3 lecture hours. 3 credits.
Prerequisite: senior standing. Synthesizes knowledge from previous major courses and applies it to a practical application in the field. Also explores issues related to career planning.

URSP 461 Applied Planning Studio

Semester course; 3 lecture hours. 3 credits.
Prerequisites: all core courses in the urban and regional studies program. Applying the principles and theories of urban studies, students work as a group in the preparation of a plan to address a real community problem.

Women's Studies**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.
Prerequisite: UNIV 112. 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. Pre- or corequisite: UNIV 200. 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 309/AFAM 309/ANTH 309/INTL 309 Global Women's Health

Semester course; 3 lecture hours. 3 credits. Explores issues in women's health from a national and international perspective with an emphasis on the experiences of women in the African diaspora. Theories in medical anthropology are employed to examine key themes.

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 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.

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.
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.

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 Gender, Crime and Justice

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CRJS 181 or permission of instructor. Examines the role of gender as it relates to crime and justice. Special attention will focus on the gendered experiences of practitioners, offenders and victims within the criminal justice system in terms of processing, adjudication and institutional responses.

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. Prerequisite: ARTH 390 with a minimum grade of C. 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.

WMNS 493 Internship

Semester course; variable hours. 1, 2 or 3 credits. May be repeated for a maximum total of 6 credits. Prerequisites: Internship credit is limited to students with a minimum grade point average of 3.0 and junior or senior status. Directed internship, local or abroad, or other approved study-abroad experience with the objective to provide real-life experience. Determination of the amount of credit (based on hours or effort required) and permission of departmental internship coordinator must be obtained prior to registration for the course. Graded pass/fail.

World Studies**WRLD 203/INTL 203 Cultural Texts and Contexts: _____**

Semester course; 3 lecture hours. 3 credits. Through the analysis and interpretation of literary, cinematic and other cultural texts, this course explores the ways cultural and national identities have been shaped, imagined and contested in various regions of the world. While responding to the readings and films as artistic manifestations or social documents, students will also become familiar with the aesthetic, political and social contexts in which the works were and are produced. See the Schedule of Classes for specific topics to be offered each semester.

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 230 Introduction to World Cinema

Semester course; 5 lecture/screening hours. 3 credits. An overview of the main theoretical frameworks, critical concepts and debates devoted to non-Hollywood world cinemas, with special emphasis on the rethinking of national cinema and the

problematic of identity in an increasingly transnational era. Broad interdisciplinary readings in film theory, film history and cultural studies will be supplemented by case studies of particular cinemas and filmmakers, so as to convey an appreciation of the main international movements in the history of cinema.

WRLD 291 Topics in World Languages and Cultures

Semester course; variable hours. 1-3 credits. May be repeated with different content for a maximum of 6 credits. A study of a specialized topic in world cultures and languages. See the Schedule of Classes for specific topics to be offered each semester.

WRLD 302 Communicating Across Cultures

Semester course; 3 lecture hours. 3 credits. Designed to increase understanding of the foundational concepts of communication and intercultural dialogue. Examines (among others) such concepts as individualism, collectivism, ethnocentrism, xenophobia, uncertainty avoidance, nonverbal communication and stereotyping.

WRLD 330 Introduction to Film Studies

Semester course; 3 lecture hours. 3 credits. Prerequisite: WRLD 230 or permission of instructor. An overview of film studies with special attention given to the debates informing the periodization of film history, the critical paradigms of the major film theories and the elements of a cinematographic language from both a technical and aesthetic standpoint.

WRLD 359 International Media Coverage: The Middle East

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: MASC 101 or 151. 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.

WRLD 391 Topics in World Languages and Cultures

Semester course; variable hours. 1-3 credits. May be repeated with different content for a maximum of 6 credits. An in-depth study of a specialized topic in world cultures and languages. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

WRLD 422 National Cinema

Semester course; 1-3 lecture hours. 1-3 credits. Course can be repeated with different themes up to a total of six credits. Prerequisite: WRLD 230 or 330 or permission of instructor. Tracing the development of cinematic traditions in selected nations, this course focuses on the thematic selections and stylistic techniques particular to that particular cinematographic culture. See the Schedule of Classes for the specific theme to be offered each semester.

WRLD 430 Film and the City

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. Focuses on

cinematic representations of cities worldwide, so as to probe the increasingly cross-cultural dynamics of urban landscapes. Films discussed will span the entire history of cinema across genres and national traditions.

WRLD 490 Seminar in World Cultures and Languages

Semester course; 3 lecture hours. 3 credits. Restricted to seniors in world cultures and languages with at least 85 credit hours earned toward the degree. Research and analysis of a selected topic in world cultures and languages in a seminar setting.

WRLD 491 Topics in World Languages and Cultures

Semester course; variable hours. 1-3 credits. May be repeated with different content for a maximum of 6 credits. An intensive and comprehensive examination of specialized areas of interest in world cultures and languages. See the Schedule of Classes for specific topics to be offered each semester and prerequisites.

WRLD 493 World Cultures Internship

Semester course; variable hours. 1-3 credits (40 clock hours per credit). May be repeated for a maximum of 6 credits, however only 3 credits can count toward the major concentration. Prerequisites: completion of 9 credits of upper-level (300- or above) course work toward any non-foreign-language concentration within the School of World Studies, and permission of the internship coordinator. Student must be in good academic standing with a minimum major GPA of 2.25. Designed for the advanced student to gain workplace experience in internationally oriented public and private organizations and agencies.

WRLD 499 Senior Capstone Seminar

Semester course; 1 lecture hour. 1 credit. Prerequisite: Completion of six credits of 400-level courses in the major and senior standing. Open only to students enrolled as majors in the School of World Studies, including anthropology, religious studies, and world cultures and languages. Capstone seminar summarizing and synthesizing studies in World Studies programs. Preparation for entry into career search. Organization and polishing of written works representing skills acquired in programs. Assembly of individual portfolio as means of assessment and career tool.

School of Allied Health Professions

Allied Health Professions

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.

Clinical Laboratory Sciences

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.

Clinical Radiation Sciences

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 201 Radiographic Imaging and Exposure I

Semester course; 3 lecture hours. 3 credits. Prerequisite: CLRS 205. Corequisite CLRZ 201. 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, PHIS 206 and PHIZ 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 and 2 laboratory hours. 4 credits. 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 and pelvis. 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 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 and PHYZ 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 the 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. Pre- or corequisite: CLRS 305. 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; 3 lecture and 2 laboratory hours. 4 credits. Prerequisite: CLRS 309 and CLRS 323. 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: two semesters of general chemistry. Pre- or corequisite: 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. 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. Prerequisite: CLRS 318. 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. Emphasizes federal regulations and monitoring of the imaging system components that may affect radiographic quality through improper functioning. Provides in-depth exploration of digital imaging.

CLRS 321 Nuclear Medicine Physics and Instrumentation I

Semester course; 2 lecture hours. 2 credits. Pre- or corequisite: CLRS 303. Corequisite: CLRS 321. Presents the physical principles of atomic structure, electromagnetic spectrum, units of measurement, radioactive decay and attenuation in matter. Operation of radiation equipment will include statistical applications and quality control procedures.

CLRS 322 Nuclear Medicine Physics and Instrumentation II

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CLRS 317, CLRS and CLRS 321.
Corequisite: CLRS 322. Presents advanced applications in physics and the operating principles of nuclear medicine imaging devices and related quality control procedures.

CLRS 323 Radiation Therapy, Techniques and Applications

Semester course; 4 lecture hours. 4 credits. Pre- or corequisite: CLRS 305. 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.
Prerequisites: PHYS 101, PHYZ 101 and CLRS 232. 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 390 Research Methods in the Radiation Sciences

Semester course; 2 lecture hours. 2 credits. Pre- or corequisites: STAT 210 and junior standing or permission of instructor. 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.
Prerequisites: CLRS 208 and junior standing 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 and senior standing 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 407 Introduction to PET/CT

Semester course; 2 lecture hours. 2 credits.
Prerequisite: CLRS 408. Overview of PET and PET/CT focusing on instrumentation, radiopharmaceuticals and its diagnostic application in neurology, oncology and cardiology.

CLRS 408 Introduction to Computed Tomography (CT)

Semester course; 2 lecture hours. 2 credits.
Prerequisite: CLRS 341 or permission of instructor. Provides the student with an overview of computed tomography. Topics include computed tomography physical principles, data acquisition/image reconstruction, equipment and terminology. Patient care issues (i.e., preparation, monitoring) and basic quality control will be introduced.

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. Prerequisites: 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 a 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; 3 lecture and 2 laboratory hours. 4 credits. Prerequisite: CLRS 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. Emphasis will be placed on traditional and advanced technology and its applications in treatment delivery in radiation oncology. 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 420 Introduction to Vascular-Interventional Radiology

Semester course; 3 lecture hours. 3 credits.
Prerequisite: departmental approval. Introduction to the basic techniques of vascular and interventional radiologic procedures with emphasis on the anatomy demonstrated, equipment, contrast agents, and the role and responsibilities of the technologist.

CLRS 430 Radiobiology

Semester course; 2 lecture hours. 2 credits.
Prerequisites: CLRS 232 and senior standing 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 hours. 2 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.
Prerequisites: CLRS 323 and CLRS 342. 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 319 and senior standing. 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 332, CLRS 403, CLRS 403 and 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 332, CLRS 403, CLRS 403 and 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 481 Applied Pharmacology for Radiation Sciences

Semester course; 3 lecture hours. 3 credits.
Prerequisite: departmental approval. Covers general pharmacology including the study of drug groups, dosages, administrations and reactions of drugs common to patients. Special emphasis on contrast media and other agents commonly used in medical imaging and therapy.

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**CLRS 201 Radiographic Imaging and Exposure I Laboratory**

Semester course; 2 laboratory hours. 1 credit.
Prerequisite: CLRS 205. 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.

CLRS 321 Nuclear Medicine Physics and Instrumentation Laboratory I

Semester course; 2 laboratory hours. 1 credit. Pre- or corequisite: CLRS 303. Corequisite: CLRS 321. Presentation of the applications and techniques employed in the operation of nuclear medicine non-imaging devices. Labs will emphasize the use of survey meters, dose calibrator and scintillation counting device.

CLRS 322 Nuclear Medicine Physics and Instrumentation Laboratory II

Semester course; 2 laboratory hours. 1 credit.
Prerequisites: CLRS and CLRS 321. Corequisite: CLRS 322. Evaluation of applications of different imaging techniques and computer processing utilized in nuclear medicine. Emphasizes the use of single and multiple channel analyzers, planar and SPECT acquisition, and image processing.

CLRS 403 Advanced Patient Care for the Imaging Professional

Semester course; 2 laboratory hours. 1 credit.
Prerequisite: CLRS 208 or permission of instructor. Pre- or corequisite: 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.

CLRS 405 Principles of Mammography Lab

Semester course; 2 laboratory hours. 1 credit.
Prerequisites: CLRS 201 and CLRS 320, or permission of instructor. Pre- or corequisite: 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.

CLRS 461 Radiopharmacy Laboratory

Semester course; 2 laboratory hours. 1 credit.
Prerequisites: CLRS 318 and 344. Corequisite: CLRS 461. A simulated radiopharmacy laboratory will focus on operation of laboratory equipment in the compounding of radiopharmaceuticals.

Gerontology**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.

Health Care Management**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.

Patient Counseling

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 410 Basic Patient Counseling

Semester course; 3 lecture hours. 3 credits. Provides an intensive course of study toward the development of pastoral skills in the hospital context. Assigns students to selected clinical areas with faculty supervision. Utilizes group process and individual supervision for the review of clinical material.

Rehabilitation Counseling

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.

School of the Arts

Applied Music

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 126 Keyboard Skills Applied Lesson

Semester course; half-hour lesson per week. 1 credit. Open only to music majors. Acquisition of keyboard performance skills with emphasis on sight reading, keyboard harmony and improvisation. Proficiency exam through jury required. Graded PR for students who have successfully completed the course but did not pass the proficiency exam.

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. Initial placement in course sequence determined by proficiency audition. Prerequisite for APPM 274: permission of instructor. Acquisition of keyboard performance skills with emphasis on sight reading, keyboard harmony and improvisation. Proficiency exam through jury required. Graded PR for students who have successfully completed the course but did not pass the proficiency exam.

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. Prerequisite: MHIS 147. 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. 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. Prerequisites: APPM 174 and MHIS 147. 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. 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. 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. Prerequisite: MHIS 246. 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 Theatre

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. For music majors only. Prerequisite: APPL 415 with a minimum grade of C. Corequisites: APPL 416 and APPM 299. 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 464 Piano Pedagogy Practicum

Semester course; 1 lecture and 1 laboratory hour. 2 credits. Prerequisites: MHIS 304 and APPM 463 (piano). An advanced study of piano pedagogy with a supervised teaching component.

APPM 492 Senior Project: Portfolio Review

Semester course. 1 credit. Prerequisites: APPL 416 for performance majors or APPL 314 for B.A. degree students, senior standing and a minimum of 18 credits in 300- or 400-level courses. A capstone experience integrating resume preparation and professional development within the field of music. Documentation of creative activities and achievements accumulated during music studies is compiled for a portfolio review.

APPM 493 Music Internship

Semester course; Variable hours. 1-4 credits. May be repeated for a maximum of 4 credits. Prerequisites: Open to music majors with junior standing, 3.0 GPA in major course work and minimum of 2.5 overall GPA, plus consent of coordinator and department chair. Provides full- or part-time professional field experience with approved organizations/individuals. Areas for the internship include (but are not limited to) music publication and production, arts administration and promotion, arts management, entertainment law, presentations and research, instrument repair, recording techniques, composition and arranging, and/or performance opportunities. Graded as S/U.

APPM 494 Senior Recital

No credit. For music majors only. Prerequisite: APPL 417 with a minimum grade of C. Corequisites: APPL 418 and APPM 299, with a minimum grade of C in each. Public presentation of a full-length recital.

Art Education

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. Prerequisite: ARTE 310. For art education majors only. 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 writing units of study.

ARTE 401 Art Education Elementary Materials and Practicum

Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisites: UNIV 200, admission to the art teacher preparation program and 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 Clinical Internship Seminar

Semester course; 1 seminar hour. 1 credit. Corequisites: TEDU 485 and 486. For art education majors only. Capstone experience. A seminar concurrent with clinical internship (student teaching) that gives students an opportunity to discuss and evaluate their progress in teaching assignments and other related activities.

ARTE 407 Photography in Art Education

Semester course; 1 lecture and 2 studio hours. 3 credits. A general introduction to the technical, theoretical and historical issues related to photography. Taught as a seminar and workshop teaching both digital and traditional camera functions, photographic terms, concepts, history, technique and alternative processes applicable to K-12 education.

ARTE 408 Two-dimensional Art Experiences

Semester course; 1 seminar and 4 studio hours. 3 credits. Open to art education majors only. Students will explore the two-dimensional traditional and emerging media that are relevant to teaching. The focus will be contemporary methods and conceptual approaches to visual meaning-making.

ARTE 409 Three-dimensional Art Experiences

Semester course; 1 seminar and 4 studio hours. 3 credits. Open to art education majors only. Students will explore the three-dimensional traditional and emerging media that are relevant to teaching. The focus will be contemporary methods and conceptual approaches to visual meaning-making.

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.

Art Foundation

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 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 115-116 Art History Survey

Continuous courses; 3 lecture hours. 3-3 credits. Offered at VCU Qatar. A survey of the history and development of the visual arts within the contexts of history, geography, politics, religion, economics and the broad social and personal aspects of human culture.

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 131 Drawing Studio

Semester course; 6 studio hours. 3 credits. Open only to first-year fine arts and design majors in the School of the Arts. Drawing A to Z, from pencil to perspective, from sumi ink to skywriting. An intensive drawing studio covering the historic principles of drawing and their place in contemporary practice. Provides an in-depth investigation of line, perspective, the figure, gesture, space, atmosphere, erasure, etc. Through the repeated physical activity of drawing, students will refine their intellectual powers of observation and visualization.

ARTF 132 Surface Research

Semester course; 6 studio hours. 3 credits. Open only to first-year fine arts and design majors in the School of the Arts. A studio-based course designed to cultivate a student's ability to create and understand two-dimensional imagery. Will include basic principles of design, color and visual organization in traditional, digital and lens-based media. Course content will explore the context of imagery in the larger culture and the potential of art and design.

ARTF 133 Space Research

Semester course; 6 studio hours. 3 credits. Open only to first-year fine arts and design majors in the School of the Arts. A comprehensive investigation of three-dimensional phenomena in fine art and design. Will cultivate a student's ability to think, perceive, visualize, design and build in three dimensions. Issues of understanding and envisioning space, objects, scale and the relationship of the body to the built environment are subjects of the course. Students will acquire a broad skill set of fabrication techniques and an inquiry into the possibility of 21st-century materials.

ARTF 134 Time Studio

Semester course; 6 studio hours. 3 credits. Open only to first-year fine arts and design majors in the School of the Arts. Brings together tenets of contemporary practice that have extended the fields of fine art and design. Time-based media such as film, video and sound are included in this mix. The historically

underrepresented impulses of theatrically and performance will be explored. Students will use video as a primary tool, but will address larger issues of ephemerality, duration and the possibilities of the moving image.

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 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. Open only to students enrolled in Art Foundation program.

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. Prerequisites: ARTH 103 and UNIV 200, both with a minimum grade of C. 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. Prerequisites: ARTH 103 and UNIV 200, both with a minimum grade of C. 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.
Prerequisite: UNIV 200 with a minimum grade of C. 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.
Prerequisites: ARTH 103 and UNIV 200, both with a minimum grade of C. 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.
Prerequisites: ARTH 103 and UNIV 200, both with a minimum grade of C. 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.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. Painting, architecture and sculpture during the North European Renaissance.

ARTH 317, 318 History of Architecture

Semester courses; 3 lecture hours. 3, 3 credits.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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 104 and UNIV 200, both with a minimum grade of C. Study of European art and architecture between 1770 and 1900.

ARTH 330 20th-century Art and Architecture

Semester course; 3 lecture hours. 3 credits.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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.
Prerequisites: ARTH 103 and UNIV 200, both with a

minimum grade of C. 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.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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.
Prerequisites: ARTH 104 and UNIV 200, both with a minimum grade of C. 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.
Prerequisite: UNIV 200 with a minimum grade of C. 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.
Prerequisite: UNIV 200. 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 361 The Human Condition: An Arts Perspective

Semester course; 3 lecture hours. 3 credits.
Prerequisite: UNIV 200 or HONR 200. Considers both the commonality of the human condition and differentiation among sociological and cultural experiences represented in selected artworks in the permanent collection of the Virginia Museum of Fine Arts.

ARTH 370 History of Animated Film

Semester course; 3 lecture hours. 3 credits.
Prerequisites: ARTH 104 and UNIV 200. The history of animation as an art form, from early experimental to popular culture to independent animation. Design, structure and technique are considered.

ARTH 390 Art Historical Methods

Semester course; 3 lecture hours. 3 credits.
Prerequisites: ARTH 104 and UNIV 200. Course further develops critical thinking and writing skills specific to art history through several short written assignments and a final extended written project.

ARTH 404 Studies in Prehistoric and Ancient Art

Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 6 credits. Prerequisite: ARTH 390 with a minimum grade of C. 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. Prerequisite: ARTH 390 with a minimum grade of C. 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 415 Early Italian Renaissance Art and Architecture

Semester course; 3 lecture hours. 3 credits.
Prerequisite: ARTH 390 with a minimum grade of C. 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.
Prerequisite: ARTH 390 with a minimum grade of C. 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. Prerequisite: ARTH 390 with a minimum grade of C. 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: ARTH 390 with a minimum grade of C. 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 425, 426 Neoclassicism, Romanticism, Realism and Impressionism through Fin-de-Siecle

Semester courses; 3 lecture hours. 3, 3 credits.
Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. An in-depth study of the most important contributions of Renaissance Ibero-American art throughout the Western Hemisphere in architecture, sculpture and painting.

ARTH 430 Modern Painting

Semester course; 3 lecture hours. 3 credits.

Prerequisite: ARTH 390 with a minimum grade of C. An analysis of the major movements in 20th-century painting.

ARTH 431 Modern Sculpture

Semester course; 3 lecture hours. 3 credits.

Prerequisite: ARTH 390 with a minimum grade of C. The evolution of 20th-century sculpture considering major movements and artists.

ARTH 433 Modern Architecture

Semester course; 3 lecture hours. 3 credits.

Prerequisite: ARTH 390 with a minimum grade of C. 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 Modern and Contemporary Art I, II

Semester courses; 3 lecture hours. 3, 3 credits.

Prerequisite: ARTH 390 with a minimum grade of C. First semester: an in-depth examination of art from 1900-1950. Will include discussion of background and context. Second semester: a continuation of detailed analysis of art from 1950 to the present.

ARTH 439 Studies in 20th-century Art

Semester course; 3 lecture hours. 3 credits. May be repeated.

Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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: ARTH 390 with a minimum grade of C. History and origins of Richmond area architecture.

ARTH 444 Studies in the Art of the United States

Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: ARTH 390 with a minimum grade of C. 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: ARTH 390 with a minimum grade of C. 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 245 and ARTH 390, both with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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 456 Ideas and Criticism in Art

Semester course; 3 lecture hours. 3 credits.

Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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. Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisites: ARTH 302 and 390, both with a minimum grade of C. 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 471 Film Theory

Semester course; 3 lecture hours. 3 credits.

Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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.

Prerequisite: ARTH 390 with a minimum grade of C. 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. Prerequisite: ARTH 390 with a minimum

grade of C. 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 490 Senior Seminar in Art History

Semester course; 3 lecture hours. 3 credits.
Prerequisite: ARTH 390 with a minimum grade of C. A study of a specific topic, artist, movement or style in a seminar format. Students will produce an extended research project to fulfill the seminar requirements. Fulfills School of the Arts writing intensive requirement.

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 302 and 390, both with a minimum grade of C. Restricted to art history majors only. Fieldwork in a local or regional museum. Topics include museum administration, museum ethics, collections maintenance and management, curatorial and exhibition issues, and education.

ARTH 497 Directed Research Project

Semester course; 3 credits. Prerequisite: ARTH 390 with a minimum grade of C. Advanced individual work on a subject to be formulated in writing by the student and the instructor. Writing intensive.

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 375 Message Therapy

Semester course; 3 lecture hours. 3 credits. Open to arts majors only. Students will learn the skills to craft powerful communication and attract/hold attention and interest. The course offers strategies on how to connect with an audience and effectively communicate about artistic work, promote an event/person/product and tell a story.

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 491 Special Topics

Semester course; variable hours. 1-4 credits. May be repeated with different topics for a maximum of 6 credits. Prerequisite: approval of School of the Arts dean. Open only to School of the Arts students. Topical course offering a variety of subjects not available through an individual department. See the Schedule of Classes for specific topics to be offered.

ARTS 493 Internship

Semester course; variable hours. 1-6 credits. (30-40 work hours per credit) May be repeated for a maximum of 9 credits. Prerequisites: junior standing in the School of the Arts and permission of department chair. A practicum that provides students with valuable hands-on experience. Internship details are to be worked out and agreed upon by supervising professor, department chair and internship employer. A grade of PR will be assigned for an internship that extends past the grading period.

Cinema

CINE 100 Visual Storytelling

Semester course; 1 lecture and 2 studio hours. 2 credits. Screenplay and mise en scene course examines the relationship of the performer and narrative to the cinematic frame without the use of an edit to disrupt the time/space relations in the shot. The student will write seven short scripts to explore the classical mise en scene concept and then produce, shoot or direct a final scene as part of a production team.

CINE 101 Visual Storytelling

Semester course; 1 lecture and 2 studio hours. 2 credits. Screenplay and mise en scene course examines the relationship of the performer and narrative to the cinematic frame with the use of linkage editing. The student will write a new script based on a classic scene and, working with performers, will block, shoot and edit their scene. The editing will consist of no more than four cuts.

CINE 200 Cinema Form and Concept I

Semester course; 2 lecture and 2 studio hours. 2 credits. Open only to B.A. in Film majors or with

permission of instructor. Concepts, issues and processes involved in feature and short-form narrative filmmaking.

CINE 201 Cinema Form and Concept II

Semester course; 2 lecture and 2 studio hours. 2 credits. Open only to B.A. in Film majors or with permission of instructor. Concepts, issues and processes involved in feature and short-form narrative screenwriting and filmmaking.

CINE 300 Cinema Form and Concept III

Semester course; 2 lecture and 1 studio hours. 2 credits. Prerequisite: UNIV 200. Open only to B.A. in Film majors or with permission of instructor. Concepts, issues and processes involved in feature and short-form narrative filmmaking including screenplay treatments and storyboards.

CINE 301 Cinema Form and Concept IV

Semester course; 2 lecture and 1 studio hours. 2 credits. Open only to B.A. in Film majors or with permission of instructor. Concepts, issues and processes involved in feature and short-form narrative filmmaking including the roles of dialogue and light.

CINE 390 Digital Cinema Production Intensive I

Semester course; 30 lecture and 10 studio hours. Additional evening and weekend hours for location filming and postproduction. 15 credits. Prerequisites: CINE 200 and 201 or permission of instructor. Open only to B.A. in Film majors or with permission of instructor. Production and post-production of narrative short films using digital technology for camera, editing and sound, with an emphasis on the relationships among production crew roles and departments.

CINE 392 Independent Study in Film

Semester course; variable hours. 1-3 credits. May be repeated for a maximum total of six credits. Prerequisites: junior standing as a major in film and approval of department chair and instructor. Individual instruction and supervision of a special project.

CINE 490 Digital Cinema Production Intensive II

Semester course; 30 lecture hours and 10 studio hours. Additional evening and weekend hours for location filming and postproduction. 15 credits. Prerequisites: CINE 300, 301 and 390 or permission of instructor. Open only to B.A. in Film majors or with permission of instructor. Advanced production and postproduction of narrative short films using digital technology for camera, editing and sound, with the development of budgets, production schedules and rehearsals with performers.

CINE 491 Special Topics in Cinema

Semester course; 3 lecture hours. 3 credits. May be repeated for 6 credits. Prerequisites: ARTH 270 and 271 or permission of instructor. An in-depth examination of selected topics. See the Schedule of Classes for specific topics to be offered each semester.

CINE 493 Film Internship

Semester course; variable hours. 3 credits. May be repeated up to a maximum of 6 credits. Open only to B.A. in Film majors or with permission of instructor. Supervised work experience related to the film industry.

CINE 495 Cinema as Art

Semester course; 3 lecture hours. 3 credits.

Prerequisites: ARTH 270 and 271 or permission of instructor. An analysis of cinema as art, image, narrative and philosophy.

Communication Arts**COAR 200 Visual Studies: Drawing**

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: ARTF 131. 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. Prerequisites: ARTF 132 and 133. 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: ARTF 132. 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: ARTF 134. 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 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. Formerly 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 300. 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 325 Botanical Drawing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 300. This course explores plant life from direct observation and analytical drawing. Students examine the major divisions and structures of plants and how to depict their unique form.

COAR 326 Imagery for Science Fiction and Fantasy

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 300 and 320. This course focuses on assignments for science fiction/fantasy subject matter and its various commercial applications.

COAR 327 Comics and Graphic Novels

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 300 and 320. This course explores the possibilities of visual storytelling as it relates to comics and graphic novels (the latter being loosely defined as a longer, more in-depth and mature form of comics).

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. Prerequisites: 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 History of Visual Communications I

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTH 103 and 104. An examination of the historical developments in visual communications from cave paintings to modernism.

COAR 353 History of Visual Communications II

Semester course; 3 lecture hours. 3 credits. Prerequisites: ARTH 103 and 104. An examination of the historical developments in visual communications from modernism to the contemporary era.

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: UNIV 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 3-D Image and Movement

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: COAR 331 and 332. Course addresses current technological tools to explore the relationship between image, object and movement.

COAR 433 Game Design, Theory and Practice

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: COAR 332 or permission of instructor. Students will study the history, theory and design of games, gaming concepts and narrative from past to present.

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: UNIV 200. 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 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 464 Senior Portfolio

Semester course; 4 lecture and 6 studio hours. 6 credits. Prerequisite: COAR 450. An advanced course in the conceptualization, realization and documentation of a portfolio project. It is a capstone experience integrating professional development of the portfolio, promotional materials and resume preparation within the field of communication arts. Assignments will incorporate applicable references to the history of art and contemporary developments.

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.

Craft and Material Studies**CRAF 201-202 Metalsmithing**

Continuous courses; 2 lecture and 6 studio hours. 4-4 credits. Prerequisite: successful completion of the Art Foundation program. Investigation of metal forming processes such as forging, raising and construction. Research in contemporary and historical metal forms.

CRAF 211 Jewelry

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: successful completion of the Art Foundation program. Investigation of basic jewelry making processes such as construction, chasing, surface embellishment and basic stone setting. 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. Prerequisite: successful completion of the Art Foundation program. 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 240 Introduction to Ceramics

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: successful completion of the Art Foundation program. Introduction to beginning processes of wheel throwing and hand-built

construction techniques, design, aesthetics and the creative development of clay objects examining cultural, historical and personal modes of expression. Demonstrations and slide presentations are given for assignments along with handouts to assist in illustrating techniques and processes. Students will be introduced to various ceramic aesthetics in contemporary, social and historical context.

CRAF 241 Ceramics: Handbuilding

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: successful completion of the Art Foundation program. 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. Prerequisite: successful completion of the Art Foundation program. 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. Prerequisite: successful completion of the Art Foundation program. 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 253 Introduction to Glassworking: Lampworking

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: successful completion of the Art Foundation program. An investigation of techniques, tools, equipment and materials involved in glass lampworking processes. The course covers basic melting, shaping and blowing with a glass torch working process.

CRAF 261, 262 Beginning Textiles

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. Prerequisite: successful completion of the Art Foundation program. 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 Craft/Material Studies

Semester course; 1 lecture hour. 1 credit. Prerequisite: successful completion of the Art Foundation program. Corequisite: UNIV 200. 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. Each of the courses may be repeated up to a maximum of 12 credits. Prerequisite: CRAF 211 with a minimum grade of C. These courses offer 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 with a minimum grade of C. 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. Each of the courses may be repeated for up to a maximum of 12 credits. Prerequisite: CRAF 320 with a minimum grade of C. 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. Each of the courses may be repeated for up to a maximum of 12 credits. Prerequisite: CRAF 240 with a minimum grade of C. 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. Each of the courses may be repeated for up to a maximum of 12 credits. Prerequisite: CRAF 251 or 252, with a minimum grade of C. Opportunity for further investigation and specialization in glassworking design and technical mastery.

CRAF 353 Glassworking: Lampworking

Semester course; 2 lecture and 6 studio hours. 4 credits. May be repeated for up to a maximum of 12 credits. Prerequisite: CRAF 251, 252 or 253, with a minimum grade of C. Provides an opportunity for further investigation, specialization and technical mastery in glass lampworking design.

CRAF 361 Intermediate Textiles: Tapestry/Weaving

Semester courses; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. May be repeated up to a maximum of 12 credits. Prerequisite: CRAF 261 or 262, with a minimum grade of C. 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.

CRAF 362 Intermediate Textiles: Pattern Weaving

Semester course; 2 lecture and 6 or 12 studio hours. 4 or 6 credits. May be repeated up to a maximum of 12 credits. Prerequisite: CRAF 261 or 262, with a minimum grade of C. 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. Each of the courses may be repeated for up to a maximum of 12 credits. Prerequisite: CRAF 261 or 262, with a minimum grade of C. Exploration of dye and pigment techniques for fabric along with pattern development and conceptual use of fabric.

CRAF 367, 368 Tapestry

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. Prerequisite: permission of instructor. 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. Prerequisite: permission of instructor. 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 Craft/Material Studies Seminar

Semester course; 1 lecture hour. 1 credit. Prerequisite: permission of instructor. 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. Prerequisite: permission of instructor. 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. Prerequisite: permission of instructor. 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. Prerequisite: permission of instructor. 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. Prerequisite: permission of instructor. 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. Prerequisite: CRAF 362 with a minimum grade of C. 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. Prerequisite: CRAF 364 with a minimum grade of C. Development of a personal direction with advance examination of dye applications.

CRAF 480 Senior Studio/Critique Course

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisites: completed 12 credits from CRAF 301-364 with a minimum grade of C. Corequisite: enrollment in 3 credits from CRAF 301-364. Focuses on the development of independent interests aimed at creating a cohesive series/body of work.

CRAF 481 Senior Studio/Critique Course

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: CRAF 480 with a minimum grade of C. The course will focus on the continuation of creating a cohesive series/body of work begun during CRAF 480.

CRAF 482 Senior Seminar

Semester course; 2 lecture hours. 2 credits. Prerequisite: senior standing in the major. 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 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 Fieldwork

Semester courses; 135 clock hours. 3 credits. Prerequisites: senior standing in the major and permission of department chair. Opportunity for practical work experiences. Senior students are placed with professionals who 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 135 clock hours and maintain a daily log of their experiences. Field supervisor will plan student's work and evaluate performance.

CRAF 494 Fieldwork

Semester course; 270 clock hours. 6 credits. Prerequisites: senior standing in the major and permission of department chair. Opportunity for practical work experiences. Senior students are placed with professionals who 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.

Dance and Choreography

DANC 101-102 Modern Dance Technique I and Workshop

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. These courses may be repeated for a maximum total of 12 credits on the recommendation of the chair. Prerequisite: dance major or departmental approval. Fundamental study and training in principles of modern dance technique. Emphasis is on body alignment, spatial patterning, flexibility, strength and kinesthetic awareness. Course includes weekly group exploration of techniques related to all areas of dance.

DANC 103-104 Survey of Dance History

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: dance major or departmental approval. 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 111-112 Ballet Technique I

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. Prerequisite: dance major or departmental approval. Corequisites: DANZ 111-112. 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: audition or permission of instructor. 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

Continuous 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 and Workshop

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. These courses may be repeated for a maximum of 12 credits on the recommendation of the chair. Prerequisites: dance major and DANC 102, or departmental approval. Further study and training in the principles of modern dance technique on an intermediate level with the expectation of better coordination of all elements into a sense of dance. Course includes weekly group exploration of techniques related to all areas of dance.

DANC 205-206 Composition

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Prerequisites: dance major and DANC 105 and 107, or departmental approval. An introduction to the basic elements of choreography.

DANC 207 Studies in Music for Dance

Semester course; 3 lecture hours. 3 credits. Prerequisites: dance major and DANC 107, or departmental approval. Study of the history, theory and aesthetics of music as it relates to dance. Course includes lecture, listening, reading, discussion, writing and oral presentations.

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 total of 8 credits on the recommendation of the chair. Prerequisites: dance major and DANC 112, or departmental approval. 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 and Workshop

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. These courses may be repeated for a maximum of 12 credits on the recommendation of the chair. Prerequisites: dance major and DANC 202, or departmental approval. Advanced 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. Course includes weekly group exploration of techniques related to all areas of dance.

DANC 303-304 Choreography/Performance

Continuous courses; 2 lecture and 2 studio hours. 3-3 credits. Prerequisites: dance major, DANC 205-206 and 207, and successful completion of the sophomore readmittance evaluation. 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. Prerequisites: dance major and DANC 212, or departmental approval. 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. Prerequisite: DANC 103-104 and UNIV 200, 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. Prerequisite: dance major and UNIV 200. 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. Prerequisites: dance major and 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; 2-6 studio hours. 1-3 credits. May be repeated for a maximum total of 6 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.

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. Prerequisite: audition or permission of the 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 and Workshop

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. These courses may be repeated for a maximum of 18 credits on the recommendation of the department chair. Prerequisites: dance major and DANC 302, or departmental approval. Pre-professional study and training in modern dance technique. Movement studies demanding a superior level of clarity, strength and flexibility. Movement patterns demanding a high level of coordination, deep kinesthetic awareness and aesthetic sensitivity. Exploration of a wide range of performance qualities. Course includes weekly group exploration of techniques related to all areas of dance.

DANC 407 Teaching Methods for Dance

Semester course; 2 lecture and 2 studio hours. 3 credits. Prerequisite: dance major and DANC 302. 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 411-412 Ballet Technique IV

Continuous courses; 1 lecture and 2 studio hours. 2-2 credits. May be repeated for a maximum total of 12 credits. Prerequisites: dance major and placement audition or permission of the chair. Preprofessional study and practice of ballet technique focusing on the refinement of technical skills and the elements of dynamic performance in ballet.

DANC 413 African American Presence in American Dance, Performance and Social Contexts

Semester course; 3 lecture hours. 3 credits. Prerequisites: DANC 103-104 and UNIV 200, or permission of instructor. 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. Prerequisite: dance major. 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. Prerequisite: dance major. 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: dance major; DANC 302, 303 and 304; and departmental approval. 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 111-112 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 211-212 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. Prerequisites: dance major and DANC/DANZ 112, or departmental approval. A reinforcement in the study of ballet technique at the intermediate level. An extension of DANC 211-212 to be taken concurrently.

DANZ 311-312 Ballet Technique III Laboratory

Continuous courses; 2 studio hours. 1-1 credit. May be repeated for a maximum total of 6 credits on the recommendation of the chair. Prerequisites: dance major and placement audition or permission of the chair. Reinforcement in the study of ballet technique at the advanced level. May be taken concurrently with DANC 311-312.

DANZ 411-412 Ballet Technique IV**Laboratory**

Continuous courses; 2 studio hours. 1-1 credit. May be repeated for a maximum total of 4 credits on the recommendation of the chair. Prerequisites: dance major and placement audition or permission of the chair. Reinforcement in the study of ballet technique at the preprofessional level. An extension of DANZ 411-412, which can be taken concurrently.

Fashion Design and Merchandising

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 understanding 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. Prerequisite: UNIV 200. 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.

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 345 Computers for Fashion Design:**Adobe Photoshop and Illustrator**

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Laptop computer and basic computer skills required. Students will learn to conceptualize fashion design while gaining an understanding of graphic and illustration software through the utilization of the computer as a drawing and communication tool.

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 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.

FASH 380 Fashion Branding

Semester course; 3 lecture hours. 3 credits. Students will understand the concept of fashion branding and the processes necessary to successfully develop or redevelop a fashion brand.

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. Prerequisites: FASH 341 and 342. 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 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.

GDES 202 Design Technology I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the Art Foundation Program. A design foundation workshop that emphasizes skills development and application of design technology: time and project management, visual thinking, image capturing and editing.

GDES 204 Design Technology II

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: Successful completion of the Art Foundation Program. A design foundation workshop that emphasizes skills development and application of design technology: graphic representation, type management and output production.

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.

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.

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.

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.

GDES 213 Typography II

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.

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.

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.

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.

GDES 253 Theory and Philosophy of Visual Communication

Semester course; 3 lecture hours. 3 credits. An overview of theoretical and philosophical issues influencing the practice of visual communication design.

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.

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.

GDES 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.

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.

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.

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.

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.

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.

GDES 343 Systems in Design

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the sophomore GDES courses. 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.

GDES 345 Print I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: UNIV 200 and successful completion of the sophomore GDES courses. 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.

GDES 346 Visual Narrative I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the sophomore GDES courses. 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.

GDES 347 Interaction I

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the sophomore GDES courses. 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.

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.

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.

GDES 366 Visual Narrative 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.

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.

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.

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.

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.

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.

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.

GDES 412 Typography III

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: successful completion of the sophomore GDES courses. Advanced problems in typographic design with emphasis upon the development of a personal creative approach to form and communication.

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.

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.

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.

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.

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.

GDES 418 Design Center

Semester course; 2-6 lecture and 3-9 studio hours. 3-9 credits. Prerequisites: Portfolio review by faculty. Course may be repeated for credit. A professional studio to give students practicum experience working

with faculty on self-initiated and client-initiated, real-world design projects.

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.

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.

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.

GDES 472 Senior Studio

Semester course; 2 lecture and 3 studio hours. 3 credits. A capstone course oriented toward the creation of a professional portfolio, self-promotional materials and business system. The course culminates in the annual Senior Show.

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.

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.

Interior Design

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: 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 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. Prerequisites: all Art Foundation courses. 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: UNIV 200 and 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.

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 391 Topics in Interior Design

Semester course; 1-4 studio or lecture hours. 1-4 credits. May be repeated for a maximum of 8 credits. Prerequisite: permission of the instructor. A study of a topical issue in interior design. See the Schedule of Classes for specific topics to be offered each semester.

IDES 400 Senior Interior Design Studio I

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: IDES 302. 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. Prerequisite: 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. Prerequisite: IDES 431. Interior design majors only. Provides supervised practical work experiences that are coordinated with professional interior designers in the field. Formal arrangements must be made and approved by coordinator or department chair.

Kinetic Imaging

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. Prerequisite: UNIV 200. 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.

KINE 492 Internship

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 6 credits. Prerequisite: permission of the chair. Open to kinetic imaging majors only. Creative learning experiences in the professional realm under the direction and supervision of qualified practitioners.

Music Composition

MUSC 201 Class Composition I

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 146. 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.

Music Education

MUED 301 Methods and Techniques: Guitar

Semester course; 2 laboratory hours. 1 credit. For music education majors only. Achievement of basic performance competencies and teaching knowledge on the guitar including chording, single-string technique, plectrum and finger styles.

MUED 302 Methods and Techniques: Voice

Semester course; 2 laboratory hours. 1 credit. For music education majors only. Achievement of performance competencies in voice including vocal production, diction and solo and group performance.

MUED 303-304 Methods and Techniques: Woodwinds

Continuous courses; 2 laboratory hours. 1-1 credit. For music education majors only. Achievement of performance competencies and teaching knowledge on flute, clarinet, oboe, bassoon and saxophone.

MUED 305 Methods and Techniques: Brass

Semester course; 2 laboratory hours. 1 credit. For music education majors only. Achievement of performance competencies and teaching knowledge on trumpet, baritone, tuba, trombone and French horn.

MUED 306 Methods and Techniques: Strings

Semester course; 2 laboratory hours. 1 credit. For music education majors only. Achievement of performance competencies and teaching knowledge on violin, viola, cello or bass.

MUED 307 Methods and Techniques: Percussion

Semester course; 2 laboratory hours. 1 credit. For music education majors only. Achievement of performance competencies and teaching knowledge on snare drum. Introduction to basic techniques of other percussion instruments.

MUED 380 Introduction to Music Education

Semester course; 1 lecture and 2 laboratory hours. 2 credits. Prerequisite: passing score on Praxis I or the Virginia Communication and Literacy Assessment or threshold SAT/ACT scores. 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 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. Formerly MUED 391.

MUED 382 Secondary Methods/Practicum and Rehearsal Techniques

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisites: APPM 381, MUED 381 and passing score on the Virginia Communication and Literacy Assessment. 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 384 Marching Band Techniques

Semester course; 1 lecture and 1 laboratory hour. 2 credits. Prerequisite: MUED 380. Discussion of marching band techniques that address the different components of preparation, rehearsal and presentation of events. The application of topics and discussions are presented with marching band choreography using computer software simulation.

MUED 385 Music Education Technology and Arranging

Semester course; 1 lecture and 1 laboratory hour. 2 credits. Prerequisite: MUED 380. Basic understanding of current technology in the field of music education. Specific skills developed for arranging school-aged ensembles with CAI, sequencing, productivity software and basic sound reinforcement will be the primary focus.

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 485 Music Education Student Teaching I: Elementary

6 credits. Prerequisites: MUED 382, APPL 416, passing score on the Praxis II Music Content Knowledge and 2.8 overall GPA. Corequisite: MUED 486. The culminating field experience for music education students. An eight-week directed internship at the elementary general music education level.

MUED 485 and 486 provide sequential experience and responsibilities for planning and instruction of music education for children in the P-12 setting.

MUED 486 Music Education Student Teaching II: Secondary

6 credits. Prerequisites: MUED 382, APPL 416, passing score on the Praxis II Music Content Knowledge and 2.8 overall GPA. Corequisite: MUED 485. The culminating field experience for music education students. An eight-week directed internship at the secondary instrumental or choral music education level. MUED 485 and 486 provide sequential experience and responsibilities for planning and instruction of music education for children in the P-12 setting.

Music History, Literature and Theory

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 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.

MHIS 147 Jazz Theory and Aural Skills

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 145. 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, timbral 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 244 Experiencing Music

Semester course; 1 lecture and 2 laboratory hours. 3 credits. Designed for the purpose of developing familiarity with the elements of music that are part of a successful performance and listening experience. Weekly attendance at both VCU and external events is part of the criteria to develop students' awareness of the creative process in shaping a musical performance.

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, 304 Piano Literature

Semester courses; 2 lecture hours. 2, 2 credits. Prerequisite: Open to music majors; all others must obtain permission of instructor. 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. 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 246. 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. Prerequisites: MHIS 246 and APPM 272, or permission of instructor. A study of the basic harmonic, melodic, notational and orchestration 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: MHIS 311. Advanced harmonic, melodic and orchestration techniques applied to writing for the small jazz ensemble, vocal group and large jazz orchestra.

MHIS 321, 322 Music History I, II

Semester courses; 3 lecture hours. 3, 3 credits. Prerequisites: MHIS 120 and UNIV 200. 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: MHIS 120. 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. 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 or MHIS/AFAM 250. 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 373 Beethoven and Brahms Symphonies

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 305. An overview of all symphonies will be the basis for an in-depth analysis of selected movements.

MHIS 380 Survey of the Music Industry

Semester course; 3 lecture hours. 3 credits. Topics include copyright, business organization, music production, management, recording, freelancing, grants, taxation and careers allied with music.

MHIS 382 Computers and Digital Recording

Semester course; 2 lecture and 1 studio hours. 3 credits. Prerequisite: permission of chair. Open to arts majors. Lectures, and presentations on electronics, digital technology and acoustics as they relate to studio recording. Course covers the necessary knowledge and skills to work with software and other related audio-production equipment. Taught off campus at a nearby studio. Additional fee required.

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. Prerequisite: MHIS 312. Arranging and performance-practice techniques across selected jazz styles.

MHIS 406 Jazz Form and Analysis II

Semester course; 2 lecture hours. 2 credits. Prerequisite: MHIS 405 or 411. 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. A study of the techniques used in modal, blues and other forms of contemporary jazz composition.

MHIS 420 Chamber Music Literature Through 1800

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 321 or 322. Historical and analytical study of selected chamber music works from the 16th, 17th and 18th centuries.

MHIS 421 Chamber Music Literature Since 1800

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 321 or 322. Historical and analytical study of selected chamber music works from the 19th, 20th and 21st centuries.

MHIS 422 The History of the Symphony

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 321 or 322. Historical and analytical study of selected symphonies from the 17th, 18th, 19th and 20th centuries.

MHIS 423 Tone Poems and Concert Overtures

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 321 or 322. Historical and

analytical study of selected tone poems and concert overtures from the 18th, 19th, 20th and 21st centuries.

MHIS 424 History of American Musical Theatre

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 321 or 322. Historical and analytical study of selected musical theatre productions from the 19th, 20th and 21st centuries.

MHIS 425 Opera History

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 321 or 322. Historical and analytical study of selected operas from the 17th, 18th, 19th, 20th and 21st centuries.

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 474 Bach: Goldberg Variations

Semester course; 3 lecture hours. 3 credits. Prerequisite: MHIS 246 or permission of instructor. A study in performance aspects and theoretical analysis of the Goldberg Variations by Johann Sebastian Bach. Writings on the topic, a printed score of the work and selected recordings will serve as the content for this study.

MHIS 476 Duke Ellington

Semester course; 3 lecture hours. 3 credits. Prerequisite: permission of instructor. An overview of the music of Duke Ellington. Lectures and presentations on Ellington recordings, writings and sources of his influences will serve as content for overview.

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.

Painting and Printmaking

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 digital imaging.

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 290 Concepts and Issues

Semester course; 2 lecture hours. 2 credits. A lecture course that familiarizes students with contemporary artworks, as well as modern and postmodern concepts. Students will be introduced to contemporary issues in art through the presentation of slides, films and visiting speakers. Visits to outside events and lectures will be required.

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 309 Electronic Strategies

Semester course; 2 lecture and 6 studio hours. 4 credits. A digital media course designed to acclimatize students with the use of computers in the context of fine art. As opposed to common perceptions of "computer art," students will learn to use the computer as they would any other tool -- to articulate their ideas and add to their artistic practice. Through in-class exercises and homework assignments emphasizing problem solving, students will learn to express their ideas through this emerging medium.

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: UNIV 200 and 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 330 Figure Painting

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: PAPR 205 or permission of instructor. Designed to allow advanced painting students to work on a continuous basis with the life model in painting. The first half of the semester is focused on old master techniques and styles from earlier periods in art. The second half of the semester examines the work of contemporary figurative painters in the context of developing each student's individual approach to technique, style and content.

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 409 Large Format Digital Printing

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: PAPR 209. Engages students in the use of digital tools in printmaking. Students will investigate developments in digital culture in relation to print's history and future. Creative applications of digital tools, with an emphasis on the digital print, form the heart of this course.

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.

Photography and Film**PHTO 201 Sophomore Photography Seminar**

Semester course; 1 lecture hour. 1 credit. Prerequisite: sophomore standing in Department of Photography and Film. Introduces various methods and means of exhibition.

PHTO 202 Sophomore Film Seminar

Semester course; 1 lecture hour. 1 credit. Prerequisite: sophomore standing in the Department of Photography and Film. Students will learn all aspects of organizing a film festival that will be held at the end of the spring semester.

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 301 Junior Seminar

Semester course; 1 studio hour. 1 credit. Prerequisite: junior standing in the Department of Photography and Film. Instruction in how to make an artist Web site using current technology and 2-D design principles.

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 340 Introduction to Studio Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: PHTO 243 and 380 or permission of instructor. Introduces 4x5 large-format cameras, tungsten and strobe lighting. Explores tabletop and portrait photography through lectures and studio assignments. Comprehensive hands-on experience in planning and shooting studio photography.

PHTO 341 Intermediate Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 243 or permission of the instructor. Previsualizing the photographic image through controlled exposure and film development techniques using the Zone System. Emphasis on expanding the student's ability to express ideas photographically. Discussion of student work in regular critiques.

PHTO 350 Concepts in Photography

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: UNIV 200 and 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 382 Advanced Digital Printing

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: PHTO 380 and 381. How to manage a digital color workflow in order to produce desired colors and tonal values in the final output -- the print. Instruction in controlling image management, color calibration and printing through lectures, demonstration and hands-on experience. Discussion of student work in regular critiques.

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 394 Introduction to Documentary Filmmaking

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisites PHTO 360 and 376. Students will focus on viewing and discussing selected documentaries and learning various production skills (from conceptualization through postproduction) necessary to create a short documentary film.

PHTO 395 Introduction to Experimental Film

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHTO 361 and 392. Investigates a wide variety of experimental forms and covers the history of experimental/avant garde cinema. Emphasis will be placed on analysis of key films and on learning various experimental films.

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. A capstone experience integrating writing proficiency, critical thinking, information fluency and oral communication.

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 course; 2 lecture and 3 studio hours. 3 credits. Prerequisites: PHTO 340. Exploration of advanced studio lighting applications and 4x5 large-format camera techniques. Culminates in student presentation of a cohesive individual-based portfolio.

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 474 Contemporary Issues in Photography and Film

Semester course; 3 lecture hours. 3 credits. Prerequisite: PHTO 243 or permission of instructor. Focus on prominent topics and issues directing and defining the contemporary photographer. Employs cultural theory interpretation and discourse to strengthen individual perspective in studio practice.

PHTO 475-476 Filmmaking Workshop

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. Prerequisites: UNIV 200 and 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 494 Advanced Documentary Filmmaking

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: PHTO 394. Students will learn advanced documentary filmmaking techniques in areas of both production and postproduction through hands-on editing exercises, film screenings, class discussions and group critiques.

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.

Sculpture and Extended Media

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 Basic Sculpture I

Semester course; 2 lecture and 6 studio hours. 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 212 Basic Sculpture II

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: SCPT 211. The primary goal of this course is the effective expression of ideas. The student uses advanced techniques that build upon the basic skills taught in Basic Sculpture I with attention given to problem solving.

SCPT 215 Sophomore Seminar

Semester course; 2 lecture hours. 2 credits. Open only to sculpture majors. Designed for sophomore sculpture majors as a supplement to studio courses in the department. Emphasis is placed on articulating and expanding upon individual interests in relation to studio practices.

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 290 Concepts and Issues

Semester course; 2 lecture hours. 2 credits. Prerequisite: completion of Art Foundation. A lecture course that familiarizes students with contemporary artworks, as well as modern and postmodern concepts. This class presents contemporary issues in art through the presentation of media and visiting speakers. Visits to outside events and lectures will be required.

SCPT 311, 312 Intermediate Sculpture

Semester courses; 3 lecture and 6 studio hours. 4, 4 credits. May be repeated for a maximum of 8 credits. Prerequisite: SCPT 212. 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 321 Figure Modeling

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: completion of Art Foundation. This course provides instruction in fundamental figure modeling skills working with clay and from live models.

SCPT 322 Flexible Molds

Semester course; 2 lecture and 3 studio hours. 3 credits. Prerequisite: completion of Art Foundation. This course provides instruction on a variety of moldmaking techniques, including plaster and flexible moldmaking materials.

SCPT 323 Foundry

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: SCPT 322. This course provides instruction in bronze and aluminum metal casting using the lost wax process, ceramic shell.

SCPT 324 Robotics for Sculpture

Semester course; 2 lecture and 6 studio hours. 4 credits. Prerequisite: completion of Art Foundation. This course provides instruction in the construction, programming and integration of microcontrollers in conjunction with the use of switches, motors and other devices.

SCPT 411, 412 Advanced Sculpture

Semester courses; 2 lecture and 6 studio hours. 4, 4 credits. May be repeated for a maximum of 16 credits. Prerequisite: SCPT 212. The majority of the student's activities occur in the studio with emphasis on the development of a personal style.

SCPT 415 Senior Seminar

Semester course; 2 lecture hours. 2 credits. Open only to sculpture majors. Designed for graduating sculpture students. Focus is on professional development and preparation for the possibility of graduate school.

SCPT 417 Seminar in Contemporary Sculpture

Semester course; 4 lecture hours. 4 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 480 Critical Issues

Semester course; 4 lecture hours. 4 credits. Prerequisite: completion of Art Foundation. This advanced course examines diverse critical and aesthetic issues through the study of a select group of highly innovative international artists.

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.

Speech

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

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. Restricted to theatre majors. 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. Restricted to theatre majors. 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 121 Introduction to Drawing

Semester course; 2 lecture hours. 2 credits. Open only to theatre majors. An introduction to drawing skills. Topics include line quality and contour, volume, value with shading and crosshatching, texture, space and composition, perspective, gesture, and figure drawing.

THEA 122 Color Theory

Semester course; 2 lecture hours. 2 credits. Open only to theatre majors. An introduction to color theory. Topics covered include how to create different values, hues and intensities, and how to mix color to best express a specific artistic intent.

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. Restricted to theatre majors. 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. Restricted to theatre majors. 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. Restricted to theatre majors. 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. Restricted to theatre majors. 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. Restricted to theatre majors. 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. Restricted to theatre majors. 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: minimum grade of B 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. Restricted to theatre majors. 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. Prerequisites: UNIV 200. Restricted to theatre majors. 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: minimum grade of B 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: minimum grade of B 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: minimum grade of B 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. Restricted to theatre majors. 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. Restricted to theatre majors. Practical application in the methodologies of stage lighting.

THEA 325 Stage Management Practicum

Semester course; 2 lecture and 2 studio hours. 3 credits. May be repeated for a maximum of 18 credits. Prerequisite: permission of instructor. The fundamental responsibilities and techniques of professional stage management at the assistant stage management level. Graded as Pass/Fail.

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 328-329 Draping and Patternmaking for the Theatre

Continuous courses; 1 lecture and 6 studio hours. 3-3 credits. Prerequisite: THEA 104. Open to costume design students only or with permission of instructor. A hands-on exploration of pattern and draping techniques. First semester topics include bodices, collars, sleeves and skirts; second semester topics: pants, dresses, period work, tailoring and creative design.

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. Restricted to theatre majors. 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 412 Acting for Camera

Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisite: THEA 314 with a minimum grade of B. Open only to theatre majors upon completion of a satisfactory audition or with permission of instructor. Students will learn techniques for approaching acting problems associated with performance in front of a camera.

THEA 413 Actor's Studio II

Semester course; 1 lecture and 4 studio hours. 3 credits. Prerequisites: minimum grade of B 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 415 The Business of Theatre

Semester course; 3 lecture hours. 3 credits. Prerequisites: minimum grade of B 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 416 Solo Performance

Semester course; 3 lecture hours. 3 credits. Prerequisite: THEA 314 with a minimum grade of B. Open only to theatre majors upon completion of a satisfactory audition or with permission of instructor. An exploration of story and personal journey. Students will explore and interrogate a diverse range of solo-performance styles culminating in a solo performance of a "work-in-progress" of between 15 and 30 minutes presented to an audience.

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. Restricted to theatre majors. Intensive study of major continental and American plays.

THEA 426/ENGL 426 Advanced Playwriting

Semester course; 3 lecture hours. 3 credits. May be repeated once for credit. Prerequisite: ENGL 305, 317 or comparable drama course, or permission of instructor. A practical approach 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 432 Stage Management: Music Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: THEA 325 with a minimum grade of B. Open only to theatre majors. An in-depth analysis of music theory as it pertains to the opera and musical theatre fields.

THEA 433 Stage Management: Musical Theatre and Opera

Semester course; 3 lecture hours. 3 credits. Prerequisite: THEA 325 with a minimum grade of B. Open only to theatre majors. An in-depth analysis of the specific techniques required to successfully stage-manage musical theatre and opera.

THEA 434 Stage Management: Maintaining and Remounting Productions

Semester course; 3 lecture hours. 3 credits. Prerequisite: THEA 325 with a minimum grade of B. Open only to theatre majors. An in-depth analysis of the advanced techniques in stage management required to successfully maintain a long-running show and remount a previously realized production.

THEA 435 The Business of Stage Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: THEA 325 with a minimum grade of B. Open only to theatre majors. An analysis of the techniques necessary for a successful career as a stage manager, studying resumes, interview skills, unions and other areas.

THEA 491 Topics in Theatre

Semester course; variable hours. 1-3 credits per semester. May be repeated for a maximum of 9 credits. Restricted to theatre majors. 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. Restricted to theatre majors. A practicum in theatre conducted in cooperation with selected professional or semi-professional theatre organizations.

THEA 495 Senior Project: Portfolio Review

Semester course; 1 lecture hour. 1 credit. Prerequisites: senior standing and a minimum of 18 credits in 300- or 400-level major courses. Restricted to theatre majors. A capstone experience integrating resume preparation and professional development within the field of theatre. Documentation of creative activities and achievements accumulated during theatre studies is compiled for a portfolio review.

Theatre Lab

THEZ 221 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 223, 224 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 225 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 227, 228 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 229 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 305, 306 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 321, 322 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 323 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 324 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 326 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 407 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 421, 422 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 429 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 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 Introduction to Accounting I

Semester course; 3 lecture hours. 3 credits. Theoretical and technical facets of financial and managerial accounting for business. Accumulation, analysis, interpretation and uses of accounting information. Course will focus on financial accounting

ACCT 204 Introduction to Accounting II

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 203 with a minimum grade of C. Theoretical and technical facets of financial and managerial accounting for business. Accumulation, analysis, interpretation and uses of accounting information. Course will focus on managerial accounting.

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 291 Topics in Accounting

Semester course; variable hours. 1-3 credits. Maximum of 3 credits per topic; may be taken with different topics for a maximum of 6 credits. Prerequisite: permission of instructor. An in-depth study of selected accounting topics. Graded as pass/fail.

ACCT 303 Intermediate Accounting I

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 204 or ACCT 205 with a minimum grade of C. This course is restricted to students who have completed at least 54 credit hours (junior standing). Focuses on financial accounting and accounting standards, including the conceptual framework for financial accounting. Includes an in-depth study of the income statement, the balance sheet and the statement of cash flows. Also covers valuation of inventories, as well as accounting for acquisition and disposition of property, plant and equipment.

ACCT 304 Intermediate Accounting II

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 303 with a minimum grade of C. This course is restricted to students who have

completed at least 54 credit hours (junior standing). Continues the study of financial accounting, covering depreciation, intangible assets, contingencies, long-term liabilities, stockholders' equity, earnings-per-share, investments, accounting for income taxes, leases and accounting changes. Also includes statement of cash flows.

ACCT 305 Tax Planning for Individuals

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 202 or 203 with a minimum grade of C. 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. Prerequisite: ACCT 204 or ACCT 205 with a minimum grade of C. 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. Prerequisite: ACCT 204 or ACCT 205 with a minimum grade of C. 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 and 304 with a minimum grade of C. 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 with a minimum grade of C. 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 306 with a minimum grade of C. An advanced conceptual management control systems course designed to expose students to the theoretical and conceptual foundations of management control systems 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: ACCT 303 and 304 with a minimum grade of C. 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. Prerequisite: ACCT 204 or ACCT 205 with a minimum grade of C. 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: ACCT 303, 304 and 307 -- all with a minimum grade of C. 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

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 406 with a minimum grade of C. 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

Semester course; 3 lecture hours. 3 credits. Prerequisite: ACCT 405 with a minimum grade of C. Complex tax problems of the trust, partnership and corporation. Particular emphasis is given to tax planning.

ACCT 481 Law for Accountants I

Semester course; 3 lecture hours. 3 credits. Provides detailed examination of laws that are of particular importance to accountants, along with ethical considerations and social and political influences. The course focuses on contracts, sales, agency, commercial paper, secured transactions and bankruptcy.

ACCT 482 Law for Accountants II

Semester course; 3 lecture hours. 3 credits. Provides detailed examination of laws that are of particular importance to accountants, along with ethical considerations and social and political influences. This course focuses on security regulations, antitrust, partnerships, corporations, suretyship, insurance, wills and trusts. Students may not receive degree credit for MGMT 481-482 and for MRBL 323, 324.

ACCT 492 Independent Study in Accounting

Semester course; variable hours. 1-3 credits. Maximum total of 3 credits. Prerequisites: junior standing in accounting 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 accounting 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.

Economics

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. Also note that students may receive credit for only two of the following three courses: ECON 203, 210 or 211.

ECON 205 The Economics of Product Development and Markets

Semester course; 3 lecture hours. 3 credits. 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 Principles of Economics

Semester course; 3 lecture hours. 3 credits. A course designed to acquaint the student with a theoretical and practical understanding of the economic institutions and problems of the American economy with a focus on microeconomics. Note that students may receive credit for only two of the following three courses: ECON 203, 210 or 211.

ECON 211 Principles of Economics

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 203 with minimum grade of a B or ECON 210. A course designed to acquaint the student with a theoretical and practical understanding of the economic institutions and problems of the American economy with a focus on macroeconomics. Note that students may receive credit for only two of the following three courses: ECON 203, 210 or 211.

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. Prerequisite: ECON 203 with a minimum grade of B or ECON 210. 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. Prerequisite: ECON 211. 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 211; and MGMT 212 or MATH 200. This course is restricted to students who have completed at least 54 credit hours (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.

ECON 305 Public Finance - State and Local

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 203 with a minimum grade of B or ECON 210. An economic analysis of state and local government budgeting, revenue sources and expenditures.

ECON 306 Public Finance - Federal

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 203 with a minimum grade of B or ECON 210. 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. Prerequisite: ECON 211. 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 with a minimum grade of B 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. Prerequisite: ECON 203 with a minimum grade of B

or ECON 210. 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. Prerequisite: ECON 211. 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. Prerequisite: ECON 203 with a minimum grade of B or ECON 210. 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. This course is restricted to students who have completed at least 54 credit hours (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. Prerequisite: ECON 211. An analysis of economic and political influences on exports and imports, balance of payments, foreign investment, exchange rates and international monetary systems.

ECON 333 Behavioral Economics

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 203 with a minimum grade of B or ECON 210. Identifies when behavior systematically violates mainstream models and provides alternative behavioral models which are psychologically and empirically plausible. Discusses a variety of violations including endowment effects, framing, dynamic inconsistency and the winner's curse.

ECON 338 Game Theory

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 203 with a minimum grade of B or ECON 210. Analyzes strategic situations using game theory. Applies the analysis to a variety of settings and questions. Develops an understanding of the uses and limitations of the analysis.

ECON 344 Biodiversity and Ecological Economics

Semester course; 3 lecture hours. 3 credits. Prerequisite: ECON 203 with a minimum grade of B or ECON 210. Explores the use of both economic and ecological approaches to the identification, valuation and protection of biological diversity and ecological integrity. Investigates the potential of coupled human and natural systems through construction and computer simulation of dynamic ecological-economic models.

ECON 402 Business Cycles and Forecasting

Semester course; 3 lecture hours. 3 credits.

Prerequisite: ECON 211. 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: ECON 211; and MGMT 212 or MATH 200. This course is restricted to students who have completed at least 54 credit hours (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.

Prerequisite: ECON 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.

ECON 421 Government and Business

Semester course; 3 lecture hours. 3 credits.

Prerequisite: ECON 203 with a minimum grade of B or ECON 210. 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

Semester course; 3 lecture hours. 3 credits.

Prerequisites: ECON 301 and 302; and STAT 210, STAT 212, MGMT 301 or PSYC 214. This course is restricted to students who have completed at least 54 credit hours (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. Graded as pass/fail.

ECON 501 Introduction to Econometrics

Semester course 3 lecture hours. 3 credits.

Prerequisites: ECON 500, 210 or 203, the latter with a minimum grade of B; and MGMT 301, STAT 210 or STAT 212. 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.

Finance, Insurance and Real Estate**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: MGMT 212 or MATH 200; and ACCT 204, ACCT 205 or ACCT 202 (for non-business majors). Pre- or corequisite: MGMT 301, STAT 210, STAT 212, STAT 312 or STAT 541. This course is restricted to students who have completed at least 54 credit hours (junior standing). 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.

Prerequisite: FIRE 311 with a minimum grade of C. Pre- or corequisite: MGMT 302, MATH/STAT 309, STAT 314 or STAT 321. This course is restricted to students who have completed at least 54 credit hours (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. This course is restricted to students who have completed at least 54 credit hours (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: FIRE 311; and MGMT 301, STAT 210, STAT 212, STAT 312 or STAT 541. This course is restricted to students who have completed at least 54 credit hours (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. Focuses on the language, principles, practices and laws that govern the real estate enterprise, including property rights, legal elements, physical aspects of location and production, brokerage, valuation, ethical dimensions, development, financing and land use.

FIRE 317 Real Property Management

Semester course; 3 lecture hours. 3 credits. This course is restricted to students who have completed at least 54 credit hours (junior standing). Real property economics, planning, construction, marketing and management of leased properties.

FIRE 326 Real Estate Law

Semester course; 3 lecture hours. 3 credits.

Prerequisite: MGMT 323. Legal fundamentals of real estate including contracts, risk management, environmental and ethical issues, concepts of title, title examination, easements, conveyances, liens and recording statutes affecting real estate.

FIRE 330 Regulatory Aspects of Safety and Risk Control

Semester course; 3 lecture hours. 3 credits. This course is restricted to students who have completed at least 54 credit hours (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. This course is restricted to students who have completed at least 54 credit hours (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. This course is restricted to students who have completed at least 54 credit hours (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.

Prerequisite: FIRE 311. This course is restricted to students who have completed at least 54 credit hours (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: FIRE 314; and MGMT 302, MATH/STAT 309, STAT 314 or STAT 321. This course is restricted to students who have completed at least 54 credit hours (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.

Prerequisite: FIRE 311. This course is restricted to students who have completed at least 54 credit hours (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. Prerequisite: FIRE 312 with a minimum grade of C. Cases involving financial decisions for various forms of business enterprises.

FIRE 424 Property and Liability Insurance

Semester course; 3 lecture hours. 3 credits.

Prerequisite: FIRE 333. 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: FIRE 316. This course is restricted to students who have completed at least 54 credit hours (junior standing). Theory and practice of real property valuation from fundamental concepts to complex income-producing properties and partial-interest valuations. Technology-related tools are employed in the course, including financial modeling with various software programs.

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 and Capital Markets

Semester course; 3 lecture hours. 3 credits.

Corequisite: FIRE 311. This course is restricted to students who have completed at least 54 credit hours (junior standing). 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 and their interaction with the capital markets. Technology-related tools are employed in the course, including financial modeling with various software programs.

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 Real Estate Investment Analysis

Semester course; 3 lecture hours. 3 credits.

Prerequisites: FIRE 425 and FIRE 429. This course is restricted to students who have completed at least 54 credit hours (junior standing). This is the capstone course for real estate majors and covers the analytical methods and tools useful for analyzing commercial real estate investments, including a multidisciplinary approach to financial, spatial and social economics which builds a cohesive framework for analyzing complex investment decisions emphasizing fundamentals of property and financial markets.

FIRE 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 312 with a minimum grade of C. This course is restricted to students who have completed at least 54 credit hours (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 with a minimum grade of C. This course is restricted to students who have completed at least 54 credit hours (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 and 333. This course is restricted to students who have completed at least 54 credit hours (junior standing). Sources of financial risk. Measurement and uses of enterprisewide financial risk techniques. A variety of analytical tools will be used to learn about value at risk, credit risk, stress testing, financial risk management and actuarial models, and how to manage financial risk.

FIRE 466 E-business Risk Management

Semester course; 3 lecture hours. 3 credits.

Prerequisite: INFO 202. This course is restricted to students who have completed at least 54 credit hours (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.

Information Systems**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. 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. 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. 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. Graded as pass/fail. Administered as a self-paced, computer-aided instructional course.

INFO 164 Intermediate Microcomputer-based Word Processing Packages

Semester course; 1 credit. 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. Pre- or co-requisite: INFO 162. 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. Graded as pass/fail. Administered as a self-paced, computer-aided instructional course.

INFO 166 Introduction to Microcomputer-based Database Packages

Semester course; 1 credit. 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. 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. 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. 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 202 Introduction to E-business Technologies

Semester course; 3 lecture hours. 3 credits. 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.

INFO 250 Introduction to Programming

Semester course; 3 lecture hours. 3 credits. Prerequisites: INFO 160 and MGMT 171. 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 Information Technology Infrastructure

Semester course; 3 lecture hours. 3 credits. Pre- or co-requisite: INFO 202, CMSC 245 or CMSC 255. Principles of computer hardware and software architecture, network communications technologies and security. Introduction to data structures.

INFO 350 Intermediate Programming

Semester course; 3 lecture hours. 3 credits. Prerequisite: A minimum grade of C in one of the following: INFO 202, INFO 250, CMSC 245 or CMSC 255. Object-oriented programming and algorithmic design are introduced using C# and the .NET Framework. Emphasizes building business applications using the .NET Framework Class Library and the components, events and message handling therein. Intermediate Web application development is also covered. Students cannot receive credit for both CMSC 256 and INFO 350.

INFO 360 Business Information Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: INFO 160. This course is restricted to students who have completed at least 54 credit hours (junior 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. This course is restricted to students who have completed at least 54 credit hours (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. Prerequisite: INFO 202, CMSC 245 or CMSC 255. This course is restricted to students who have completed at least 54 credit hours (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. Prerequisite: INFO 202, CMSC 245 or CMSC 255. This course is restricted to students who have completed at least 54 credit hours (junior standing). 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. Prerequisite: INFO 350 with a minimum grade of C. This course is restricted to students who have completed at least 54 credit hours (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 Advanced Technology for E-business

Semester course; 3 lecture hours. 3 credits.
Prerequisites: grades of C or better in INFO 350 and 364, and junior standing. Focuses on the technical aspects of developing e-business systems using Web services and Web server controls to build visually interactive and highly responsive Web applications. Students will learn how various XML APIs (processing, messaging and distributed registries) are used under the umbrella of Web services to support the sharing of data and processes for e-business applications. The course will integrate the students' prior knowledge of client-side GUI development with server-side controls, components and behaviors in a multitiered environment that includes database connectivity.

INFO 461 Information Systems Planning and Project Management

Semester course; 3 lecture hours. 3 credits.
Prerequisite: INFO 361. 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. This course is restricted to students who have completed at least 54 credit hours (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 350, 364, 370 and 461. The student's behavioral and technical skills developed in listed prerequisite courses are challenged by participating in a team systems development project. Appropriate computer-assisted software engineering 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 and INFO 364. This course is restricted to students who have completed at least 54 credit hours (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.

Management**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.
Prerequisite: MATH 141 or MATH 151. 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, and introductory linear programming. 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 or MATH 151. 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 Business Statistics I

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MGMT 212 or MATH 200. Statistical

methods employed in the collection and analysis of business and economic data. Statistical thinking, concepts of variability, process studies, data collection, descriptive measures, probability and introduction to regression, correlation and statistical inference. Students may not receive degree credit for both MGMT 301 and STAT 208, 210, 212 or 312.

MGMT 302 Business Statistics II

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MGMT 301, STAT 210 or STAT 212. Statistical methods employed in the collection and analysis of business and economic data. Continuation of statistical inference, analysis of variance, contingency tables, regression and correlation analysis with emphasis on problem formulation and interpretation of computational results.

MGMT 318 Study Abroad

Semester course; variable hours. 1-3 credits.
Prerequisite: permission of instructor. A field study orientation with the purpose of exposing students to particular global marketplaces. Open to all majors.

MGMT 319 Organizational Behavior

Semester course; 3 lecture hours. 3 credits. This course is restricted to students who have completed at least 54 credit hours (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.
Prerequisite: MGMT 301, STAT 210 or STAT 212. This course is restricted to students who have completed at least 54 credit hours (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 321 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 small business. Formerly MGMT 421.

MGMT 323 Legal Environment of Business

Semester course; 3 lecture hours. 3 credits.
Prerequisite: sophomore 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 MGMT/ACCT 481.

MGMT 324 Tort Law

Semester course; 3 lecture hours. 3 credits. 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.

MGMT 325 Organizational Communication
Semester course; 3 lecture hours. 3 credits. This course is restricted to students majoring in the School of Business who have completed at least 54 credit hours (junior standing). A study of interpersonal, team and organizational communication practices in modern dynamic work and virtual environments. This course includes: 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; UNIV 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. 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: MGMT 301, STAT 210 or STAT 212. This course is restricted to students who have completed at least 54 credit hours (junior standing). Introduces students to the role of human resource management 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 Quantitative Solutions for Management

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MGMT 301, STAT 210 or STAT 212. This course is restricted to students who have completed at least 54 credit hours (junior standing). Modeling business-related problems using quantitative techniques. Focus is on applications to problems in the service and manufacturing sectors. Typical problem situations involve management of inventory,

scheduling of people and processes and allocation of scarce resources.

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 386 Introduction to Supply Chain Management

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MGMT 320. This course is restricted to students who have completed at least 54 credit hours (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. A practicum in the development of personal, interpersonal and team-management skills as applied to leadership and teamwork.

MGMT 403 Human Resource Development

Semester course; 3 lecture hours. 3 credits.
Prerequisite: junior standing. Designed to improve qualifications of those seeking employment in the human resources field. Focuses on human resource development and organization development and their relationship to human resource management. Formerly ADLT 403.

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 Labor and Employment Relations

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MGMT 331. This course is restricted to students who have completed at least 54 credit hours (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 422 Managing the Family Firm

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MGMT 321 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 MGMT 331. This course is restricted to students who have completed at least 54 credit hours (junior standing). A survey of legislation and court and administrative-body decisions affecting the employer/employee relationship.

MGMT 431 Strategic Human Resource Management

3 lecture hours. 3 credits. Prerequisite: MGMT 331. This course is restricted to students who have completed at least 54 credit hours (junior standing). A critical study of selected problems in human resource management.

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: MGMT 319, 320 and 325; MGMT 323 or ACCT 481; MKTG 301; FIRE 311; INFO 360; and

ECON 303. This course is restricted to business majors with senior standing. 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 435-436 New Venture Strategy and Initiation

Continuous courses; 3 lecture hours. 3-3 credits. Prerequisite: MGMT 321. First semester: provides students with an integrated strategic analysis of entrepreneurial firms and how they establish competitive advantage. Second semester: engages students in intensive development of a comprehensive business plan using knowledge and skills from MGMT 435. Students should take MGMT 436 immediately following MGMT 435.

MGMT 439 Introduction to Quality Management and Six Sigma

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 320. This course is restricted to students who have completed at least 54 credit hours (junior standing). Critical concepts of process management from quality management and Six Sigma; service quality; systems thinking; process improvement strategy and methods; fact-based decision making; collection and use of data in improvement projects; introduction to data analysis tools and techniques; statistical process control.

MGMT 440 Forecasting Methods and Process

Semester course; 3 lecture hours. 3 credits. Prerequisite: MGMT 302 or STAT 314. This course is restricted to students who have completed at least 54 credit hours (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, MGMT 418, ECON 329 or INTL 418. 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. Prerequisite: MGMT 331. This course is restricted to students who have completed at least 54 credit hours (junior standing). 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.

Marketing

MKTG 301 Marketing Principles

Semester course; 3 lecture hours. 3 credits. This course is restricted to students who have completed at least 26 credit hours (sophomore standing). An introduction to the activities, set of institutions and processes for creating, communicating, delivering and exchanging offerings that have value for customers, clients, partners and society at large. Formerly MKTG 308.

MKTG 302 Marketing Problems

Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). A case course requiring the senior marketing student to apply their knowledge in solving marketing managerial problems. Marketing majors should take this course in the semester immediately following the term in which they complete MKTG 301. Formerly MKTG 476.

MKTG 310 Information for Marketing Decisions

Semester course; 3 lecture hours. 3 credits. Prerequisites: MKTG 301; and MGMT 301, STAT 210, or STAT 212. This course is restricted to students who have completed at least 54 credit hours (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.

MKTG 315 Buyer Behavior

Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. MGMT 301, STAT 210, or STAT 212. This course is restricted to students who have completed at least 54 credit hours (junior standing). 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. Formerly MKTG 373.

MKTG 320/INTL 320 International Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). Designed to help students develop an understanding of international marketing policies and the differences among foreign marketing environments. Students compare and contrast domestic and international marketing and examine recent changes in the international marketing environment. Formerly MKTG 378/INTL 378.

MKTG 330 Integrated Marketing Communications

Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). An overview of the steps required to develop an integrated marketing communications campaign. Topics include advertising, public relations, sales promotion, personal selling and direct marketing. Special emphasis is placed on the role of new technologies and interactive media. Formerly MKTG 371.

MKTG 340 Retail Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (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. Formerly MKTG 376.

MKTG 435 Personal Selling and Sales Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). 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 activities necessary to manage the outside sales force efficiently and effectively to achieve the organization's overall goals. Formerly MKTG 474.

MKTG 442 Services Marketing

Semester course; 3 lecture hours. 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours

(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. Formerly MKTG 475.

MKTG 445 Nonprofit Marketing

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). Examines the relationship between marketing and organizational success in the nonprofit sector, as well as the impact of nonprofit organizations on local, national and global economies. Through real-world applications, students learn to combine marketing strategies and tactics with civic engagement, community service and corporate social responsibility. Students must complete a minimum of 20 service-learning hours with the nonprofit organization that is the focus of the course.

MKTG 448/INTL 448 Internet Marketing

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). Examines Internet marketing as a necessary ingredient to successful worldwide marketing strategy. Students analyze markets using Web-based techniques for market evaluation, competitive analysis, market comparison and selection. Discussion includes comparison of e-business versus traditional business perspectives on marketing strategies and tactics. Formerly MKTG 478/INTL 478.

MKTG 450 Product Development and Management

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). Study of the role of marketing in developing and managing products. Essential concepts include the use of project teams for product development and the application of a new product development process. Topics include innovation, technology, listening to the voice of the customer, product design, branding, positioning and product life-cycle management. Formerly MKTG 472.

MKTG 470 Field Project in Marketing

Semester course; 3 credits. Prerequisite: MKTG 301. This course is restricted to students who have completed at least 54 credit hours (junior standing). Students take part in a real-world project under faculty supervision, with the topic announced in advance. Examples include conducting a marketing research project, creating an advertising campaign, writing a marketing case study about an existing business and developing a marketing plan.

MKTG 475 Honors Seminar in Marketing

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MKTG 301 and permission of department chair. This course is restricted to students who have completed at least 54 credit hours (junior standing). Students conduct research about major firms in the Richmond region. Chief marketing officers of these firms teach students about current marketing issues and evaluate the students' projects.

MKTG 491 Topics in Marketing

Semester course; variable hours. Variable credit, with a maximum total of 3 credits per course. For marketing majors, a maximum total of 6 credits for all topics courses. Prerequisite: MKTG 301. An in-depth study of a selected business topic, to be announced in advance.

MKTG 492 Independent Study in Marketing

Semester course; 1-3 credits. For marketing majors, a maximum total of 3 credits for all MKTG 492 courses. Prerequisites: MKTG 301, junior standing and permission of adviser and department chair prior to course registration. Intensive study or research under supervision of a faculty member in an area not covered in depth or contained in the regular curriculum.

MKTG 493 Internship in Marketing

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. Formerly MRBL 493.

School of Dentistry

Dental Hygiene

DENH 301 Dental Hygiene Theory I

Semester course; 2 lecture and 6 laboratory/clinical hours. 5 credits. 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. 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 dental hygiene diagnosis, treatment planning, oral signs of abuse/neglect, topical medicaments and use of sonic and ultrasonic instrumentation.

DENH 312 Preventive Oral Health Education

Semester course; 3 lecture hours. 3 credits. 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. 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. 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 preventive health behaviors and providing nutritional education to dental patients in a clinical setting. The interrelationships of diet, nutrition and dental and systemic diseases will be discussed along with current food trends, consumer aspects of food choices and basic nutrition principles. A general review of dietary supplements also will be provided.

DENH 401 Dental Hygiene Theory III

Semester course; 2 lecture hours. 2 credits. 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, cosmetic and restorative dentistry, pain control, oral surgery, prosthodontics, pediatric dentistry and implantology. Through case scenarios students develop treatment plans with regard to the dental hygiene process of care. Students discuss patient education needed for each phase of care appropriate for the informed consent of the patient.

DENH 402 Dental Hygiene Theory IV

Semester course; 2 lecture hours. 2 credits. 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 407 Research Methods and Study Designs

Continuous course; 2 lecture hours. 2 credits. Designed to guide dental hygiene students in becoming competent in the use of scientific literature as a part of lifelong learning and evidence-based decision-making in patient care. Covers foundational materials in research design and biostatistics, including the development of testable hypotheses, data collection, data summary, and evaluation and interpretation of data found in scientific literature. Students will critique scientific literature from peer-reviewed journals and participate in reflection of current literature on assessment of patients with special needs by dental students. Students will also take part in an online Collaborative Investigator Training Initiative for protecting human subjects in research. Graded as CO in first semester with letter grade assigned upon completion of second semester.

DENH 411 Introduction to Public Health

Semester course; 2 lecture hours. 2 credits. This hybrid course is intended to provide the dental hygiene student with an overview of the broad field of public health. Topics include the sciences of public health, the controversial nature of public health, powers and responsibilities of the government, social and behavioral factors in health, environmental issues in public health, medical care and public health, and public health challenges in the upcoming century. The course serves as a foundation for DENH 412. The course will also provide students with experiences that foster positive attitudes and behaviors regarding their responsibility to care for underserved populations, thereby providing insights on the impact of social and economic factors on dental health. Field experiences place emphasis on special populations, including elementary school children; geriatric, institutionalized and hospitalized clients; and individuals with mental and/or physical disabilities. The course and its field experiences will prepare the dental hygienist for the role of dental public health practitioner, educator and consultant, as well as a resource person in community settings.

DENH 412 Community Dental Health

Semester course; 1 lecture and 3 clinical/service-learning project hours. 2 credits. This course provides an introduction to the principles of dental public health, community dental health education and community program planning. Topics include oral health trends, dental indices, prevention and control of oral diseases in a community, and community dental health programs. 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. Field experience is designed to prepare students to function in a variety of settings. Emphasis placed on special populations, including elementary school children; geriatric, institutionalized and hospitalized clients; and individuals with mental and/or physical disabilities.

DENH 422 Current Issues, the Law and Ethics

Semester course; 2 lecture hours. 2 credits. Designed to explore the ethics, jurisprudence and principles of practice. Included are case studies and a reflection paper exploring 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. 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, management skills and self-assessment 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. 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. 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. Independent study projects planned to meet the learning objectives of the student.

DENH 477 Special Topics in Dental Hygiene

Semester course; 1-3 credits. Designed around the interests of students, faculty expertise and availability of educational resources. Format may include intensive mini-courses or workshops.

General Practice

GENP 302 Dental Materials

Semester course; 1 lecture and 3 laboratory hours. 2 credits. Provides 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. Primary dental materials will be discussed in relation to their properties and manipulation with an approach to aid in patient education and to recognize adverse affects on the patient's health from improper manipulation or placement failures.

GENP 311 Oral Anatomy and Occlusion

Short course; 2 lecture hours; 15-20 hours seminar/recitation and online discussion. 10 weeks. 3 credits. 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 Pathology

ORPT 301 Dental Radiology

Semester course; 1 lecture hour. 1 credit. 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. 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 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. 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.

Periodontics

PERI 326 Periodontics I

16 lecture, 2 seminar and 2 clinical hours. 1 credit. Corequisites: 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 of the periodontal patient. Emphasis will be placed on the etiology of periodontal diseases, rationale and outcomes of treatment. This course features small-group exercises in lectures, seminars and clinical patient-based instruction.

PERI 329 Periodontics II

Semester course; 3 lecture hours. 3.5 credits. This course provides the scientific basis to understand the pathology and etiological factors of periodontal diseases. It also discusses the epidemiology of periodontal disease and emphasizes treatment strategies based on current knowledge. Students are prepared to assess patients' periodontal status and to plan initial clinical periodontal management. Examination, diagnosis, prognosis and treatment planning procedures are covered.

School of Education

Adult Education

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.

Educational Studies

EDUS 101 Teacher Cadet Program

Semester course; 3 hours. 3 credits. Open only to students concurrently enrolled through a Teacher Cadet program at a participating Virginia high school. Designed to provide an introduction and foundation for the teaching profession, including awareness of personal attributes related to education, learning and cognitive styles, student growth and development, history and trends in public education, basic instructional approaches and the structure and governance of public education. The program includes an extended clinical component.

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.

Emotional Disturbance

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.

Health, Physical Education and Exercise Science

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 and Activities

Semester course; 3 lecture/laboratory hours. 3 credits. Open only to general health and physical education majors in the health, physical education and exercise science program. Students develop educational skills

and methodology for instruction of team sports and group activities in classroom, gymnasium and outdoor field settings. Students acquire skills needed to teach team sports and activities 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 Rhythmic

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 BIO2 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 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 300 Health Care Delivery in the U.S.

Semester course; 3 lecture hours. 3 credits. Introduces students to the American health care system and provides an opportunity to analyze the diverse components comprising the system. Major components of the system are examined, including inpatient and outpatient services, financing, insurance and technology. Provides the student a perspective of the variety of career choices in health care.

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 Elementary Health and Physical Education

Semester course; 3 lecture hours. 3 credits. Prerequisites: HPEX 230, and either HPEX 201 or HPEX 202. Open only to general health and physical education majors in the health, physical education and exercise science program. Emphasis is given to the role of movement and theory in the education program and its implications for curriculum development and learning. Major consideration is given to the development of movement competency through thematic instruction.

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. Corequisite: HPEZ 334. 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 337 Technology in Teaching Health and Physical Education

Semester course; 3 lecture hours. 3 credits. Emphasis is placed on the application of the latest software and hardware technology used in the field of health and physical education. Students use public school settings and authentic data whenever possible.

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 Disease Trends, Prevention and Control

Semester course; 3 lecture hours. 3 credits. Provides students an opportunity to examine the major categories of diseases, infectious and noninfectious, including significant examples in each category. Students will also research major diseases affecting the U.S. population as well as global populations. Current modalities for the prevention, treatment and control of these diseases will be studied.

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. Corequisite: HPEZ 373. 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. Prerequisite: BIOL 205. 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. Prerequisites: PHIS and PHIZ 206. Corequisite: HPEZ 375. 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. Prerequisites: permission of instructor; acceptance into teacher preparation program; and CPR certification. 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. 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 and HPEZ 375. 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 Principles of Health Care Management

Semester course; 3 lecture hours. 3 credits. Prerequisite: HPEX 300. Exposes the student to basic aspects of administration and management in various health care settings. The traditional areas of administration and management, such as planning, organizing, staffing, directing and controlling will be addressed. Contemporary issues such as cultural competence, quality of care, ethics, and fraud and abuse will be examined. The course will provide a theoretical base that will enhance and facilitate the

student's application of sound management principles in various practice settings.

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 451 Professional Conference in Community Health Education

Semester course; 1 lecture hour. 1 credit. Offers the student an opportunity to participate in a professional conference focusing on community health education. This experience includes observing, summarizing and critically evaluating presentations, as well as preparing and delivering presentations and networking.

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 professional 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. Prerequisites: pass Praxis II; HPEX 393 with a minimum grade of C. 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. Prerequisites: pass Praxis II; HPEX 393 with a minimum grade of C. 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. Prerequisites: HPEX and HPEZ 375; HPEX 393 or 395. (Exercise science concentration pre- or corequisite: HPEX 440.) 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. Pre- or corequisite: HPEX 495. 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 220 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 320 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 321 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 322 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 324 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 334 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 373 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 375 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.

HPEZ 450 Service-learning in Community Health Education Planning and Evaluation

Semester course; 1 service-learning/laboratory hour. 1 credit. Prerequisite: HPEX 356. Corequisite: HPEX 450. Pre- or corequisite: PSYC 412. Provides experience working with community partners to gain firsthand exposure to specific target populations, observing the needs of those populations and current efforts, if any, to address those needs. Community partners include nonprofit agencies, schools, worksites, hospitals and state and local health departments.

Mental Retardation

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.

Reading and Study Skills

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.

Recreation, Parks and Sport Management

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 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 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 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 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.

Recreation, Parks and Sport Management Lab

RPSZ 204 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 300 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 371 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.

Teacher Education

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 203 Focus on Choice

Semester course; variable hours. 1-3 credits. May be repeated for a maximum of 3 credits. A career planning experience for adults focusing on discontinuity in life patterns and a review of current educational and occupational opportunities. Consideration of the world of work, fields of education and volunteer service, and the development of one's own potential will be featured.

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. Presents an overview of the historical basis and regulatory requirements related to special education, including the individual education program (IEP) as a legal document and the rights and responsibilities of parents, teachers and schools. The characteristics of learners with disabilities and their educational and medical implications are also examined, as well as the cultural, familial and ethical issues involved.

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 410 Classroom Management in Elementary Schools

Semester course; 3 lecture hours. 3 credits. Designed to help students develop their understanding of effective classroom management techniques. Students will examine management models and research and evaluate antecedent factors of a management scheme such as their philosophy of education, management style, learning styles and school and classroom climate.

TEDU 411 Integrating 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 Early/Elementary Children

Semester course; 4 lecture hours. 4 credits. Prerequisite: admission to teacher preparation program. Corequisites: TEDU 310 (Practicum A) and 426. A study of developmentally appropriate curriculum and methods for early/elementary children, including diversity, assessment, behavior guidance and management, planning instruction and creating positive learning environments. Includes an overview

of the history of early/elementary 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 minimum grade of C, recommendation of practicum supervisor and passing score on the VCLA test. 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.

School of Engineering

Biomedical Engineering

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 102 Introduction to Engineering

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: Registration is restricted to biomedical engineering majors. Introduces basic engineering principles in the context of biomedical topics, including electrical circuits and components such as resistors, capacitors, diodes, transistors, digital electronics and motors. Applications of biomedical systems including heart function, brain waves, human motion and skin responses are discussed. The laboratory introduces fundamental biomedical circuit testing and measurement and proper laboratory notebook writing, with students required to analyze, build and test biomedical devices such as an ECG, EMG and Galvanic Skin Response.

EGRB 103 Introduction to Biomechanics

Semester course; 3 lecture hours. 3 credits.
Prerequisites: MATH 201 and PHYS 207. Restricted to biomedical engineering majors only. The theory and application of engineering mechanics applied to the design and analysis of rigid and deformable biomedical and physiological structures. The study of forces and their effects, including equilibrium of two- and three-dimensional bodies, stress, strain and constitutive relations, bending, torsion, shearing, deflection, and failure of physiological and biomedical systems.

EGRB 105 History of Medical Technology

Semester course; 3 lecture hours. 3 credits. Origins and recent advances in medical technologies including hearing aids, artificial knees, heart-lung machines, medical anesthesia devices and medical imaging systems such as CAT MRI.

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, MATH 310 or permission of instructor. The goal of this course is to enhance students' software skills for subsequent biomedical engineering courses and laboratories, as well their career. The course covers the basic fundamentals of programming with the MATLAB and LabVIEW software packages, as well as data analysis of biomedical data. An important component of this course is developing problem-solving skills.

EGRB 301 Biomedical Engineering Practicum II

Semester course; 3 lecture hours. 3 credits.
Prerequisite: junior standing in biomedical engineering program. Explores the professional and ethical responsibilities of a biomedical engineer. Emphasis will be placed on design issues associated with biomedical engineering, regulatory issues and human and animal subjects.

EGRB 303 Biotransport Processes

Semester course; 3 lecture hours. 3 credits.
Prerequisites: PHIS 309, 310 (or equivalents); EGRB 103; and PHYS 207. 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 medical and clinical settings. 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: MATH 301 and 310; PHIS 309 and 310; EGRB 215. Explores the basic theory and application of digital signal processing techniques related to the acquisition and processing of biomedical and physiological signals including signal modeling, AD/DA, Fourier transform, Z transform, digital filter design, continuous and discrete systems.

EGRB 310 Biomechanics

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRB 103, EGRB 215, PHIS 309 and PHIS 310. Co-requisites MATH 301 and MATH 310. A study of the forces, stresses and strains in the human body during normal function. Emphasis is placed on the mechanics of various components of the body including hard (bone) and soft (skin, vessels, cartilage, ligaments, tendons) tissues from a structure-function perspective. Stress and strain relationships for these biomaterials will be analyzed based upon the fundamentals of engineering mechanics. In addition, the distinctive features of biological materials will be studied with respect to their differences from nonliving materials and elaborated upon in laboratory exercises using material evaluation protocols.

EGRB 401-402 Biomedical Engineering Senior Design Studio

Continuous courses; 9 laboratory hours. 3-3 credits.
Prerequisites: senior standing in the Department of Biomedical Engineering; EGRB 301, EGRB 307 and EGRB 308; or permission of instructor. 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. An oral presentation is due at the end of the first semester, as well as a final project report and oral presentation at the conclusion of the two-semester design process.

EGRB 403 Tissue Engineering

Semester course; 3 lecture hours. 3 credits.
Prerequisites: junior standing in engineering and PHIS 309 and 310, or permission of instructor. 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, 307 and 310, or permission of instructor. 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 the School of Engineering and PHYS 208. 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.

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, intraportal 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, or permission of instructor. This course explores the principles and practices regarding rehabilitation engineering and the interaction of biomedical engineering with health care delivery to individuals who are disabled. It will cover the three main areas of rehabilitative engineering: assistive technology, prostheses and rehabilitation therapy devices. Design will be an important component of the course.

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 biomedical engineering, PHIS 309 and 310, or permission of instructor. Principles of materials science as it relates to the use of materials in the body. Characterization of biomaterials. Study of the properties of biomedical materials used as implants, prostheses, orthosis and as medical devices in contact with the human body.

Analysis of physical, chemical, thermal and physiological response factors associated with materials and implant devices used in the human body.

Chemical and Life Science Engineering

CLSE 101 Introduction to Engineering

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: course open to first-year students majoring in chemical and life science engineering. Introduction to chemical and life science engineering. Topics covered include ethics and social responsibility; engineering design process; engineering solutions; estimations and approximations; dimensions, units and conversions; mathematics and computer solutions; life-long learning; introduction to the interface between engineering, biology and medicine.

CLSE 102 Methods in CLSE

Semester course; 1 lecture hour. 1 credit. Prerequisite: CLSE 101. An introduction to problem formulation and solution methods for chemical and life science engineering. Typical chemical and life science engineering scenarios will be presented. Emphasis will be placed on identifying and formulating problems based on presented scenarios.

CLSE 115 Introduction to Programming for Chemical and Life Science Engineering

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MATH 200. Corequisite: CLSE 102. Intended for chemical and life science engineering majors. Introduction to the concepts and practice of structured programming. Topics include problem-solving, top-down design of algorithms, objects, basic syntax, control structures, functions and arrays.

CLSE 201 Chemical Engineering Fundamentals I: Material Balances

Semester course; 3 lecture and 1 recitation hours. 4 credits. Prerequisites: CLSE 102 and 115, both with minimum grade of C; CHEM 102; and MATH 201. The first of two introductory chemical and life science engineering courses. Covers material balances on steady-state chemical processes.

CLSE 202 Chemical Engineering Fundamentals II: Energy Balances and Engineering Thermodynamics

Semester course; 3 lecture and 1 recitation hours. 4 credits. Prerequisites: minimum grades of C in CLSE 201, CHEM 101-102 and MATH 200-201 or equivalents. The second of two introductory chemical and life science engineering courses. Covers energy balances on steady-state chemical processes, computer-aided balance calculations, balances on transient processes and introduction to thermodynamics.

CLSE 301 Transport Phenomena I

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CLSE 202 with a minimum grade of C, PHYS 208 and MATH 301. Basic concepts of transport phenomena as applied to chemical and life science engineering. Topics include transport of mass momentum and energy in single and multidimensions.

CLSE 302 Transport Phenomena II

Semester course; 3 lecture hours. 3 credits.
Prerequisites: grades of "C" or higher in CLSE 301

and 305. Concepts of transport phenomena as applied to chemical and life science engineering. Topics include advanced multicomponent, multiphase systems, integral analysis, and an integrated view of momentum, heat and mass transport in unit operations. Formerly EGRC 302.

CLSE 305 Thermodynamics of Phase Equilibria and Chemical Reactions

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CLSE 201 and 202, both with a minimum grade of C, and MATH 307. Continuation of CLSE 202. 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.

CLSE 306/CHEM 306 Industrial Applications of Inorganic Chemistry

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CHEM 302 and CHEZ 302. 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. Formerly EGRC/CHEM 306.

CLSE 312 Chemical Reaction Engineering

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CLSE 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. Formerly EGRC 312.

CLSE 320 Instrumentation Laboratory

Semester course; 6 laboratory hours. 2 credits.
Prerequisites: grades of "C" or higher in CLSE 201 and 202. Co-requisite: CLSE 301. 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. Formerly EGRC 320.

CLSE 325 Bioengineering

Semester course; 3 lecture hours. 3 credits.
Prerequisites: BIOL 101, 102, 103 or 151 and CLSE 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. Formerly EGRC 325.

CLSE 405 Process Synthesis

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CLSE 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. Formerly EGRC 405.

CLSE 409 Process Control in Chemical and Life Science Engineering

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CLSE 301 and 305. Covers process control as applied to chemical and life science engineering with many practical examples. Topics include time and frequency domain analysis, multivariable processes and applications to chemical and biochemical production and processing. Formerly EGRC 409.

CLSE 428 Introduction to Polymer Science and Engineering

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CLSE 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. Formerly EGRC 428.

CLSE 440 Unit Operations Laboratory

Semester course; 6 laboratory hours. 2 credits.
Prerequisites: CLSE 302, 305 and 312. Students carry out experiments with chemical and biochemical reactors, energy exchangers, fluid flow networks and other unit operations. Detailed laboratory reports are required for each of the experiments undertaken. Formerly EGRC 440.

CLSE 450 Undergraduate Research in Chemical and Life Science Engineering

Semester course; variable hours. 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. Formerly EGRC 350.

CLSE 460 Undergraduate Honors Research in Life Sciences Engineering

Semester course; 1-3 lecture hours. 1-3 credits.
Corequisites: BIOL 218, CLSE 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. Formerly ENGR 460.

CLSE 461 Stem Cell Engineering

Semester course; 3 lecture hours. 3 credits.
Prerequisites: BIOL 218, CLSE 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. Formerly ENGR 461.

Computer Science**CMSC 101 Introduction to Computer Science**

Semester course; 3 lecture hours. 3 credits.
Prerequisite: MATH 141 or the equivalent with a grade of C or better. An introduction to the work of computer scientists, including an overview of current research and application areas as well as career opportunities. An introduction to data representation, number systems, problem solving, the basics of computer organization, the software engineering life cycle, team dynamics, research resources and social and ethical aspects of technology, including discussion of the university honor code. Departmental expectations for oral and written presentations, code and project documentation. Includes a semester-long team project.

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 and 2 laboratory hours. 4 credits. Prerequisite: Calculus-level placement on the VCU Mathematics Placement Test within one-year period immediately preceding enrollment in the course, or MATH 151 or equivalent. Students are expected to have fundamental computer skills. Introduction to object-oriented programming using Java. Topics include problem solving, top-down design of algorithms using control structures, methods, arrays, basic I/O, basic concepts of objects and classes in Java, Java classes for manipulating strings, and introduction to program testing, UML notation and integrated

development environments. 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. Continued focus on program testing and UML notation. Students may not receive credit for both CMSC 256 and INFO 350.

CMSC 302 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. Boolean algebras, combinatorial and sequential circuits, algorithms and algorithm analysis, recursion, recurrence relations, graphs, trees.

CMSC 303 Introduction to the Theory of Computation

Semester course; 3 lecture hours. 3 credits.
Prerequisite: CMSC 302 or the equivalent with a grade of C or better. Complexity classes, grammars, automata, formal languages, Turing machines, computability.

CMSC 311 Computer Organization

Semester course; 3 lecture hours. 3 credits.
Prerequisites: CMSC 101 with a grade of C or better and MATH 211 with a grade of C or better. Pre- or corequisite: CMSC 302. Introduction to the basic organization of computers including elementary digital logic design, processor and arithmetic/logic unit design, data paths, memory hierarchy, I/O devices, instruction set architecture, addressing modes, and data representation.

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 and Implementation Practicum

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: CMSC 246 or 256 with a grade of C or better. Overview of the software design process including analysis, design and life-cycle models. Design and implementation of event-driven programs with graphical user interfaces. Students will work in teams to design and implement a system with a client-server architecture.

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 302 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, hashing and graph representation; incorporating data structures into object-oriented design. Analysis of various searching and sorting algorithms. Algorithm design topics include divide-and-conquer, dynamic programming and greedy methods.

CMSC 403 Programming Languages

Semester course; 3 lecture hours. 3 credits.

Prerequisites: CMSC 256 with a grade of C or better and CMSC 303. 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 404 Compiler Construction

Semester course; 3 lecture hours. 3 credits.

Prerequisites: CMSC 401 and 403. A first course in compiler theory and construction. Formal description of languages, underlying theory and design techniques for compilers, lexical analysis, syntax analysis, syntax-directed translation, intermediate languages, run-time system management, code generation, code optimization, compiler-building tools.

CMSC 420 Software Engineering Practicum

Semester course; 3 lecture hours. 3 credits.

Prerequisite: CMSC 355. Practicum in the logistics of team software development. Students work in small teams that develop the components of a larger software product. Topics include configuration management; software component interface specification, detail design, coding and unit testing; integration; and system testing.

CMSC 451-452 Senior Project

Continuous courses; 1 lecture and 4 laboratory hours.

3-3 credits. Prerequisites: senior standing in the computer science department; 27 credits in computer science, including CMSC 401; UNIV 200 or equivalent. Capstone project or experience for the computer science major; research and presentation methods in computer science; ethical, legal and social issues in computing; and professional responsibilities of computer scientists. Each student will participate, either individually or as part of a team, in a project or other experience approved by the course coordinator or sponsored by another computer science faculty member. Each student will write and revise a research paper on a technical topic associated with his or her project or experience. During the first semester, students will submit a detailed written description of their proposed project or experience and will present orally some aspect of what they have learned and/or done during the first semester. A final project report and presentation, which will include a discussion of associated legal, social and/or ethical issues, are due at the conclusion of the two-semester project or experience. (The courses in this sequence cannot be

counted as upper-level CMSC electives for students graduating under bulletins prior to 2008-09.)

CMSC 491 Topics in Computer Science

Semester course; variable hours. 1-3 credits. May be repeated for credit with different content. Prerequisite: permission of instructor. This course will cover selected topics in computer science. See the Schedule of Classes for specific topics to be offered each semester.

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; variable hours. 1-3 credits. May be repeated for up to 3 credits. Prerequisites: CMSC 401 and CMSC 403. Approval of Computer Science Undergraduate Credentials Committee is required prior to registration. A minimum of 30 clock hours per credit 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.

Electrical and Computer Engineering

EGRE 101 Introduction to Engineering

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: course open to first-year students majoring in electrical or computer engineering. Introduction to engineering through instruction on basic concepts of engineering. Topics will include an introduction to basic circuit components and circuit analysis, digital logic design, electromagnetics, motors, mechanical power, and torque. General topics important to all engineers will also be covered, such as mathematics, improving written and oral communication skills, teamwork, ethics and life-long learning. The laboratory introduces fundamental testing, measurement, troubleshooting methodology and proper laboratory notebook maintenance. Students are required to analyze, build and test a digitally controlled robot.

EGRE 150 Introduction to Electrical and Computer Engineering

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: MATH 200 with a minimum grade of C. 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: EGRE 101, EGRM 101 or EGRB 102, as applicable per department, with a minimum grade of C. An introduction to electrical circuit theory and its application to practical direct and alternating current circuits. Topics include: Kirchhoff's Laws (review from EGRE 101, EGRM 101 or EGRB 102, as applicable), 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 207 Electric Circuits II

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: EGRE 206, with a minimum grade of C. An introduction to higher level electric circuit theory, including the study of basic active components, such as diodes and operational amplifiers. Emphasis will be placed on design rather than analysis. The laboratory exercises will serve to train students in the art of designing a circuit to perform specific tasks and to conform to specific design parameters.

EGRE 224 Introduction to Microelectronics

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 207 and MATH 301, both with a minimum grade of C. This course covers the analysis, modeling and design of electrical circuits which contain electronic devices. Students will learn to design analog circuits to specifications through laboratory problems, a design project and circuit simulation.

EGRE 245 Engineering Programming Using C

Semester course; 3 lecture hours. 3 credits. Restricted to electrical and computer engineering majors. Prerequisite: MATH 151 with a minimum grade of C. 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, basic C syntax, control structures, functions, arrays, files and strings.

EGRE 246 Advanced Engineering Programming Using C++

Semester course; 3 lecture hours. 3 credits. Restricted to electrical and computer engineering majors. Prerequisite: EGRE 245 with a minimum grade of C. Advanced programming for engineering applications in C++. Topics include objects, classes and inheritance; linked lists; recursion; basic searching and sorting techniques; and program design for control and monitoring type applications.

EGRE 254 Digital Logic Design

Semester course; 3 lecture and 2 laboratory hours. 3 credits. Prerequisites: EGRE 101 and MATH 201 or equivalents, both with a minimum grade of C. 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, both with a minimum grade of C. 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 with a minimum grade of C or consent of instructor.

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.

EGRE 309 Electromagnetic Fields

Semester course; 3 lecture hours. 3 credits.

Prerequisites: EGRE 206, MATH 301 and MATH 307, and PHYS 208, all with a minimum grade of C. Fundamentals of engineering electromagnetics, including electrostatics, magnetostatics, electrodynamics, analysis and understanding of the phenomena associated with electric and magnetic fields, wave dynamical solutions of Maxwell's equations, reflection and transmission of electromagnetic waves in dielectric materials, waveguides and transmission line structures, and radiation from antennas.

EGRE 310 Microwave and Photonic Engineering

Semester course; 3 lecture hours. 3 credits.

Prerequisite: EGRE 309 with a minimum grade of C. 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 206 and 245 and MATH 301, all with a minimum grade of C. 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 with a minimum grade of C. 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 with a minimum grade of C. 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 246 and 254, both with a minimum grade of C. 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 246 and 254, both with a minimum grade of C. 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. Prerequisite: EGRE 364 or CMSC 311 with a minimum grade of C. 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 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 365 and 426, both with a minimum grade of C. 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 to meet appropriate engineering standards and multiple realistic constraints.

EGRE 435 Microscale and Nanoscale Fabrication

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 303 and ENGR 334, both with a minimum grade of C. This course presents the design tools and techniques for designing a fabrication process as well as a device design and layout for advanced microscale and nanoscale devices. A number of different types of device technologies are covered, incorporating electronic, micromechanical and microfluidic devices and sensors. In the laboratory section of the course, students work in design teams to develop a complete fabrication process and design layout for a microscale device to meet appropriate engineering standards and multiple realistic constraints. Computer simulations and computer-aided design tools are used in the final design. The laboratory section of this course accomplishes the design phase of the senior design capstone project, which is presented at the end of semester and fabricated in the subsequent course, EGRE 436.

EGRE 436 Advanced Microscale and Nanoscale Fabrication

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisite: EGRE 435 with a minimum grade of C. This course presents a detailed analysis of the physics and modeling of the fundamental 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. Processes covered in detail include oxidation, diffusion, ion implementation, thin film deposition and plasma etching techniques. Student work in design teams in the laboratory section, which focuses on the fabrication and testing of the microscale device developed in EGRE 435. The laboratory section of the course accomplishes the fabrication and testing phase of the senior design capstone project.

EGRE 444 Communication Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRE 336 with a minimum grade of C. 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 455 Control Systems Design

Semester course; 3 lecture hours. 3 credits.
Prerequisite: ENGR 454 with a minimum grade of C.
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.

Engineering**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.
Prerequisite: MATH 200 with a minimum grade of C or permission of instructor. Corequisite: PHYS 207 or permission of instructor. 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 121 Engineering Fundamentals

Semester course; 3 lecture hours. 3 credits.
Prerequisite: permission of instructor. Open only to non-engineering majors in Certificate in Product Innovation program. Introduces engineering fundamentals to students from non-engineering disciplines. Particular focus is the engineering problem-solving process as applied to open-ended problems. Students will be introduced to the different types of engineering, examine engineering issues and apply the engineering problem-solving process.

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, MATH 301 and EGRM 204, with a minimum grade of C in each, 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.
Prerequisites: ENGR 301, EGRM 204, MATH 301 and 307, with a minimum grade of C in each, or permission of 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: MATH 301 with a minimum grade of C, PHYS 208 and STAT 541; 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.
Prerequisites: MATH 301, EGRE 206, EGRM 201 and PHYS 207, all with a minimum grade of C; or permission of instructor. 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 Microfabrication

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: CHEM 101, MATH 201 and PHYS 208, all with a minimum grade of C. This course gives an overview of microscale device fabrication and testing for a general audience. A wide variety of new terms, equipment and processes are presented. Fundamentals of photolithography, mask making, diffusion, oxidation, ion implantation, film deposition and etching are covered. Laboratory work consists of safety training, hands-on fabrication experience and testing. A laboratory chip test is fabricated from start to finish and then tested. The test chip includes basic integrated circuit elements as well as solar cells.

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. Prerequisites: chemical, electrical and computer, or mechanical engineering major and experience to satisfy the engineering internship requirements. 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 or graduate 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 with a minimum grade of C, or permission of instructor. 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 454 Automatic Controls

Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: EGRE 337 or ENGR 305 or ENGR 315 with a minimum grade of C. 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 of single-input/single-output and multivariable systems, analysis and simulation using matlab/simulink and other control system analysis/design/implementation software.

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.

Engineering Lab

ENGZ 402-403 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. [Note: Mechanical engineering majors are required to have the following prerequisites: EGRM 300, 303 and 420, and either EGRM 421 or EGRN 320, with a minimum grade of C in each. Chemical and life science engineering majors are required to have the following prerequisites: CLSE

301, 302, 305, 312 and 320. A different list of prerequisites may be required by the department of your major.] 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.

Mechanical Engineering

EGRM 101 Introduction to Engineering

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: mechanical engineering major or permission of the instructor. Introduction to the art and science of engineering through the basics of mechanical, electrical, chemical and biological systems. Topics covered include: definition and history of engineering; ethics and social responsibility; engineering design process; engineering solutions; estimations and approximations; dimensions; units and conversions; mathematics and computer solutions; life-long learning; Newton's laws; statics and dynamics; thermal sciences; energy; electricity and electronics; materials; manufacturing; economics; and introduction to the various engineering disciplines and mechanical engineering sub-disciplines.

EGRM 201 Dynamics and Kinematics

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 207, ENGR 102 and MATH 201, with a minimum grade of C in each, or permission of the instructor. 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 and MATH 201, with a minimum grade of C in both, or permission of the instructor. 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 201 with a minimum grade of C in both, or permission of the 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. Prerequisites: mechanical engineering major or permission of the instructor. 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 and EGRM 202, with a minimum grade of C in both, 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 EGRM 204, with a minimum grade of C in each, 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, with a minimum grade of C in each, or permission of instructor. Mathematical modeling of automatic control systems; transfer functions, stability theory; open-loop and closed-loop control; root locus plots; application to control system design.

EGRM 309 Material Science for Engineers

Semester course; 3 lecture hours. 3 credits. Prerequisites: PHYS 207, with a minimum grade of C, and CHEM 101, or permission of instructor. 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 201 and 202, with a minimum grade of C in both, or permission of the instructor. 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, with a minimum grade of C, or permission of the instructor. 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 321 Numerical Methods

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 301 and EGRM 215, with a

minimum grade of C in both, or permission of instructor. A study of numerical algorithms used in error analysis, computing roots of equations, solving linear algebraic equations, curve fitting, numerical differentiation and integration, numerical methods for ordinary differential equations and a brief introduction to numerical methods for partial differential equations. The course content is tailored for mechanical engineering applications.

EGRM 401 Mechanical Engineering Leadership

Semester course; 9 laboratory hours. 3 credits. Prerequisites: junior or senior standing in mechanical engineering and permission of the instructor. Senior/junior students will lead first-year students in the lab component of EGRM 101. Under the guidance of the seniors/juniors, first-year students are introduced to the practice and methodology of engineering in the context of mechanical engineering, are exposed to the typical machine shop environment, prototype machines and computer design, and learn to design, conduct and analyze, and report on simple experiments. Leadership skills will be honed as the senior/junior students guide, lead and supervise first-year students.

EGRM 410 Mechatronics

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: EGRE 206 and ENGR 315, with a minimum grade of C in both, or permission of 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: EGRM 201 and EGRM 215, with a minimum grade of C in both, or permission of instructor. 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, 321 and 420; and MATH 301 and 307, all with a minimum grade of C, 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 and 302, with a minimum grade of C in both, 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.

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. Prerequisites: EGRM 202 with a minimum grade of C, 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.

Nuclear Engineering

EGRN 210 Introduction to Nuclear Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisites: MATH 200, with a minimum grade of C, and mechanical engineering major, or permission of the instructor. An introductory course to familiarize students with the concepts, systems and application of nuclear energy. Topics include radioactivity, fission, fusion, reactor concepts, biological effects of radiation, nuclear propulsion and radioactive waste disposal. Designed to provide students with a broad perspective of nuclear engineering.

EGRN 310 Fundamentals of Nuclear Engineering

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRN 210 with a minimum grade of C, or permission of instructor. Emphasizes the fundamentals of nuclear engineering. Topics include the interaction of neutrons with matter, fission, neutron diffusion and moderation, reactor kinetics and dynamics, and radiation detection and measurement.

EGRN 320 Reactor Design and Systems

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRN 310 with a minimum grade of C, or permission of instructor. Engineering principles of nuclear reactors, emphasizing power reactors. Specific topics include power plant thermodynamics, reactor heat generation and removal (single-phase as well as two-phase coolant flow and heat transfer), and structural mechanics. The course also covers engineering considerations in reactor design.

EGRN 330 Radiation Safety and Shielding

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisite: EGRN 310 with a minimum grade of C, or permission of instructor. Fundamentals of radiation safety and shielding with focus on sources of radioactivity, interaction of radiation with matter, biological effects of radiation, dosimetry, attenuation of gamma rays and neutrons and effectiveness of shielding methods.

EGRN 331 Nuclear Instrumentation and Measurements

Semester course; 6 laboratory hours. 3 credits. Prerequisite: EGRN 330 with a minimum grade of C, or permission of instructor. Follow-on to EGRN 330 providing an in-depth study of radiation detection systems. Students will understand both the practical operation of detection systems as well as the physical processes involved in radiation detection, attenuation and shielding.

EGRN 410 Economics of Nuclear Power Production

Semester course; 3 lecture hours. 3 credits. Prerequisite: EGRN 310 with a minimum grade of C, or permission of instructor. Fundamentals of engineering economic analysis are applied to energy supply, demand, prices and production with specific emphasis on nuclear energy, the capital cost of nuclear power plants, the nuclear fuel cycle and associated energy technologies.

EGRN 420 Nuclear Power Plants

Semester course; 2 lecture and 3 laboratory hours. 3 credits. Prerequisites: ENGR 302, EGRM 303 and

EGRN 320, with a minimum grade of C in each, or permission of instructor. Design and analysis of nuclear power plants. Review of thermodynamic cycles and reactor types; analysis of the coupling of the reactor and the power plant; thermal and mechanical design of steam turbines; turbogenerators; auxiliary systems; design synthesis and heat balance calculations; operation of nuclear reactors.

EGRN 430 Processing of Nuclear Fuel

Semester course; 3 lecture hours. 3 credits.

Prerequisite: EGRN 310 or permission of instructor. A study of processing techniques involved in the nuclear fuel cycle. Topics include front-end stages of nuclear cycle (sources and exploration of nuclear fuel, mining, milling, fuel conversion, fuel enrichment, and fabrication), how processing influences in-core fuel performance and study of back-end stages (spent fuel re-processing, waste disposal and management).

EGRN 440 Nuclear Safety and Security

Semester course; 3 lecture hours. 3 credits.

Prerequisite: EGRN 320 with a minimum grade of C, or permission of the instructor. A study of technological risks and security issues related to nuclear power. Analysis of nuclear reactor system components and operational features that are relevant to safety; reactor containment; safety analysis of nuclear power plants using deterministic and probabilistic models; methods for human, environmental and ecological risk assessment; NRC regulations and procedures; safeguarding against natural (earthquake, tornadoes) and human (domestic and international) threats; classification and consequences of accidents including historical case studies.

EGRN 450 Nuclear Reactor Control and Dynamics

Semester course; 3 lecture hours. 3 credits.

Prerequisites: MATH 301, EGRM 201 and EGRN 420, with a minimum grade of C in each, or permission of instructor. An introduction to control theory and its applications for nuclear engineering students. Modeling and development of differential equations for nuclear systems. Analysis of nuclear reactor dynamics in the time and frequency domains. Application of feedback control techniques to reactor operation, stability and performance.

School of Medicine

Anatomy and Neurobiology

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.

Emergency Medical Sciences and Administration

EMSA 200 Introduction to EMS Systems

Semester course; 3 lecture hours. 3 credits. A survey of Emergency Medical Services systems in the U.S. Examines the 14 attributes of an EMS system to include the history of EMS, public and private organizations, delivery models, personnel, training and integration in the overall health care system.

EMSA 201-202 Emergency Medical Technician

Continuous courses; 4 lecture and 4 laboratory hours. 6-6 credits. Prerequisites: current CPR certification at the Health Care Provider level and permission of instructor. Students will learn to recognize the nature and seriousness of a patient's condition or extent of injuries, to assess requirements for emergency medical care, and to administer appropriate emergency medical care based on assessment findings of the patient's condition. Includes the lecture and laboratory elements needed to be eligible for certification as a Virginia and/or National Registry EMT-B as defined by the commonwealth of Virginia and the U.S. Department of Transportation's National Curriculum for EMTB.

EMSA 300 Foundations of Paramedic Practice

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Open only to EMSA majors. Prerequisites: EMSA 200, 201-202. Foundation course covering medical ethics, medical legal issues, wellness and injury prevention, life span development, and communication with patients. Also reviews the anatomy and physiology of the airway and respiratory system, the assessment and establishment of airway including basic and advanced airway management.

EMSA 310 Clinical Practicum I

Semester course; 2 laboratory hours. 2 credits. (90 hour minimum) Open to EMSA majors only. Corequisites: EMSA 310, 320, 400 and 405. First in a series of three application courses. Requires the student to apply the concepts being learned in the classroom to their patients under the supervision of a preceptor in hospital clinical areas. Covers professional behavior while acquiring and analyzing the patient's history, performing a comprehensive physical examination of different developmental and ethnic groups, performing appropriate medication administration and management of the patient's airway.

EMSA 320 Field Practicum I

Semester course; 2 laboratory hours. 2 credits. (90 hour minimum) Open to EMSA majors only. Corequisites: EMSA 310, 320, 400 and 405. First in a series of three application courses. Requires the student to apply the concepts being learned in the classroom to their patients under the supervision of a preceptor in a mobile intensive care unit. Covers professional behavior while acquiring and analyzing the patient's history, performing a comprehensive physical examination of different developmental and ethnic groups, performing appropriate medication administration and management of the patient's airway. Develops the ability to team lead and manage a basic incident.

EMSA 340 Fundamentals of Pathophysiology

Semester course; 2 lecture hours. 2 credits. Open to EMSA majors only. Foundation course for subsequent courses on specific disease processes. Covers cellular metabolism, disease processes, shock, Multi Organ Dysfunction Syndrome (MODS), the immune system and inflammatory response.

EMSA 360 Field Operations and Safety

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Open to EMSA majors only. The student will learn how to manage an incident and implement patient care in the pre-hospital environment. Students will integrate the principals of general incident management, management of mass casualty incidents and the safe rescue of patients from water, below grade, highway and hazardous situations.

EMSA 400 Pincipals of Pharmacology

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Open to EMSA majors only. Presents the classification of pharmaceuticals, pharmacokinetics and pharmacodynamics of medications. Integrated discussion of agents used for the peripheral and central nervous systems, and respiratory, cardiovascular, gastrointestinal and endocrine systems are addressed. Integrates these agents with the pathophysiology of each body system to form a plan for management and administration. The application of drug dosage calculations, medication preparation, sterile technique and standard precautions for the preparation and administration of medications.

EMSA 401 Pediatric Advanced Life Support (PALS)

Semester course; 1 lecture hour. 1 credit. Prerequisite: certification/licensure as a paramedic, R.N., M.D., D.O., dentist, physician's assistant, or enrolled as a paramedic, medical or nursing student. A comprehensive course that emphasizes early recognition of pre-arrest states and the prevention of cardiopulmonary arrest according to American Heart Association guidelines. Covers relevant priorities and techniques that enable effective intervention in pediatric resuscitation by physicians, nurses, paramedics and other health care workers who are licensed to do advanced practice intervention, including airway management, vascular access and intravenous fluid and medication administration.

EMSA 402 Advanced Cardiac Life Support (ACLS)

Semester course; 1 lecture hour. 1 credit. Prerequisite: certification/licensure as a paramedic, R.N., M.D., D.O., dentist, physician's assistant, or enrolled as a paramedic, medical or nursing student. A

comprehensive course that emphasizes early recognition of pre-arrest states and the prevention of cardiopulmonary arrest according to American Heart Association guidelines. Covers relevant priorities and techniques that enable effective intervention in adult cardiac resuscitation by physicians, nurses, paramedics and other health care workers who are licensed to do advanced practice intervention, including airway management, vascular access and intravenous fluid and medication administration.

EMSA 405 Advanced Patient Assessment

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Open to EMSA majors only. Covers the acquisition and analysis of patients' histories and advanced physical assessments. Encompasses normal and abnormal variations of different developmental and ethnic groups to perform a comprehensive history and physical to form a clinical diagnosis. Incorporates appropriate documentation and communication through written, verbal and direct patient contact.

EMSA 411 Clinical Practicum II

Semester course; 2 laboratory hours. 2 credits. (90 hour minimum) Open to EMSA majors only. Corequisites: EMSA 340, 360, 441 and 443. Requires the student to apply the concepts being learned in the classroom to their patients under the supervision of a preceptor in hospital clinical areas. Covers professional behavior while acquiring and analyzing the patient's history, performing a comprehensive physical examination of different developmental and ethnic groups, performing appropriate medication administration and management of the patient's condition.

EMSA 412 Clinical Practicum III

Semester course; 2 laboratory hours. 2 credits. (90 hour minimum) Open to EMSA majors only. Corequisites: EMSA 430, 440, 442 and 450. Requires the student to apply the concepts being learned in the classroom to their patients under the supervision of a preceptor in hospital clinical areas. Covers professional behavior while acquiring and analyzing the patient's history, performing a comprehensive physical examination of different developmental and ethnic groups, performing appropriate medication administration and management of the patient's condition.

EMSA 421 Field Practicum II

Semester course; 2 laboratory hours. 2 credits. (90 hour minimum) Open to EMSA majors only. Corequisites: EMSA 340, 360, 441 and 443. Focuses on the patient presenting with cardiopulmonary, obstetrical and gynecological pathologies, and pediatric patients, under the supervision of a preceptor in a mobile intensive care unit. Requires the synthesis of the assessment of the pathology to form a clinical diagnosis and treatment plan for each patient. Demonstrates the ability to assess, perform and coordinate advanced patient care under supervision.

EMSA 422 Field Practicum III

Semester course; 2 laboratory hours. 2 credits. (90-hour minimum) Open to EMSA majors only. Corequisites: EMSA 430, 440, 442 and 450. Focuses on the patient presenting with medical complaints or traumatic injury patients under the suoervision of a preceptor in a mobile intensive care unit. Requires the synthesis of the assessment of the pathology to form a clinical diagnosis and treatment for each patient.

Demonstrates the ability to assess, perform and coordinate advanced patient care under supervision.

EMSA 430 Trauma

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Open to EMSA majors only. A comprehensive course integrating the anatomy, pathophysiology, epidemiology, mortality and morbidity of trauma. Covers the structure of trauma care systems, kinematics and epidemiology of trauma. Integrates the assessment, clinical diagnosis, development and application of a management plan for patients with hemorrhage, shock, burns, head, thoracic, abdominal, musculoskeletal and spinal injuries.

EMSA 440 Medical Emergencies

Semester course; 4 lecture hours. 4 credits. Open to EMSA majors only. Integrates the assessment, clinical diagnosis, development and application of a management plan for patients with needs in the following systems: endocrine, gastrointestinal, urological, neurological and hematological. Will also encompass patients presenting with toxicological, environmental and behavioral/psychiatric emergencies.

EMSA 441 Basic Electrocardiography

Semester course; 3 lecture hours. 3 credits. Permission of instructor required. Reviews the relevant anatomy, physiology and electrophysiology of the cardiac system. The acquisition, interpretation and diagnosis of cardiac dysrhythmias using three-lead electrocardiograms will be covered.

EMSA 442 Advanced Electrocardiography

Semester course; 1 lecture hour. 1 credit. Prerequisites: EMSA 441 or equivalent and permission of instructor. Reviews the relevant anatomy, physiology and electrophysiology of the cardiac system. The acquisition, interpretation and diagnosis of cardiac dysrhythmias using 12-lead electrocardiograms will be covered.

EMSA 443 Cardiopulmonary Medicine

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Open to EMSA majors only. A comprehensive course integrating the anatomy, pathophysiology, epidemiology, mortality and morbidity of cardiopulmonary pathologies into the assessment, clinical diagnosis, development and application of a management plan.

EMSA 445 Assessment-based Management

Semester course; 4 lecture hours. 4 credits. Open to EMSA majors only. Students will synthesize and integrate the pathophysiological principles with assessment results to formulate a clinical impression, then develop and implement an appropriate treatment plan on a programmed patient or manikin. Patient complaints will be inclusive of the materials presented in previous courses for pediatric, adult and geriatric patient populations.

EMSA 450 Obstetrics, Gynecology and Pediatrics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Open to EMSA majors only. A comprehensive course integrating the anatomy, pathophysiology, epidemiology, mortality and morbidity of women and children into the assessment, clinical diagnosis, development and application of a management plan for women with gynecological emergencies, normal pregnancies and deliveries, and abnormal pregnancies and deliveries. Will also integrate the assessment,

diagnosis and management of the neonatal and pediatric patient for medical and traumatic injuries and illness.

EMSA 460 EMS Operations

Semester course; 3 lecture hours. 3 credits. Topics presented include medical incident command, national incident management systems, post-9/11 issues and needs, interoperation with other agencies, interoperability of communications between agencies, deployment methods, OSHA regulations at incident scenes and field supervision.

EMSA 461 EMS Supervision and Human Resources

Semester course; 3 lecture hours. 3 credits. The principles of personnel management and processes for effective EMS organizations are explored. Employment regulations, job analysis, performance assessment, recruitment and retention, training and development, employee and labor relations. Also presented are the factors and processes relating to paid and volunteer personnel, medical directors, shift schedules and general personnel issues.

EMSA 462 Management of EMS Organizations

Semester course; 3 lecture hours. 3 credits. Examines theory, processes and techniques needed to manage the EMS agency. Will address regulatory, management, finance, reimbursement, legislation, regulation and other contemporary issues affecting EMS organizations.

EMSA 463 Legal Issues in Health Care

Semester course; 3 lecture hours. 3 credits. Examines basic principles and practices of law affecting EMS operations of ground and air transport systems. Topics will include the legal aspects of patient care and treatment, medical services, and hospital-patient related functions and health care and public safety employment law.

EMSA 464 Research and Quality Improvement

Semester course; 3 lecture hours. 3 credits. A review of published research in EMS. Selected studies will be reviewed with respect to their methodology, statistics, measurement and design. Basic research principles, scientific theory and the ability to critically interpret peer-reviewed literature will be emphasized.

EMSA 465 EMS Education

Semester course; 3 lecture hours. 3 credits. The principles of adult education and training will be presented. Topics will include domains of learning, principles of adult learning, construction of lesson plans and use of current technology for presentation of content. Dealing with barriers to effective education and special considerations for non-traditional teaching and learning settings will be presented. Students will prepare and function as assistant instructors in other EMS education programs.

EMSA 466 Injury Prevention and Control

Semester course; 3 lecture hours. 3 credits. An introduction to public health principles and an overview of injury prevention principles for EMS personnel and the community. Review of epidemiological principles and patterns of injuries related to occupation, transportation, interpersonal violence and related incidents. Emphasis will be

placed on prevention of injuries. The success of fire prevention will be explored as an example. The role of public health and EMS the post-9/11 world will be examined.

EMSA 470 Summative Field Internship

Semester course; 1 laboratory hour. 1 credit. (45 hour minimum) May be repeated. Open to EMSA majors only. This is an evaluation of the student's ability to assess, perform and coordinate advanced patient care without the assistance of the preceptor.

EMSA 471 Summative Senior Seminar

Semester course; 3 credits. Open to EMSA majors only. The synthesis, integration and evaluation of the student's entire paramedic curriculum experience. Provides students with the opportunity to review and present their ability to assess, perform and coordinate advanced patient care. Prepares the student for transition into the profession.

EMSA 472 Professional Issues in EMS

Semester course; 3 credits. Open to EMSA majors only. Provides an overview of the current and potential issues facing EMS. Discussions and assignments are designed to enable the student to investigate and report on issues affecting delivery of health care, patient and provider safety, cost of care, research, legislation and issues affecting staffing and personnel.

EMSA 474 Critical Care Transportation Provider I

Semester course; 3 credits. Designed for the experienced paramedic or registered nurse. Objective is to offer formal training in the concepts and essential skills required for the treatment of critical care patients by ground or aeromedical mode. Topics covered include: flight physiology, aeromedical considerations, medical legal aspects, X-ray interpretation, lab data interpretation, hemodynamic monitoring, advanced airway management and mechanical ventilation, and a review of pathologies, assessment and management of medial and traumatically injured patients. Students must be paramedics, R.N.s or advanced providers and should have ALS certification for more than two years with current certification in ACLS, trauma life support, PALS and BLS health care provider.

EMSA 475 Critical Care Transportation Provider II

Semester course; 3 credits. A continuation of the concepts and ideas covered in EMSA 474.

EMSA 476 Critical Care Transport Provider Practicum

Semester course; variable hours. 1-3 credits. Prerequisite: Completion of EMSA 474. May be taken concurrently with EMSA 475. Focuses on the patient with complicated multisystem health problems in the critical care environment. Provides an opportunity for observation and integration of classroom concepts in a critical care area.

EMSA 491 Special Topics

Semester course; variable hours. 1-4 credits. A study of selected topics in EMSA. See the Schedule of Classes for specific topics to be offered each semester.

EMSA 492 Independent Study

Semester course; variable hours. 1-4 credits. An independent study of selected topics in EMSA.

Microbiology and Immunology

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.

Pathology

PATH 445/FRSC 445 Forensic Toxicology

Semester course; 3 lecture hours. 3 credits. Prerequisites: CHEM 301-302 and CHEZ 301. 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.

Pharmacology and Toxicology

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, drug actions and uses, and adverse effects to provide the rationale for the effective and safe use of drugs in dental hygiene.

Physiology

PHIS 206 Human Physiology

Semester course; 3 lecture hours. 3 credits. Prerequisites: BIOL 101 and BIOZ 101 or equivalents with minimum grades of C. Functioning of the human body with emphasis on experimental procedures.

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.

Physiology Lab

PHIZ 206 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 for credit toward the B.S. in Biology.

School of Nursing

Nursing

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 (3 credits lecture). Prerequisite: admission to the School of Nursing. 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. This course introduces the concept of evidence-based practice as a component of professional nursing practice. 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 participants in the learning process.

NURS 261 Health Assessment for Nursing Practice

Semester course; 2 lecture and 45 clinical hours. 3 credits (2 credits lecture and 1 credit clinical laboratory). Prerequisite: admission to the nursing program. 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 frameworks to be used with a diversity of patient populations in acute care, ambulatory and community settings.

NURS 301 Information Literacy in Health Care

Semester course; 3 lecture hours. 3 credits. Uses an information literacy framework to provide opportunities to enhance existing skills necessary for the effective use of information technology in the health professions. Emphasizes the efficient acquisition of information and critique of health-related information sources. Incorporates current and emerging information formats. Enhances oral and written presentation skills for effective communication in the health care setting. Students will analyze privacy concerns related to the use of technology in conjunction with patient data.

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 307 Foundations of Professional Nursing I

Semester course; 3 lecture hours. 3 credits. Pre- or corequisite: NURS 301. Focuses on research in the context of nursing's development as a profession and discipline. Selected aspects of knowledge development and nursing science are explored. The research process and critique of research is emphasized.

NURS 308 Foundations of Professional Nursing II

Semester course; 3 lecture hours. 3 credits. Prerequisites: NURS 301 and 307, UNIV 111, 112 and UNIV 200 or their equivalents. Expands abilities to synthesize a body of knowledge and articulate conclusions in the evaluation of clinical practice. Using the scope and standards of nursing practice and standards of professional performance, students will validate prior nursing education and evaluate current practice in a clinical setting.

NURS 325 Nursing of Adults I

Semester course; 3 lecture and 90 clinical hours. 6 credits (3 credits lecture and 3 credits clinical laboratory). Prerequisite: completion of 200-level required nursing courses: NURS 201, 202 and 261. Focuses on patients with acute and chronic physical illnesses that have relatively stable trajectories. Examines principles of rehabilitation and emphasizes concepts relevant to care of the elderly. Provides theoretical and evidence-based foundations for nursing management and related 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 90 clinical hours. 6 credits (3 credits lecture and 3 credits clinical laboratory). Prerequisite: completion of 200-level nursing course: NURS 201, 201 and 261. 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 90 clinical hours. 6 credits (3 credits lecture and 3 credits clinical laboratory). Prerequisite: completion of 200-level required nursing courses: NURS 201, 202 and 261. 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 evidence 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 60 clinical hours. 5 credits (3 credits lecture and 2 credits clinical laboratory). Prerequisite: completion of 200-level required nursing courses: NURS 201, 202 and 261. Examines theoretical, empirical and practical knowledge applied to the prevention and treatment of common psychiatric and mental health conditions encountered in basic nursing practice. Provides students with an integrative perspective from which to incorporate various frameworks of knowledge into practice. Provides didactic knowledge and clinical learning experiences to facilitate students' understanding of actual and potential psychiatric illnesses and mental health problems in individuals, families and communities.

NURS 365 Nursing Science I

Semester course; 3 lecture hours. 3 credits (3 credits lecture). Prerequisites: anatomy and physiology: BIOL 205 and PHIS 206. 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 (3 lecture credits). Prerequisites: anatomy, physiology and microbiology: BIOL 205, PHIS 206, BIOL 209 and BIOZ 209 Integrates the foundations of nursing diagnoses and interventions derived from pathophysiology, biochemistry and pharmacology for selected human systems.

NURS 367 Applied Principles of Health and Disease

Semester course; 3 lecture hours. 3 credits. Prerequisite: anatomy and physiology. Pre- or corequisite: NURS 301. Expands on a foundation of basic knowledge of normal functioning and common pathophysiologic conditions. Based on common principles of health and disease: homeostasis and disruptions of homeostasis, growth cycles, communication of information, and repair and regeneration. Develops a foundation of current knowledge in the area of physiology/pathophysiology for practice.

NURS 371 Principles of Research in Nursing Practice

Semester course; 2 lecture hours. 2 credits.
Prerequisite: STAT 210. This overview course will examine the relevance of nursing research to practice, review important research concepts and introduce beginning skills required to enact evidence-based practice.

NURS 396 Nursing Internship

Semester course; 120 clinical hours per credit. Variable credit. May be repeated. Prerequisite: completion of junior-level clinical course or equivalent. 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 407 Using Evidence in Clinical Practice

Semester course; 2 lecture hours. 2 credits.
Prerequisites: NURS 301 and 307. Pre- or corequisite: NURS 308. Focuses on skills required to enact evidence-based practice (EBP) over one's professional life, including synthesis of appropriate evidence for use in practice. Formally introduces models for EPB, reviews change theories useful to initiate EBP and identifies individual and organizational resources needed for EBP.

NURS 410 Applied Ethics in Clinical Practice

Semester course; 3 lecture hours. 3 credits (3 credits lecture). Prerequisite: NURS 301. Identifies and examines ethical and moral dilemmas encountered in professional nursing practice. Examines personal value systems related to nursing ethics. Discusses relationships between professional nursing and resolution of moral dilemmas. Applies ethical principles to selected dilemmas in clinical nursing practice including patients' rights, informed consent, confidentiality, quality of life, and death and dying.

NURS 415 Community Health Nursing

Semester course; 3 lecture and 2 laboratory hours (30 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 416 Community Health Nursing

Semester course; 3 lecture and 60 clinical hours. 5 credits (3 credits lecture and 2 credits clinical laboratory). Prerequisite: completion of all 300-level nursing courses: NURS 325, 335, 345, 355, 365, 366 and 371. Develops knowledge for care of communities and populations based on the core functions of public health. Provides theory essential to the assessment, planning, implementation and evaluation of communities. Emphasizes the study and application of community health nursing roles for health promotion and disease prevention. Concentrates on an epidemiological approach to population-focused nursing. Evaluates the effects of contemporary issues and health policy on the public's health.

NURS 425 Nursing of Adults II

Semester course; 3 lecture and 90 clinical hours. 6 credits (3 credits lecture and 3 credits clinical laboratory). Prerequisite: completion of all 300-level nursing courses: NURS 325, 335, 345, 355, 365, 366 and 371. Focuses on the patient in acute phases of physical illnesses and with complicated multisystem health problems. Provides theoretical and evidence-based foundations for nursing management and related therapeutic regimens. Focuses on the development and application of clinical decision-making and an evidence-based model in the provision of care to acutely ill adults in a variety of settings.

NURS 461 Advanced Clinical Assessment

Semester course; 3 lecture hours. 3 credits.
Prerequisite: NURS 301. Pre- or corequisite: NURS 367. Expands existing physical and psychosocial assessment skills to address selected complex patient problems. Focuses on acquisition of clinical evidence for assessment of rapidly changing situations, patient risk and situations related to patient safety. Critical analysis of patient data, prioritization of patient needs and effective communication are emphasized.

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.
Prerequisite: completion of at least three 300-level clinical courses or equivalent. 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. Pre- or corequisite: NURS 477. 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 488 Practicum in Clinical and Management Decision-making

Semester course; 3 clinical hours (45 clinical hours per credit). 3 credits. Prerequisites: NURS 308 and 477. Pre- or corequisite: NURS 407. Designed as the culminating or capstone experience for the R.N.-B.S. completion program, this preceptor-supervised practicum provides opportunities to evaluate outcomes of baccalaureate education in clinical practice, apply management principles and change theories to clinical and management decision-making and the quality improvement process in the health care setting.

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 135 clinical hours. Honors section only: 2 lecture, 1 seminar and 135 clinical hours. 5 credits (2 credits lecture and 3 credits clinical laboratory). Honors section: 6 credits (2 credits lecture, 1 credit seminar [2 contact hours] and 3 credits clinical laboratory). Prerequisite: completion of all 300-level nursing courses: NURS 325, 335, 345, 355, 365, 366 and 371; and NURS 425. Honors section prerequisite: NURS 512. Designed as a culminating experience that meets the criteria of the third tier of the VCU Core Curriculum, this course prepares students for transition into professional practice. Requires higher-level cognitive processes that include synthesis of knowledge, evidence and skills from all previous course work and clinical experiences. Requires consistent enactment of professional practice demonstrating competency in standards of care, application of evidence, professionalism and safe and legal practice. Course is taken during the last semester of the program.

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.

School of Pharmacy

Medicinal Chemistry

MEDC 310/CHEM 310 Medicinal Chemistry and Drug Design

Semester course; 3 lecture hours. 3 credits.

Prerequisite: CHEM 302. 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.

Pharmacy

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.

School of Social Work

Social Work

SLWK 201 Introduction to Social Work

Semester course; 3 lecture hours. 3 credits. Systematic overview of the social work profession. 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. Prerequisites: 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 499 Senior Seminar

Semester course. 1 credit. Corequisites: SLWK 442 and 495. Typically to be taken in the last semester of the student's senior year. This course serves as an academic culmination of the undergraduate social work program. The student will compile a portfolio of B.S.W. program academic materials, complete a professional self-assessment and resume and participate in the development of a comprehensive

generalist intervention plan with regard to a specified social problem.

Academic Affairs

Honors College

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 200 Rhetoric

Semester course; 3 lecture hours. 3 credits. In-depth study of principles of rhetoric and argumentation in both written and oral formats. Emphasis is on research-based expository writing and debate, with skills development in technological applications for information retrieval. Students may not receive credit for both HONR 200 and UNIV 200.

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.

Division of Student Affairs and Enrollment Services

Cooperative Education

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 251/LFSC 251 Phage Discovery I

Semester course; 4 laboratory hours. 2 credits. Corequisite: BIOL 151 or 152. An exploratory laboratory where students will purify phage from soil, visualize phage using electron microscopy and isolate genomic material for nucleic acid sequencing. Registration by override only.

BNFO 252/LFSC 252 Phage Discovery II

Semester course; 4 laboratory hours. 2 credits. Corequisite: BIOL 151 or 152. An exploratory laboratory where students will learn about the genomes of viruses infecting bacteria. Students will be given the genome sequence of a novel virus, which will be the basis for a series of computer-based analyses to understand the biology of the virus and to compare it with other viruses that infect the same host. Registration by override only.

BNFO 292 Independent Study

Semester course; variable hours. 1-2 credits. May be repeated for a maximum total of 6 credits. Prerequisite: permission of instructor. 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. 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 380/MATH 380/BIOL 380 Introduction to Mathematical Biology

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisites: MATH 200 and BIOL 151, or permission of instructor. An introduction to mathematical biology. Various mathematical modeling tools will be covered and implemented in a range of biological areas. Additionally, the collaborative research process will be presented and discussed.

BNFO 420 Applications in Bioinformatics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: CMSC 245 or CMSC 255, and BNFO 301/BIOL 351. Capstone course. Students will integrate biological, computational and quantitative skills to complete bioinformatics projects in a professional team-problem-solving context. Course includes explicit instruction in the conduct of research as well as a review of applicable strategies, methods and technologies. Written and oral presentation is emphasized, with systematic feedback and practice opportunities provided.

Effective fall 2011:

BNFO 420 Applications in Bioinformatics

Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: CMSC 245 or 255 and BNFO 301. Capstone course. Students will integrate biological, computational and quantitative skills to complete bioinformatics projects in a professional team-problem-solving context. Course includes explicit instruction in the conduct of research as well

as a review of applicable strategies, methods and technologies. Written and oral presentation is emphasized, with systematic feedback and practice opportunities provided.

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. Prerequisite: BIOL 218. 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, junior or senior status. 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.

Environmental Studies

ENVS 103/BIOL 103 Environmental Science

Semester course; 3 lecture and 2 laboratory hours. 4 credits. Basic scientific principles of environmental processes with correlated laboratory exercises. Draws together aspects of biology, chemistry, geology, physics and sociology. Among the topics covered are ecology, evolution, natural resources, air and water resources, energy and recycling, population biology, and sustainable global societies. Not applicable as a prerequisite for any biology course at the 200 level or above, nor for credit toward the major in biology.

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 201 Earth System Science

Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to the processes of and linkages among the major systems that drive planet Earth. The biosphere, geosphere, hydrosphere, atmosphere and sociosphere are presented as dynamic and interdependent systems. Labs/discussion sections will include both computer modeling of integrated systems and lab activities/field trip(s) at the Rice Center for Environmental Life Sciences.

ENVS 301 Introduction to Meteorology

Semester course; 3 lecture hours. 3 credits. An introductory course designed to provide the student with an overview of the structures and processes that cause weather. These include atmospheric circulations and the weather patterns that we observe. Emphasis will be placed upon the tracking and display of weather phenomena, as well as their forecast movement and impact.

ENVS 310 Introduction to Oceanography

Semester course; 3 lecture hours. 3 credits. An introductory course designed to provide the student with an overview of the structures and processes of the world's oceans. These include the systems that impact the oceans: the hydrosphere, the atmosphere, the geosphere, the biosphere and the sociosphere. Emphasis will be placed upon hands-on techniques for understanding these systems, including online simulations and in-class activities.

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/INTL 314 Man and Environment

Semester course. 3 lecture hours. 3 credits. 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/BIO 332 Environmental Pollution
Semester course; 3 lecture hours. 3 credits.
Prerequisites: Eight credits in biology. 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.
Prerequisite: GEOG 204 or permission of instructor.
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. 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: PHYS 201. 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.
Prerequisites: BIOL 151, BIOL 152, and CHEM 102.
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. Prerequisite: Junior or senior standing, and permission of instructor.

ENVS 493 Environmental Studies Internship

Semester course; variable hours. 1-3 credits per semester. Maximum total of 6 credits. Prerequisite: junior or senior standing, and permission of instructor. Graded as pass/fail.

Environmental Studies Lab

**ENVZ 103/BIOZ 103 Environmental Science
Laboratory**

Semester course; 2 hours. 1 credit. Pre- or corequisite: ENVS/BIO 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/BIO 103.

**ENVZ 105/GEOZ 105 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 335/GEOZ 335 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 401/GEOZ 401 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 251/BNFO 251 Phage Discovery I

Semester course; 4 laboratory hours. 2 credits.
Corequisite: BIOL 151 or 152. An exploratory laboratory where students will purify phage from soil, visualize phage using electron microscopy and isolate genomic material for nucleic acid sequencing. Registration by override only.

LFSC 252/BNFO 252 Phage Discovery II

Semester course; 4 laboratory hours. 2 credits.
Corequisite: BIOL 151 or 152. An exploratory laboratory where students will learn about the genomes of viruses infecting bacteria. Students will be given the genome sequence of a novel virus, which will be the basis for a series of computer-based analyses to understand the biology of the virus and to compare it with other viruses that infect the same host. Registration by override only.

LFSC 301 Integrative Life Sciences Research

Semester course; 2 lecture and 1 recitation hours. 3 credits. Pre- or corequisite: UNIV 200. Students will leave this course knowing enough about science and the process of science to feel confident in critically evaluating scientific information and/or embarking on their own process of discovery with a faculty mentor. They will gain an appreciation of the interdisciplinary and complex nature of life sciences and will hone their critical thinking about how science interacts with and informs society.

**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.
Prerequisite: sophomore standing and UNIV 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.

da Vinci Center for Innovation

Innovation in Product Design and Development

INNO 200 Seminar in Product Innovation

Semester course; 1 lecture hour. 1 credit. A seminar series focused on the discussion of pertinent topics related to product innovation and "technopreneurship." Students will be exposed to numerous topics through guest speakers supplemented by readings and class discussion. Topics include conceptualization, patents, capitalization, venture formation, commercialization, market assessment, project management and product life cycle management.

INNO 460 Product Innovation: da Vinci Project

Semester course; 3 credits. Prerequisite: permission of instructor. Students from the School of the Arts, School of Engineering and School of Business work together on a semester-long product innovation project with a corporate sponsor under faculty supervision. Topics and activities may include project management, team building, concept generation and testing, market analysis, visualization, and prototyping.