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Message from the President



It is my pleasure to welcome you to Virginia Commonwealth University.

With more than \$96 million in annual research funding, VCU has been ranked by the Carnegie Foundation as one of the nation's top research universities and is one of only three such universities in the Commonwealth. More than 22,700 undergraduate, graduate, professional, and doctoral students pursue 157 degree programs, including post-graduate certificate programs, at the University's Academic and Medical College of Virginia Campuses in downtown Richmond. Forty-four of the University's programs are unique in Virginia, and a number of its professional and graduate programs have been nationally ranked for excellence by *U.S. News & World Report*.

VCU is in progress with Phase II of *A Strategic Plan for the Future of Virginia Commonwealth University*, the goal of which is to enhance the University's stature as one of the nation's leading research universities. Strategic projects have included establishing a new School of Engineering, which has been an important factor in attracting the microelectronics industry to the state. The University also is developing the Virginia Biotechnology Research Park in collaboration with business, civic, and government leaders. When it is fully developed, the Research Park will cover 34 acres in downtown Richmond and employ an estimated 3,000 professional and technical personnel.

VCU's MCV Campus supports MCV Hospitals, an authority of the Commonwealth and the academic health center's major clinical teaching and research facility. In 1998, MCV Hospitals was ranked in the annual study, *100 Top Hospitals: Benchmarks for Success*, which identifies U.S. hospitals that deliver the highest quality and most cost-efficient health care.

VCU is an extraordinary institution, and we are proud that you are part of the excitement here. Best wishes with your graduate program of study.

Sincerely,



Eugene P. Trani
President



Graduate Studies at Virginia Commonwealth University

William L. Dewey, BS, MS, PhD

Vice President for Research and Graduate Studies

Jack L. Haar, BS, MS, PhD

Dean, School of Graduate Studies

Sherry T. Sandkam, BA, MBA, PhD

Associate Dean, School of Graduate Studies

The University

Virginia Commonwealth University is a state-supported institution with an enrollment of more than 20,000 undergraduate, graduate, and health professions students studying on its two campuses in Richmond, Virginia. The Medical College of Virginia Campus is located near the financial, governmental, and shopping areas of downtown Richmond; the Academic Campus is two miles west in Richmond's historic Fan District, a residential area which dates from the nineteenth century.

The University takes its founding date as 1838, the year in which the Medical College of Virginia was created as the medical department of Hampden-Sydney College. MCV became an independent institution in 1854 and state affiliated in 1860.

VCU's Academic Campus began in 1917 as the Richmond School of Social Work and Public Health. In 1925, it became the Richmond Division of the College of William and Mary; and in 1939 its name was changed to the Richmond Professional Institute of the College of William and Mary, from which it separated in 1962 to become an independent state institution.

In 1968, the two schools merged to form Virginia Commonwealth University: undergraduate, graduate, and professional programs of Richmond Professional Institute joined with one of the largest and most comprehensive medical centers on the East Coast to create a major state university.

VCU enrolls a diverse student body and has one of the largest evening colleges in the United States. The University's level of funded research places it among the top 81 colleges and universities in the country in attracting research grants. Its faculty, representing the finest American and international graduate institutions, enhances VCU's position among the important institutions of higher learning in the United States via their work in the classroom, the laboratory, the studio, the

hospital, and as published in scholarly journals. VCU maintains active communications with its growing cadre of alumni and enjoys a cooperative and stimulating relationship with the city of Richmond which encompasses the arts, the business community, the architectural community, and local government. Today, VCU operates a major teaching hospital and is composed of one college, 10 schools, and the School of Graduate Studies. These academic units offer 52 undergraduate, 14 post-baccalaureate certificate, 59 master's, 5 post-master's certificates, and 22 PhD programs. The University also offers first professional degrees in medicine, dentistry, and pharmacy.

VCU's location in historic Richmond affords its students the benefits of living in one of the South's most cosmopolitan cities. Located in central Virginia, Richmond is a two-hour drive from the Atlantic seashore to the east, Appalachian Mountain recreational sites to the west, and Washington, D.C. to the north. A wide range of cultural, educational, and recreational facilities and activities is available in the Richmond area, including a full performance schedule at VCU's own Performing Arts Center. VCU's proximity to downtown Richmond, which is Virginia's capital and a major East Coast financial and manufacturing center, provides students with opportunities for internships, part-time employment, and student housing in a variety of settings.

Mission of Virginia Commonwealth University

Virginia Commonwealth University is a public, urban, research university, supported by the Commonwealth of Virginia to serve the people of the commonwealth and the nation. The University provides a fertile and stimulating environment for learning, teaching, research, creative expression, and public service. Essential to the life of the University is a faculty

actively engaged in scholarship and creative exploration activities that increase knowledge and understanding of the world, and inspire and enrich teaching.

The University is dedicated to educating full and part-time students of all ages and diverse backgrounds in an atmosphere of free inquiry and scholarship, so they may realize their full potential as informed, productive citizens with a lifelong commitment to learning and service. The University serves the local, state, national, and international communities through its scholarly activities, its diverse educational programs, and its public service activities. As an institution of higher learning in a metropolitan center that is also the capital of the commonwealth, the University enjoys unique resources that enrich its programs and offer special opportunities for contributing its intellectual and creative expertise in the development of innovative approaches to meet the changing needs of our society.

The goals of Virginia Commonwealth University in carrying out its mission are to:

- provide undergraduate education that includes a broad and rigorous foundation in the arts, sciences, and humanities, and explores the ideas and values of humankind;
- offer nationally and internationally recognized professional and graduate programs leading to doctoral, master's, and other terminal and advanced degrees in the professions, the sciences, the humanities, and the arts;
- foster a scholarly climate that inspires creativity, a free and open exchange of ideas, critical thinking, intellectual curiosity, freedom of expression, and intellectual integrity;
- expand the boundaries of knowledge and understanding through research, scholarship, and creative expression in the sciences, arts, humanities, and the professional disciplines;
- value and promote racial and cultural diversity in its student body, faculty, administration, and staff to enhance and enrich the University;
- develop and sustain a faculty of the highest quality by providing an environment conducive to their achieving and maintaining national and international stature and by continuing to attract both recognized scholars and outstanding individuals with a high potential for scholarly achievement and excellence in teaching;
- provide an optimal environment for educating and training health care professionals, for conducting research to improve health care and delivery, and for meeting the needs of patients and the community in a comprehensive health care setting;
- use the urban environment as a laboratory for studying and developing new approaches to problems pertaining to the public and private sectors;
- support, through its commitment to public exhibitions, performances, and other cultural activities, the imaginative power of the liberal, visual, and performing arts to express the problems and aspirations of humanity and to enrich the lives of individuals;
- develop innovative programs for continuing education that establish permanent intellectual connec-

tions between the University and its constituents, enhance professional competence, and promote dialogue on public issues;

- offer diverse opportunities for individuals to benefit from higher education through a variety of avenues to include flexible scheduling for part-time undergraduate and graduate students, open admission for nondegree-seeking students with appropriate preparation, advanced degree programs for working professionals, selected programs in diverse locales, admission for graduates with appropriate associate degrees of arts or sciences, and support programs for specially admitted students;
- promote interdisciplinary studies within the University to bring new perspectives to bear on complex problems; and
- mobilize its creative energies and its expertise to meet the needs of society and individuals in its unique role as Virginia's major urban university.

Accreditation

Virginia Commonwealth University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools to award associate, baccalaureate, master's, doctoral, and first professional degrees. Additionally, individual programs may be accredited by discipline-specific professional accrediting organizations.

School of Graduate Studies

VCU is composed of the following units:

School of Graduate Studies
 College of Humanities and Sciences
 (including the School of Mass Communications)
 School of Allied Health Professions
 School of the Arts
 School of Business
 School of Dentistry
 School of Education
 School of Engineering
 School of Medicine
 School of Nursing
 School of Pharmacy
 School of Social Work

The Center for Environmental Studies and the Center for Public Policy also house graduate academic programs. Graduate programs are administered by the individual departments, schools, and centers with assistance from the School of Graduate Studies. Major coordination of the various degree programs is performed by the University Graduate Council and the Graduate Dean's Advisory Committee which are chaired by the dean of the School of Graduate Studies. The University Graduate Council is comprised of one elected faculty member from each school. The Graduate Dean's Advisory Council includes directors of graduate study from each school.

Graduate Programs

The following graduate degree programs are offered at the University. Refer to the Graduate Curriculum Requirements chart in the reference section of this *Bulletin* for a complete listing of curricula, specializations, and tracks, as well as application deadline dates and special admission requirements. Applicants are encouraged to contact the school/department sponsoring the intended program of study at the telephone numbers listed in the curriculum chart. Other important phone numbers are provided in the directory on the inside back cover of this *Bulletin*.

Center for Public Policy

Doctor of Philosophy
Public Policy and Administration

Center for Environmental Sciences

Master of Interdisciplinary Studies

College of Humanities and Sciences

Doctor of Philosophy

Chemistry
Chemical Physics
Psychology
Clinical
Counseling
General

Master of Arts

English
Literature
Writing and Rhetoric
History

Master of Fine Arts

Creative Writing
Fiction
Poetry
Fiction and Poetry

Master of Public Administration

Evaluation and Public Policy Analysis
Executive Management
Human Resource Management
Local Government Management
Non-Profit Organization Management
Public Financial Management

Master of Science

Biology
Chemistry
Computer Science
Criminal Justice
Forensic Science
Justice
Mass Communications
Advertising
Account Management
Art Direction
Copywriting
Mass Communications
Mathematical Sciences
Applied Mathematics
Mathematics
Operations Research
Statistics

Physics
Instrumentation
Physics of Materials
Physics Research
Sociology

Master of Urban and Regional Planning

Economic Development
Environmental Planning
Housing and Community Planning
Physical Land Use Planning
Planning Management
Urban Revitalization

Post-Baccalaureate Certificate Programs

Applied Social Research
Criminal Justice
Computer Science (undergraduate certificate)
Planning Information Systems
Public Management
Statistics (undergraduate certificate)
Urban Revitalization

School of Allied Health Professions

Doctor of Philosophy

Health Related Sciences
Health Services Organization and Research
Physical Therapy/Anatomy
Physical Therapy/Physiology

Master of Health Administration

Master of Science

Clinical Laboratory Sciences
Advanced Masters
Categorical Masters
Gerontology
Occupational Therapy (Post-Professional Program)
Physical Therapy – Entry Level
Physical Therapy – Advanced
Musculoskeletal
Neurologic
Rehabilitation Counseling
Alcohol and Drug Education/Rehabilitation Program
Correctional Rehabilitation
Individual and Group Counseling
Mental Health Rehabilitation
Services to the Severely Physically Handicapped
Vocational Evaluation and Work Adjustment

Master of Science in Health Administration

(Executive Master's Program)

Master of Science in Nurse Anesthesia

Master of Science in Occupational Therapy (Professional)

Post-Baccalaureate Graduate Certificate Programs

Aging Studies
Patient Counseling

Post-Master's Graduate Certificate Programs

Professional Counseling
Extern Program
Residency Program
Summer Intern Program

School of the Arts

Doctor of Philosophy

Art History

Master of Art Education

Master of Arts

Art History
 Architectural History
 Historical Studies
 Museum Studies

Master of Fine Arts

Design
 Interior Environments
 Film
 Photography
 Visual Communications
 Fine Arts
 Ceramics
 Fibers
 Furniture Design
 Glassworking
 Jewelry/Metalworking
 Painting
 Printmaking
 Sculpture
 Theatre
 Acting
 Costume Design
 Directing
 Stage Design/Technical Theatre
 Theatre Education

Master of Music

Composition
 Music Education
 Performance, including conducting

School of Business**Doctor of Philosophy**

Business
 Accounting
 Information Systems
 Management

Master of Arts

Economics
 General Economics
 Financial Economics

Master of Business Administration

MBA Generalist
 MBA with Specialization
 Accounting
 Decision Sciences
 Economics
 Finance
 Human Resources Management and Industrial Relations
 Information Systems
 Marketing
 Real Estate and Urban Land Development
 Risk Management and Insurance
 Fast Track Executive MBA

Master of Science

Business
 Decision Sciences
 Finance
 Human Resources Management and Industrial Relations
 Information Systems
 Marketing
 Real Estate Valuation

Master of Taxation

Academic Track
 Professional Track

Post-Baccalaureate Undergraduate Certificate Programs

(apply to the School of Business directly)
 Accounting

Human Resource Management
 Information Systems
 Marketing
 Real Estate and Urban Land Development

School of Education**Doctor of Philosophy**

Urban Services
 Adult Education and Human Resource Development
 Educational Leadership
 Administrative Leadership
 Instructional Leadership
 Research and Evaluation
 Urban Services Leadership

Master of Education

Administration and Supervision
 Educational Administration (Principalship)
 Education Administration (Optional Track)
 Supervision of Instruction
 Dual Major – Administration and Supervision
 Adult Education and Human Resource Development
 Counselor Education
 Guidance and Counseling
 Dual Certification in Counselor Education and Visiting Teacher
 Curriculum and Instruction
 Early Education
 Gifted and Talented
 Instructional Technology
 Library/Media
 Middle Education
 Secondary Education
 English
 Foreign Languages
 French
 German
 Spanish
 Mathematics
 Sciences
 Biology
 Chemistry
 Interdisciplinary Science
 Physics
 Reading
 Special Education
 Early Childhood Special Education
 Emotional Disturbance
 Learning Disabilities
 Mental Retardation
 Severe Disabilities

Master of Science

Physical Education
 Recreation, Parks and Tourism

Master of Teaching

Early Education
 Middle Education
 Secondary Education
 English
 Foreign Languages
 French
 German
 Spanish
 History
 History and Social Studies
 Mathematics
 Sciences
 Biology
 Chemistry
 Interdisciplinary Science
 Physics
 Special Education
 Dual Endorsement in Emotional Disturbance and Mental Retardation

Post-Baccalaureate Graduate Certificates

Human Resource Development
Teaching
 Early Education*
 Middle Education*
 Secondary Education
 English*
 Foreign Languages
 French*
 German
 Spanish
 History/Social Studies
 Mathematics
 Sciences
 Biology
 Chemistry
 Interdisciplinary Science
 Physics

Post-Master's Certificates

Principalship
Reading Specialist

School of Engineering**Doctor of Philosophy**

Biomedical Engineering
MD/PhD Cooperative Program

Master of Science

Biomedical Engineering

School of Medicine**Doctor of Philosophy**

Anatomy
 Anatomy/Physical Therapy
 Biochemistry and Molecular Biophysics
 Biostatistics
 Human Genetics
 Microbiology and Immunology
 Pathology
 Pharmacology and Toxicology
 Physiology
 Physiology/Physical Therapy

Master of Science

Anatomy
Biochemistry and Molecular Biophysics
Biostatistics
Human Genetics
Microbiology and Immunology
Pharmacology and Toxicology
Physiology

Combined Doctoral Degree Programs

Anatomy/Physical Therapy
Physiology/Physical Therapy
MD/PhD

Combined Professional Programs

MD/PhD
MD/MPH

Master of Public Health**Post-Baccalaureate Graduate Certificates**

Pre-Medical Basic Health Sciences
 Anatomy
 Biochemistry and Molecular Biophysics
 Human Genetics
 Microbiology and Immunology
 Pharmacology and Toxicology
 Physiology

School of Nursing**Doctor of Philosophy**

Nursing
 Biology of Health and Illness
 Human Health and Illness
 Nursing Systems

Master of Science

Accelerated BS-MS Program
Nursing
 Adult Health Nursing
 Acute Care
 Immunocompetence
 Primary Care
 Child Health Nursing
 Family Health Nursing
 Nursing Administration
 Clinical Manager
 Nurse Executive
 Psychiatric-Mental Health Nursing
 Women's Health Nursing

Post-Master's Nurse Practitioner Certificate

Nursing
 Adult Health Nursing
 Acute Care
 Immunocompetence
 Primary Care
 Child Health Nursing
 Family Health Nursing
 Nursing Administration
 Psychiatric and Mental Health Nursing
 Women's Health Nursing

School of Pharmacy**Doctoral of Philosophy and Master of Science Programs**

Pharmaceutical Sciences
 Medicinal Chemistry
 Pharmaceutics
 Pharmacy Administration

Combined Professional Program

PharmD/PhD

School of Social Work**Doctor of Philosophy**

Social Work

Master of Social Work

Clinical Social Work Practice
Social Work Planning and Administrative Practice

Combined Certificate Programs

MSW/Certificate as School Social Worker in State of Virginia
 (In collaboration with VCU School of Education)
MSW/Certificate in Aging Studies
 (In collaboration with VCU School of Allied Health Professions,
 Department of Gerontology)

Dual Degree Study in Social Work and University of Richmond, T. C. Williams School of Law**Interdisciplinary and Cooperative Graduate Study****Master of Interdisciplinary Studies**

Arts (off-campus program)
Environmental Studies
Individualized tracks, including opportunities for study at Virginia State University

In addition to these graduate programs, VCU offers post-baccalaureate certificate and post-master's certificate programs.

Post-Baccalaureate Certificates

All certificates listed below are considered graduate-level programs, unless otherwise indicated.

Accounting (undergraduate certificate)
 Aging Studies
 Applied Social Research
 Criminal Justice
 Computer Science (undergraduate certificate)
 Human Resource Development
 Human Resource Management (undergraduate certificate)
 Information Systems (undergraduate certificate)
 Marketing (undergraduate certificate)
 Patient Counseling
 Planning Information Systems
 Pre-Medical Basic Health Sciences
 Anatomy
 Biochemistry and Molecular Biophysics
 Human Genetics
 Microbiology and Immunology
 Pharmacology and Toxicology
 Physiology
 Public Management
 Real Estate and Urban Land Development (undergraduate certificate)
 Statistics (undergraduate certificate)
 Teaching
 Early Education*
 Middle Education*
 Secondary Education
 English*
 Foreign Languages
 French*
 German
 Spanish
 History/Social Studies
 Mathematics
 Sciences
 Biology
 Chemistry
 Interdisciplinary Science
 Physics
 Urban Revitalization

Post-Master's Certificates

Nursing
 Adult Health Nursing
 Acute Care
 Immunocompetence
 Primary Care
 Child Health Nursing
 Family Health Nursing
 Nursing Administration
 Psychiatric and Mental Health Nursing
 Women's Health Nursing
 Principalship
 Professional Counseling
 Reading Specialist

Cooperative Degree Programs with other Universities

Doctor of Education Program with the College of William and Mary
 Commonwealth Graduate Engineering Program with the University of Virginia, Virginia Polytechnic Institute and State University, Old Dominion University, George Mason University, and Mary Washington College
 Christian Education/Social Work Program with Presbyterian School of Christian Education
 Master of Interdisciplinary Studies Program with Virginia State University
 Dual Degree Programs with the T.C. Williams Law School of the University of Richmond:
 Law and Health Administration
 Law and Social Work
 Law and Urban and Regional Planning

Master of Science in Criminal Justice/Master of Divinity Dual Degree Program with The School of Theology of Virginia Union University and The Union Theological Seminary

Off-Campus Graduate Instruction

VCU is dedicated to serving the needs of Virginians by providing off-campus graduate credit instruction when and where it is needed. Courses are offered in response to an expression of need from various locales and groups.

Off-campus instruction features the same course work available on campus, and most off-campus courses are fully degree-applicable within the admission standards of the School of Graduate Studies. Tuition for most off-campus classes is the same as other University classes; however, students in off-campus credit classes are not charged University or activity fees.

For additional information on off-campus credit instruction, write or call Edward Howard, Coordinator of Off-Campus Credit Instruction, Office of Community Programs, Division of University Outreach, 827 West Franklin Street, Richmond, VA 23284-2041, (804) 828-8819.

Admissions

The Board of Visitors, the administration, and the faculty of Virginia Commonwealth University are committed to a policy of equal opportunity in education and employment without regard to race, color, religion, gender, national origin, political affiliation, veteran's status, age, or disability.

Students with Disabilities

Virginia Commonwealth University complies with the requirements of the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973 and its subsequent amendments and provisions. The University does not discriminate against otherwise qualified applicants for admission or matriculants solely on the basis of a disability.

Virginia Commonwealth University is committed to a policy of equal opportunity and accessibility for qualified students. The University seeks to provide academic adjustments and reasonable accommodations as needed.

Students with disabilities enrolled in courses on the Academic Campus should contact Dr. Shyla M. Ipsen at (804) 828-2253 (VCU-ABLE). Persons with disabilities enrolled in courses on the MCV Campus should contact Mr. Donald G. Roebuck at (828) 828-9782.

Admission Requirements

General admission requirements for graduate study in the University are:

1. graduation from an accredited college or university or its equivalent;
2. except in very unusual cases approved by the graduate dean, a minimum undergraduate GPA of 2.7 on a 4.0 scale for at least the last two years of undergraduate work;
3. satisfactory scores from a current (less than five years old) standardized test commonly used and deemed appropriate by the particular discipline;
4. three letters of recommendation;

5. applicant's written statement of intent for pursuing graduate studies in a particular discipline; and
6. such additional requirements as may be established by individual programs and schools. These may include personal interviews, auditions, submission of a portfolio, or other materials.

An exception to the general admissions requirements is made for students entering through the Guaranteed Admissions Program of the University Honors Program. (See the section regarding admissions to the University Honors Program.)

Types of Admissions

Students may be admitted to graduate studies under one of the following classifications:

Degree-Seeking Student. An applicant who meets all requirements for admission to a degree program and who has been recommended by the department or school in which the applicant proposes to study, may be admitted as a degree-seeking student.

Provisional Student. An applicant who has not met fully the requirements of the program or school to which admission is sought may be admitted to that program or school as a provisional student. Reasons for requesting a provisional admission are evaluated by the department/program and the school, and documents supporting a request of provisional admission are forwarded to the dean of the School of Graduate Studies with a request for admission. The student must remove, within a time period specified by the department or school, any and all conditions of the provisional admission. Failure to meet department/school conditions will result in the student's being dropped from the program. No prerequisite courses taken as a provisional student may be applied towards a graduate degree.

Nondegree-Seeking Student. An individual who wishes to take graduate courses without formal admission to a degree program is classified as a nondegree-seeking student. There is no limit to the number of credits a nondegree-seeking student may take, as long as the student's academic performance is credible. In courses where enrollment is limited, first priority is given to students admitted to the program, followed by other VCU graduate degree-seeking students. Nondegree-seeking students are not exempt from any prerequisite which may be specified for a course. A nondegree-seeking student who is later admitted as a degree-seeking student will not be allowed to apply toward a degree more than six credits earned as a nondegree-seeking student.

Application Information

A printed copy of this *Bulletin* may be purchased from the VCU Bookstores. The *Graduate Bulletin*, in its entirety, as well as additional information on graduate studies at VCU, may be accessed via Internet. See the inside front cover of this *Bulletin* for instructions. Application forms and materials may be obtained in person at the School of Graduate Studies offices at Ginter House, 901 West Franklin Street, Room B1, (804) 828-6916, and at Sanger Hall, 1101 East Marshall Street, Room 1-018, (804) 828-0732. Mail requests should be sent to the School of

Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051. A \$30 nonrefundable application fee must accompany each application. This fee will not be credited toward tuition payment. Some schools require special fees, as indicated in individual sections of this *Bulletin*.

An application cannot be given final consideration until all required credentials have been received. These include the following: (1) two official transcripts, or the equivalent, from each college or university previously attended; (2) three letters of recommendation; and (3) report of current (less than five years old) scores achieved on the Graduate Record Examination (GRE) or other entrance examinations required by the particular department or school. The credentials above should be considered as minimal. Parts II through XIII of this *Bulletin* include detailed information concerning further admission requirements to specific programs and schools. Refer to the Graduate Curriculum Requirements chart and Directory in the reference section of this *Bulletin* for a complete listing of curricula, specializations, and tracks, as well as application deadline dates and special admission requirements.

Entrance Examinations

To supplement other evidence of preparation for graduate work, the Graduate Council has stated that all programs at VCU must consider in their admissions the scores from a current (less than five years old) standardized test commonly used and deemed appropriate for a given discipline. Common examinations used at VCU are the Graduate Record Examination (GRE), the Graduate Management Admissions Test (GMAT), the Law School Admissions Test (LSAT), and the Miller's Analogies Test (MAT). These examinations will not replace other records of achievement as a basis for admission to the School of Graduate Studies, but they will offer additional evidence concerning the qualifications of students desiring to undertake graduate work.

Admission through Honors

Virginia Commonwealth University students participating in the University Honors Program may apply for guaranteed admission to certain graduate programs before matriculation at VCU or early in their undergraduate studies. (The specific deadline for applying is set by each program.) Honors students who receive guaranteed admission may enter the program of their choice without submitting additional application material or test scores (in some programs, test scores are required for statistical purposes only) provided they fulfill University Honors Program requirements and satisfy the curricular prerequisites of the program they plan to enter.

To be granted guaranteed admission to any graduate program, a student must submit a completed application form with three letters of recommendation to the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051. To be accepted into a Guaranteed Admission Program, a student must be accepted by the University, by the University Honors Program, and by the Admissions

Committee of the program the student wishes to enter. The Admissions Committee may require an interview. Final notification of guaranteed admission is made by the dean of the School of Graduate Studies. For additional information, refer to the *Undergraduate and Professional Programs Bulletin*.

Programs which offer guaranteed admission through the University Honors Program are:

Doctor of Philosophy

Anatomy
 Biochemistry and Molecular Biophysics
 Biomedical Engineering
 Biostatistics
 Human Genetics
 Microbiology and Immunology
 Pharmacology and Toxicology
 Physiology
 Psychology

Master of Arts

Economics
 History

Master of Business Administration

Master of Public Administration

Master of Science

Anatomy
 Biochemistry and Molecular Biophysics
 Biomedical Engineering
 Biostatistics
 Business
 Clinical Laboratory Sciences
 Computer Science
 Criminal Justice
 Gerontology
 Human Genetics
 Mathematical Sciences
 Microbiology and Immunology
 Occupational Therapy
 Pharmacology and Toxicology
 Physical Therapy
 Physics
 Physiology
 Recreation, Parks, and Tourism
 Rehabilitation Counseling

Master of Science in Occupational Therapy

Master of Urban and Regional Planning

Master of Taxation

Master of Teaching

Application Procedures

Completed applications and supporting materials must be submitted to the School of Graduate Studies. Applications submitted by mail should be addressed to the School of Graduate Studies, Virginia Commonwealth

University, Richmond, VA 23284-3051. Applications submitted in person may be delivered to the Academic Campus School of Graduate Studies office at Ginter House, 901 West Franklin Street, Room B-1, or to the Medical Campus School of Graduate Studies office at Sanger Hall, 1101 East Marshall Street, Room 1-018. Completed applications and supporting materials are reviewed by the faculty of the intended program, and final notification of acceptance is made by the dean of the School of Graduate Studies. Admission to a graduate program may be contingent upon the successful completion of undergraduate courses, degree, or other prerequisites that may be specified by the program or school. Remedial courses will not apply toward a graduate degree. Applications and supporting materials should be received before the deadlines specified throughout this *Bulletin*. Late applications will be considered when possible, but may require provisional admission.

Students who do not apply at least one month prior to the beginning of any semester risk their financial aid eligibility in the event that the admission process is not completed prior to the first day of classes.

Multiple Admissions

Students may not be admitted to degree-seeking status in more than one graduate program without petitioning and receiving written permission from the program director or graduate committee of the school(s) in which the student is enrolled.

Undergraduate Students

VCU undergraduates may enroll in 500-level courses with approval of their advisers and consent of the program offering the courses. Highly-qualified undergraduates approaching their last semester of study may apply for admission to a graduate program. If accepted, they may enroll in two graduate courses during the last semester of undergraduate study. Their total load should not exceed 16 hours of combined credit. Credit for any course can be applied only to one degree.

International Students

The University encourages qualified international students, both nonimmigrant and immigrant, to seek admission to VCU. Complete information and application materials for international students may be obtained on written request from CIP/International Admissions, Virginia Commonwealth University, Richmond, VA, U.S. 23284-3043.

English Language Proficiency Requirement. To ensure maximum benefit from academic study at VCU, all non-native English-speaking applicants, regardless of immigration status, must provide evidence of English language proficiency before admission and/or enrollment in the University.

Evidence of English language proficiency is evaluated based on factors such as length of stay in the United States, amount and type of formal U.S. education, Test of English as a Foreign Language (TOEFL) scores, and other standardized test scores. The School of Graduate Studies

reserves the right to require additional testing and study in the VCU English Language Program prior to full-time enrollment in University courses. The University offers a full-time English-as-a-Second-Language noncredit program. For information on this program, including fees, contact the Center for International Programs, Virginia Commonwealth University, Richmond, Virginia 23284-3043, U.S. (804) 828-2551.

Nonimmigrants (Students with temporary U.S. visas). Due to the time constraints involved in processing applications from international students and in obtaining visas, prospective students should apply well in advance of the international application deadlines. The deadlines are April 1 for fall semester, October 1 for spring semester, and February 1 for summer semester. Students must meet specific program deadlines. The graduate dean must authorize any exception to application deadlines. All required admission documents must be submitted no later than eight weeks prior to registration if appropriate immigration documents are to be issued. Applicants who are unable to meet this credential deadline will need to defer the intended term of entry.

Both U.S. government regulations and VCU admission policies require nonimmigrant applicants to demonstrate:

- satisfactory academic achievement;
- adequate English language proficiency; and
- ability to finance all educational and living expenses.

Refer to University and program admission requirements in this *Bulletin* for other information requested of all applicants. Applicants must have earned a bachelor's degree from an accredited institution in the U.S. or an equivalent degree from a recognized foreign institution. Official academic records must be submitted.

International applicants must provide evidence of proficiency in the English language prior to admission and/or full-time enrollment in the University. An applicant may satisfy University English proficiency requirements by obtaining a satisfactory score on the Test of English as a Foreign Language (TOEFL). The University minimum TOEFL score requirement is 550; however, most graduate programs prefer a minimum TOEFL score of 600.

As VCU generally does not provide financial support for graduate international students, applicants needing a student (F-1) visa or a visiting scholar (J-1) visa also must present documented evidence of available financial support to cover annual living and educational expenses while studying at VCU.

U.S. Immigration and Naturalization Service regulations usually do not allow nonimmigrant students to study at VCU as special (nondegree-seeking) students. Proof of current visa type must be submitted with the application for applicants who are in the U.S. on student visas. F-1 students and J-1 visiting scholars admitted to VCU must submit copies of all immigration documents to the international student adviser prior to enrolling in classes.

Immigrants (Permanent residents, resident aliens, and asylum applicants). Because immigrant applicants usually are in the U.S. at the time an application is submitted, these students are required to meet the same application deadlines as U.S. citizens.

If educated in the U.S., immigrant students will be considered for admission under the same academic policies as those applied to U.S. citizens. If educated outside the U.S., the same academic records are required as those for nonimmigrant students.

VCU requires detailed information concerning U.S. immigration status. Proof of permanent residency must be submitted with the admission application.

Courses in Graduate Studies

GRS 601 The Academic Profession. Short course; 1 credit. This short course is designed to introduce graduate students to the roles and responsibilities of faculty members in institutions of higher education. Through readings, discussion, and conversations with faculty members from a variety of settings, students will learn about the changing social expectations for higher education, the diverse settings in which faculty work, and strategies for developing and presenting marketable academic skills.

GRS 602 Seminar in College Teaching. Short course; 1 credit. This short course will focus specifically on the act of teaching. Graduate education in this country has only recently begun to address college teaching issues. While mastery of the discipline and of the research skills necessary to contribute to that discipline have long been a staple of graduate training, mastery of the knowledge and skills necessary for teaching the discipline are often neglected.

GRS 603 Externship in College Teaching. 1-3 credits. Provides graduate students interested in academic careers with supervised experience in an academic environment different from that of a research university. Places students with individual faculty mentors in area colleges and universities; learning experiences are determined by mutual agreement between student and mentor.

Financial Aid

Degree- and certificate-seeking students receive an average amount of financial aid in excess of \$9,100 per academic year. Nearly 12,000 students receive a total sum of more than \$110 million in loans, grants and work study at Virginia Commonwealth University.

The role of the Financial Aid Department is to assist the 17,000 students who apply for aid in identifying and pursuing financial resources so they can achieve their educational goals. University Enrollment Services maintains four Financial Aid Counseling and Information Services Centers.

Academic Campus

Ginter House, Room 107
901 West Franklin Street
P.O. Box 843026
Richmond, VA 23284-3026

Medical College of Virginia Campus

Schools of Allied Health Professions, Nursing, and Pharmacy

1101 East Marshall Street, Room 1-055
P.O. Box 980244
Richmond, VA 23298-0244

School of Medicine

1101 East Marshall Street, Room 1-005
P.O. Box 980565
Richmond, VA 23298-0565

School of Dentistry
520 North Twelfth Street, Room 309
P.O. Box 980566
Richmond, VA 23298-0566

Applying for Financial Aid

To be eligible for most federal, state, and institutional aid programs, students must:

- be U.S. citizens or meet eligible noncitizen criteria;
- be admitted to and pursuing an eligible degree or certificate program;
- be enrolled on at least a half-time basis;
- be making "reasonable academic progress" as defined in this section of this *Bulletin*; and
- not be in default on a federal loan program or owe a repayment to a federal grant program.

All financial aid applicants must submit the Free Application for Federal Student Aid (FAFSA) each year aid is desired. Applicants who were financial aid applicants at any college or university during the previous school year receive a Renewal FAFSA in November or December of the current year. Those who were not financial aid applicants and those who do not receive a Renewal FAFSA must complete a new FAFSA. These forms are available at all Virginia Commonwealth University Financial Aid Counseling and Information Centers, financial aid offices at other colleges and universities, high school guidance offices, and most public libraries.

The deadline for mailing the FAFSA or Renewal FAFSA is April 15. Students mailing the FAFSA after April 15 will be considered late filers, and their financial aid may not be processed until after the beginning of the school year. Late filers need to pay their University bills when due or pay on the Student Accounting Department's Installment Payment Plan.

The FAFSA or Renewal FAFSA should be filed using the figures from completed tax returns. When requested, filers must submit copies of tax returns. If necessary, estimated tax figures may be used to meet the April 15 deadline.

Applicants who have attended other colleges or universities must submit Financial Aid Transcripts for all institutions attended, whether or not they received financial aid. No offer of financial aid will be made to a student until all financial aid transcripts are received.

Program Descriptions

There are three basic types of financial aid. Each type has different features and advantages.

Loans. In terms of total dollars available, there is more money available from long-term loan programs than from the other two types of aid. Loans are money borrowed which must be repaid at a later time. The student is the borrower and repays the loan after enrollment on a half-time basis ceases at a post high school institution. All educational loans carry favorable interest rates. Some include interest benefits, meaning the federal government pays the interest on the loan while the student is enrolled. Some of the more popular loan programs are:

- Federal Direct Student Loan
- Federal Unsubsidized Direct Student Loan

- Health Education Assistance Loan
- Health Professions Student Loan
- Nursing Student Loans
- Primary Care Loan
- Loan for Disadvantaged Students

Short-Term Loans. In addition to these long-term loans, Virginia Commonwealth University offers short-term loans to enrolled students to be repaid during the semester for which the loan is granted.

Grants. Grants are gifts of money awarded without any expectation of repayment. The total dollar amount of grant aid available is much less than the dollar amount of total loan aid. Contact individual academic departments for information about grant or scholarship programs.

Work Study. Work study is a form of financial aid that pays wages for work performed. Work study positions are located on and off campus in approved locations and includes Federal Work Study.

Determining a Student's Financial Aid Package

Financial need is the difference between the amount a student and the student's family can contribute, as determined from the information submitted on a FAFSA, and the total expected cost of education. The cost of education includes tuition and fees, books and supplies, housing and food, transportation, clothing, health, personal maintenance, miscellaneous expenses, and child care, if applicable. The student's financial eligibility must be determined before an offer of financial aid can be made.

All students are eligible to apply for the Federal Direct Student Loan. The student pays the interest, or capitalizes it, on the portion of the loan not based on financial need. Interest on the portion of the loan that is based on financial need is subsidized by the federal government.

Students receiving departmental or outside scholarships must notify the Financial Aid Department of these awards. Offers of financial aid for these students may be adjusted.

Graduate Assistantships and Fellowships

University graduate teaching and research assistantships, fellowships, and tuition scholarships, as well as a variety of departmental awards, are granted each year to continuing and newly admitted graduate students. Eligibility is based on a variety of criteria. Students should be aware that these awards must be included in the total financial aid award made to students receiving any aid through the Financial Aid Department. Students also should be aware that all stipend support is reported to the Internal Revenue Service and is subject to IRS rulings as to tax status.

Special rules are associated with accepting a position as a graduate assistant and are contained in the *VCU School of Graduate Studies Policies and Procedures Statement on Graduate Fellowships and Assistantships*. A student planning to accept an assistantship must be familiar with this document, a copy of which is available in the School of Graduate Studies. A University graduate assistant is precluded from any other type of

employment and forgoes the normal student academic vacations for the period of the appointment. Graduate program directors and prospective graduate assistants should agree upon the specific conditions of employment before finalizing appointments.

Inquiry about such awards should be made directly to the school or department in which the student intends to enroll. Students in the process of applying for admission should indicate their interest in such support. Some programs include a separate application for support with the application for admission. Refer to Part IV of this *Bulletin* for additional information on graduate student support for students in the College of Humanities and Sciences.

Issues Affecting Eligibility for Financial Aid

Quality Assurance. The Financial Aid Department is committed to the fair delivery of financial assistance to all eligible applicants. To ensure that eligibility information is complete and accurate, student records may be selected for future review at any time during an enrollment period to determine the reliability of the information. In signing the FAFSA certification, students and families have indicated their willingness to provide proof of the information provided on the FAFSA. If requested, the required documents and information must be provided to the Financial Aid Department or disbursed aid will be recovered and undisbursed aid will be canceled.

Enrollment and Eligibility. Financial aid eligibility is based on projected enrollment level as reported on the FAFSA:

Level	Credit Hours
Full-time	9 or more
Half-time	5 to 8
Less than half-time	1 to 4

Credit hours taken for audit do not count in the calculation of enrollment level for financial aid purposes. Since a reduction in credit hours may result in loss of financial aid, students should consult with a financial aid counselor before making any changes in their enrollment status.

Service and Financial Aid Appeals. Financial aid service and aid program decisions are made within the guidelines of federal and state regulations and comply with institutional regulations, policies and procedures. Regulations are applied uniformly to all students and situations.

Students may make service or financial aid appeals if any of the following conditions exist:

- Financial aid service does not meet your expectations.
- The student has exhausted all possible payment and resource options and still does not have enough money to cover educational expenses.
- The student's family can document unusual circumstances including:
 - loss or reduction of employment earnings by layoff or return to school;
 - disability or death of parent or spouse;

- separation or divorce;
- loss or reduction of untaxed income;
- losses due to natural disaster;
- unusually high educational program costs;
- unusual medical expenses; or
- dependent and child-care expenses.

Any financial aid staff member can advise you about the procedures to follow for an appeal hearing.

Summer Studies Financial Aid. Financial aid is available for summer studies to students who were eligible for aid the previous academic year and is calculated using the previous year's FAFSA. The choice of aid programs is limited.

Application deadlines and processing schedules for summer studies financial aid are published in the *Summer Schedule of Classes*. Processing usually is restricted to the third week of April. Students seeking financial aid for summer must have participated in advance registration for their summer studies classes.

Reasonable Academic Progress Policy for Recipients of Financial Aid. In order to be eligible to receive financial aid from federal, state, or institutional programs at VCU, students must make reasonable academic progress in their certificate or degree programs. The criteria for reasonable academic progress are listed:

- Graduate students must earn at least 80 percent of all course work attempted after being admitted to graduate school.
- Students who have been enrolled in one or more graduate programs for four or more enrollment periods must have earned a cumulative GPA of 3.0 or higher in all course work attempted after classification as a graduate student.
- Graduate students making reasonable academic progress must complete a program in a period equivalent to six semesters of full-time enrollment for the master's degree and six semesters for the doctoral degree.
- Students who receive aid and withdraw from all courses for two successive semesters shall not have made reasonable academic progress.
- Medical and dental students who are required by their academic deans to repeat a year are permitted to continue on financial aid for that year.

Students whose eligibility for financial aid has been suspended for lack of reasonable academic progress may appeal the action. The appeal must be in writing and received by the financial aid director no later than 30 days after the date on the letter of notification. Students will be notified in writing of the results of the appeal.

At the end of each academic year, reasonable academic progress status will be determined by the Financial Aid Department. This determination will be made during May.

Refund Policy. Students are entitled to refunds according to the policies outlined under "Refund of Paid Tuition" in this part of the *Bulletin*.

Student Refund/Financial Aid Repayment Policy. Students who withdraw from classes must have eligibility for a refund calculated. The Student Accounting Department will forward requests for refunds to the Financial Aid Department.

When the certified date of withdrawal occurs during the refund period, a corresponding proration of financial aid eligibility must be made. This calculation may result in a reduction in the financial aid eligibility and a possible return of funds to one or more financial aid programs. Students should consult with a financial aid counselor before making a change in enrollment status during the refund period. If the change in enrollment occurs after the disbursement of all financial aid funds, the student may be required to reimburse the financial aid programs.

Financial Aid for Study Abroad. In most cases, financial aid is available to eligible students for both academic year and summer approved study-abroad programs. Students should begin this application process by contacting the VCU Center for International Programs.

Veterans and Reservist Educational Benefits

For information on eligibility to receive veteran and reservist educational assistance, please contact the Coordinator of Veterans Affairs, Financial Aid, 901 West Franklin Street, Richmond, VA 23284-3026.

To receive educational benefits, the veteran student must comply with the following procedures:

- Veteran students must request certification each semester and each summer session from the Office of Veterans Services.
- Veteran students withdrawing from VCU or dropping a course must notify Records and Registration and the Office of Veterans Services.
- Benefits will not be awarded for courses taken on an audit basis. Also, if the veteran student is repeating a course or taking a course with no credits, the Office of Veterans Services must be notified.
- All courses taken must apply to a degree program. These courses may include elective courses and prerequisite courses, as well as the required courses.
- It is the veteran student's responsibility to see that the transcripts are evaluated to determine the number of transfer credits accepted by VCU and to have this information submitted to the Office of Veterans Services for transmittal to the VA regional office.

Assistantship in Residence Education

Part-time employment as a resident director or resident assistant is available to full-time graduate students in the department of Housing/Residence Education. Resident directors are primarily responsible for supervision of resident assistants, evening crisis response and behavioral interventions. This is a ten-month, live-in position with a financial scholarship applied directly to the student account, designated apartment and reimbursement for limited telephone service. Resident assistants are 20-hour positions for graduates or undergraduates working on a residential floor in a paraprofessional capacity. A financial scholarship also is provided with limited telephone service. Both selection processes are competitive, and prior

residence hall experience is preferred. Interested persons should contact Housing/Residence Education, 711 West Main Street, #103, Richmond, VA 23284-2517, (804) 828-6505.

Graduate Tuition and Student Fees

The tuition and fees for 1998-1999 are as listed. Additional fees may be assessed by individual programs. A complete listing of all University charges is published annually in the *VCU Schedule of Tuition, Fees, and Other Expenses*. A copy of this publication may be obtained from the Student Accounting Department on the Academic Campus, 827 West Franklin Street, (804) 828-2341, or on the MCV Campus, Lyons Building Basement, (804) 828-0749 or see the Web site at <http://www.students.vcu.edu/studentacct/>. All charges may be subject to change by decision of the Board of Visitors.

Academic Campus	In-State	Out-of-State
Academic Campus		
Full-Time Per Semester (9-15 credit hours)		
<i>Fall and Spring 1998-99</i>		
Tuition	1,958.50	5,804.50
University Fee	418.00	418.00
Health Fee	70.00	70.00
Activity Fee (AC)	13.00	13.00
Technology Fee	20.50	20.50
	<u>\$ 2,480.00</u>	<u>\$ 6,326.00</u>
Part-Time (per credit hour)		
<i>Fall and Spring 1998-99</i>		
Tuition	218.00	645.00
University Fee	35.00	35.00
Activity Fee (AC)	1.50	1.50
Technology Fee	2.00	2.00
	<u>\$ 256.50</u>	<u>\$ 683.50</u>
Full-Time (9-15 credit hours)		
<i>Summer 1999</i>		
Tuition	1,959.00	5,805.50
University Fee	268.00	268.00
Activity Fee (AC)	12.00	12.00
Technology Fee	13.00	13.00
	<u>\$ 2,252.00</u>	<u>\$ 6,098.50</u>
Part-Time (per credit hour)		
<i>Summer 1999</i>		
Tuition	218.00	645.00
University Fee	22.00	22.00
Activity Fee (AC)	1.00	1.00
Technology Fee	2.00	2.00
	<u>\$ 243.00</u>	<u>\$ 670.00</u>
MCV Campus		
Full-Time Per Semester (9-15 credit hours)		
<i>Fall and Spring 1998-99</i>		
Tuition	1,958.50	5,804.50
University Fee	418.00	418.00
Health Service Fee	70.00	70.00
SGA Fee (MCV)	14.00	14.00
Technology Fee	20.50	20.50
	<u>\$ 2,481.00</u>	<u>\$ 6,327.00</u>
Part-Time (per credit hour)		
<i>Fall and Spring 1998-99</i>		
Tuition	218.00	645.00
University Fee	35.00	35.00
SGA Fee (MCV)	5.00	5.00
Technology Fee	2.00	2.00
	<u>\$260.00</u>	<u>\$ 687.00</u>

Full-Time*Summer 1999*

Tuition	1,959.00	5,805.50
University Fee	268.00	268.00
SGA Fee (MCV)	9.00	9.00
Technology Fee	13.00	13.00
	<hr/>	<hr/>
	\$ 2,249.00	\$ 6,095.50

Part-Time (per credit hour)*Summer 1999*

Tuition	218.00	645.00
University Fee	22.00	22.00
SGA Fee (MCV)*	5.00	5.00
Technology Fee	2.00	2.00
	<hr/>	<hr/>
	247.00	674.00

* SGA Fee is a flat rate of \$5 per semester for part-time students.

Full-Time and Part-Time Graduate Study

Graduate students registered for nine to 15 credit hours are considered full-time. Graduate students registered for more than 15 credit hours during any semester will be charged an overload tuition fee on a per credit hour basis above the full-time tuition rate. Graduate students fully funded as graduate assistants or graduate fellows with tuition remission must register for at least nine credit hours per semester (six credit hours during the summer if funded on a 12-month stipend). Departmental requirements may vary; therefore, students should verify expected course loads with their graduate program directors.

In-State Residency

Eligibility for in-state tuition benefits is determined by Section 23-7.4 of the Code of Virginia. Refer to "Appendix B" of this *Bulletin* for the complete code.

All applicants to VCU who want to be classified as Virginia residents must complete the Application for Virginia In-State Tuition Rates included in the graduate application. The residency determination of the applicant will be conveyed at the time of admission.

New students who have been classified initially as non-Virginians for tuition purposes may request a review of the initial residency determination by contacting Records and Registration/Residency, (804) 828-0366. The residency officer may request that the applicant complete a Student Supplemental Application for Virginia In-State Tuition Rates and submit supporting documents for additional clarification. Continuing students desiring a change of residency status to in-state tuition rates must submit the supplemental application along with supporting documentation. Requests and applications for a second review must be submitted to the residency officer by the last day of add/drop week for each semester; however, it is recommended strongly that applications be submitted by the appropriate deadline: fall semester, August 1; spring semester, December 1; summer semester, May 1.

Students will be notified by mail of decisions regarding residency status. The Financial Aid and Student Accounting Departments also will receive official notification of residency decisions. Any denial for a change in residency status will include procedures for appeal of the intermediate decision. Students who submit fraudulent

applications, falsify documentation or conceal information will be subject to reclassification, payment of all nonresident fees owed, and University discipline.

Academic Common Market

The state participates in the Academic Common Market, an interstate agreement for sharing uncommon academic programs at both the baccalaureate and graduate levels. Other states which participate in the ACM are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, South Carolina, Tennessee, Texas, and West Virginia. Schools in these states are able to make arrangements for residents who qualify for admission to specific programs in other states to enroll on an in-state tuition basis. A student who has been accepted for admission into a program for which the student's state of residency has obtained ACM access must obtain certification of residency from the higher education authority of the student's state of residency. Inquiries about the Academic Common Market also should be directed to the higher education authority of the student's state of residency. Questions also may be directed to VCU's School of Graduate Studies, (804) 828-6916.

Refund of Paid Tuition

Full-time and part-time students canceling or reducing their academic course load will be entitled to the following prorated refund percentages:

- 100 percent refund of tuition and fees for students dropping/withdrawing through the first week of class each fall or spring semester.
- 80 percent refund of tuition and University Fee for students withdrawing through the second week of class each fall or spring semester.
- 60 percent refund of tuition and University Fee for students withdrawing through the third week of class each fall or spring semester.
- 40 percent refund of tuition and University Fee for students withdrawing through the fourth week of class each fall or spring semester.

No amount will be refunded for withdrawal after the fourth week of classes.

Please note: student activity, government, health, and private music fees are not prorated after the first week of class. Dormitory and board prorations of charges continue to be determined by University Housing, (804) 828-7666, and Food Services, (804) 828-1148.

The actual date of withdrawal will be certified by Records and Registration, and a refund, when appropriate, will be computed based on that certified date. Not attending classes without having completed the withdrawal procedure does not constitute grounds for a refund. To be eligible for a refund, students must officially drop or withdraw from their classes through Records and Registration.

Exceptions to this refund policy are made only in rare instances. Written application for an exception must be filed in the Student Accounting Department and will be forwarded to the Refund Waiver Appeals Committee for review. Students will be notified in writing of the committee's decision.

Students in off-campus classes are subject to the same refund policy as all other University students if the class is scheduled on the regular semester schedule. If the off-campus class is shorter or longer than the academic semester, the refund dates are adjusted accordingly.

If the refund reduction results in an overpayment on the account, a completed Refund Request Form must be submitted to the Student Accounting Department. Refund Request Forms are available in the Student Accounting Department on both campuses. Refunds resulting from overpayments and/or changes in registration will not be processed until after the add/drop late registration process is complete. Total processing time is approximately two to three weeks.

Statement of Student Financial Responsibility

Students who fail to meet payments when due will be assessed late payment penalties and will be denied registration for future classes until they have paid all accrued amounts owed. Students with balances owed to the University will not be issued degrees, transcripts of grades, or graduate reports until all charges are paid in full.

Any communication disputing an amount owed, including an instrument tendered as full satisfaction of a debt, must be submitted to the Director of Treasury Services, Office of the Treasurer, P.O. Box 843031, Richmond, VA 23284-3031.

Pursuant to Section 2.1-732 et seq., of the Code of Virginia, and in accordance with rules and regulations promulgated by the State Comptroller and Attorney General of the Commonwealth of Virginia, Virginia Commonwealth University will charge interest, costs, and fees on all accounts past due.

VCU is participating in the Virginia Set-Off Debt Collection Act of 1981. Under the provisions of this act, a Virginia individual income tax refund will be subject to the University's claim for unpaid balances of tuition and fees. A charge of \$20 will be levied for all dishonored checks.

General Academic Regulations

University Rules and Procedures

Each member of the VCU community has certain responsibilities, rights, and privileges. These are stated in some detail in the *Virginia Commonwealth University Rules and Procedures*, and all students are responsible for being familiar with provisions of this document. The rules and procedures are printed in the campus calendar and are also available at the Office of the Dean of Student Affairs. This document also provides for the process whereby disciplinary action, including separation from VCU, may be taken against a member of the University community as a result of behavior which is in violation of the prohibited conduct as stated in the Rules and Procedures.

All students enrolled in courses on the MCV Campus are subject to the Honor System of the MCV Campus, and, as such, are required to sign an Honor Pledge Card. Copies of the Honor Code and Pledge Cards are available

in University Records and Registration, Sanger Hall, Room 1-055.

In addition to those standards of conduct described in *Virginia Commonwealth University Rules and Procedures* and the *MCV Campus Honor Code*, which applies to all students enrolled on the MCV Campus, a student enrolled at the University may be dismissed from the school in which enrolled for failure to meet prescribed academic program requirements.

VCU seeks to foster insight, imagination, creativity, resourcefulness, diligence, honesty, and responsibility, as well as the education of the men and women enrolled in its graduate programs. Such an enterprise can take place only where the highest standards of academic integrity exist.

Academic dishonesty is the giving, taking, or presenting of information or material by students with the intent of unethically or fraudulently aiding themselves or others on any work that is to be considered in the determination of a grade or the completion of academic requirements. Students in doubt regarding any matter related to the standards of academic integrity in a given course or on a given assignment should consult with the faculty member responsible for the course before presenting the work.

Effective Bulletin

The bulletin of record for a graduate student is the *Graduate Bulletin* in effect at the time of the student's official admission to the degree program (as specified in the student's official letter of admission). The effective *Bulletin* contains the official requirements that the student must complete to earn the degree. A student who does not maintain continuous enrollment (as defined in Part I of the effective *Bulletin*), must reapply to the program and will be subject to the requirements of the *Bulletin* in effect at the time of readmission. Exception to this policy must be approved by the student's graduate program director, dean, and dean of the School of Graduate Studies.

Degree Requirements

The minimum course requirements, rules of admission to degree candidacy, language requirements, thesis or dissertation requirements, comprehensive examinations, transfer of credits, and the like, are specified for each program in Part II through XIII of this *Bulletin*. Many schools, programs, and departments print special brochures, student manuals, and program guides which may be requested from the appropriate dean or program director.

Advising Program

Students are responsible for the proper completion of their academic programs. They must be familiar with the *Graduate Bulletin*, including general academic regulations promulgated by individual schools and departments. The offices of the deans and department chairs, in cooperation with the advisers and faculty, endeavor to follow each student's academic progress, and students

are encouraged to seek counsel whenever there is a need. If advisers are unable to resolve problems satisfactorily, they will refer students to others as deemed appropriate and necessary. In order to aid advising, students have the responsibility to keep a current mailing address on file with Records and Registration, as well as with the school and department in which they are enrolled.

Exceptions

Exceptions to graduate policies must be approved by the dean of the School of Graduate Studies. Appeals for exceptions to graduate school policies are to be made in writing by students to their graduate advisers. The advisers will forward their recommendations, along with copies of the students' appeals, to the dean of the School of Graduate Studies who represents the University Graduate Council.

Student Load

Student load is the total number of credits for which students are enrolled in any semester. Degree-seeking students may be either full-time or part-time, dependent upon program rules. Students who are fully funded as VCU graduate assistants with tuition remission are classified as "full-time" during any semester in which they enroll for nine or more credits (six during the summer if funded on a 12-month stipend). Departmental requirements vary, therefore, funded students should verify expected course loads with their graduate program directors.

The maximum number of credits for which students may enroll in any semester without special permission is 15. More than 15 credits is an overload and may result in increased tuition and fees. Permission to enroll for more than 15 credits will be granted upon the written recommendation of the adviser, through departmental governance procedures, to the dean of the School of Graduate Studies.

Attendance and Continuance Policies

Any person engaged in any form of study at VCU which involves use of University facilities, laboratories/studios, libraries, or who is supervised by or consults regularly with a faculty member concerning graduate work on a project, work of art, thesis or dissertation, must register formally for a course while engaged in these activities. A graduate student who has completed course requirements for a degree must register at VCU each semester until the degree is awarded. Departments or schools will determine the number of hours for which students must register for each semester as part of their continuous registration policies.

Once admitted to a degree program, a graduate student is expected to enroll each semester. A student admitted to a program or track not requiring a project, work of art, thesis, or dissertation, must register for at least three semester hours each calendar year.

Instructors are responsible for clearly informing the student in writing of the attendance requirement for each course and the consequences of poor attendance.

A student must abide by the requirements as announced in each separate class even though the requirements may vary widely among courses.

Residence for PhD Programs

For all PhD programs, a period of residence of at least two consecutive semesters is required. Residency is defined as at least nine credits per semester. The specific requirements for residency will be detailed by the individual programs.

Change in Registration

Once a student has registered for classes, changes in registration must be made according to the procedures listed below. Whenever a student makes any change in registration, the student should keep a copy of the new schedule as verification of the change.

During the Add/Drop Period. Exact dates for add/drop periods before and during the first week of classes are listed in the schedule booklet each semester. Changes in registration during the add/drop periods can be made by completing a Course Request Form and submitting it to Records and Registration. Courses dropped during add/drop periods do not show on a student's permanent record.

After the Add/Drop Period. Students may not add courses after the add/drop period. Students may not withdraw from courses after the eighth week of classes. See the calendar in this *Bulletin* for the exact date. Students may withdraw from courses only in accordance with the following procedures:

- After the first week of classes and until the end of the eighth week of classes, withdrawal forms may be obtained only in the Records and Registration and must be filed with that office before the student officially is withdrawn. Students should retain a copy of the corrected schedule for record purposes.
- Withdrawals after the add/drop period and before the end of the eighth week of classes will become part of the permanent academic record and will be indicated by a mark of withdrawal ("W").
- Students who do not complete withdrawal forms when ceasing to attend a class will be assigned failing grades.

Cancellation of Registration

A cancellation of registration must be made prior to the end of the add/drop period by notifying, in writing, Records and Registration. Refunds will be issued in accordance with procedures set forth under "Request for Refund in the Graduate Tuition and Student Fees" section of this *Bulletin*.

Immunization Requirements

VCU requires that all full-time students have a validated immunization record on file at the University Student Health Service. This is a requirement which must be completed prior to matriculation. Failure to

meet these state law requirements will result in a hold placed on the student's second semester registration. The hold can be removed only upon receipt of the student's documented records.

The immunization record must be completed fully and accurately and also must be accompanied by documentation that the vaccines were given. This may be done in several ways: (1) students may have their physicians transfer the information from their medical records and sign the forms verifying their accuracy; or (2) students may complete the forms using information received from their local health departments or from the armed services, but they then must attach validated copies of supporting documentation. Many middle schools and high schools require validated immunization records from all students. If students recently have graduated from high school, their immunization records may still be available. They may request that the high school provide them with a copy of their immunization records.

If students cannot provide documented evidence of full immunization according to VCU guidelines, then the students must see their family physicians or health departments and receive updated immunizations. Most city and county health departments offer Immunization Clinics (Richmond City Health Department, 500 North 10th Street, Room 114). Some clinics require a small service fee.

Immunity to the following diseases must be documented as specified on the forms supplied by the School of Graduate Studies with the formal offer of admission:

Tetanus. Documentation of both 1 and 2 is necessary: (1) Primary immunization series, including month/day/year of each dose, and (2) Tetanus/diphtheria (Td) booster (month/day/year) within the past 10 years.

Diphtheria. Documentation of both 1 and 2 is necessary: (1) Primary immunization series, including month/day/year of each dose, and (2) Tetanus/diphtheria (Td) booster, including month/day/year within the past 10 years.

Polio. (1) Primary immunization with a total of three doses of OPV (oral Sabin) or (2) primary immunization with a total of four doses of IPV (injected Salk). Note: Documentation of prior vaccination against polio, including month/day/year of each dose, is required. If not completed in the past, however, it is not recommended that the student complete the primary polio series unless the student is less than 18 years old or is planning travel to an area endemic or epidemic for polio.

Rubeola (Measles). Documentation of one of the following is necessary: (1) Born before 1957 and, therefore, considered immune; (2) two doses of the measles vaccine both administered after 1967 and given after the first birthday at least one month apart (document month/day/year); (3) physician's certification of diagnosis of measles including month and year of occurrence; or (4) documentation of immune titer proving immunity. Note: Measles vaccine given before 1968 is not acceptable.

Mumps. Documentation of one of the following is necessary: (1) mumps vaccine given after age one, month/day/year documented; (2) report of immune titer, proving immunity; (3) physician's certification of diagnosis of mumps, including month and year of occurrence; or (4) birth prior to 1957 (presumption of immunity).

Rubella (German Measles). Documentation of one of the following is necessary: (1) Rubella vaccine given after one year of age (document month/day/year); or (2) Report of immune titer proving immunity. If an immune titer is used to prove immunity, a copy of the laboratory sheet must be sent as documentation. Note: A history of disease is not acceptable. Rubella vaccine given before June 9, 1969 is not acceptable.

Students with questions should contact the immunizations staff of University Student Health Service.

Academic Campus

Suite 159, Gladding Residence Center
711 West Main Street
Richmond, VA 23284-2022
(804) 828-8828

Withdrawal Policies

Leave of Absence. Students may request a leave of absence from a program through written appeal to their advisers. The adviser will forward the request, following departmental governance procedures, along with a recommendation to the dean of the School of Graduate Studies who will respond for the University. Students who do not register for courses for more than one calendar year and who have not been granted a leave of absence must reapply for admission to VCU and to the graduate degree program.

Withdrawal from the University. To withdraw officially from VCU, a student must submit a complete Official Withdrawal Form to Records and Registration before the end of the eighth week of classes. The Official Withdrawal Form is obtained from Records and Registration, 827 West Franklin Street, Room 104. Failure to complete this form may result in the assignment of failing grades in all or some of the courses.

The student's permanent academic record will indicate a grade of withdrawn ("W") for all courses in which the student was enrolled.

Health-Related Withdrawals. While graduate students are expected to work toward completion of their degrees without interruption, health-related problems may necessitate withdrawal from the University.

- Some schools require a statement from a physician indicating the nature and severity of the condition, when a student should stop attending classes, and the estimated date of return to school.
- In the event that a student's health problem poses a danger to the student, to patients, or to others with whom the student may come in contact and the student is unable or refuses to initiate steps to withdraw as stated above, administrative withdrawal of the student may be made by the dean of the School of Graduate Studies upon consultation with the appropriate faculty and a qualified physician.
- Because curricular and course content changes may occur and a student's progress toward a degree may be affected adversely because of an extended absence, specific time periods may be imposed by individual schools with respect to the length of time allowed for absence from school. If

there is a delay in return beyond the allotted time period without written consent of the dean of the School of Graduate Studies, the student may petition for return with advanced standing.

- Some schools require that prior to return to school, the student must submit to the dean of the School of Graduate Studies a statement from a physician. This statement should document that the condition that necessitated the withdrawal has been corrected to a point where the student can complete successfully all curriculum requirements with reasonable accommodation, including classroom, laboratory, clinical, and fieldwork experience.

Change of Discipline

Students wishing to change to a graduate discipline outside their present programs should obtain new application forms from the School of Graduate Studies.

Generally, they will have to submit new applications to the new program with all material required of new applicants. The dean of the School of Graduate Studies will work with the administrators of the two disciplines to facilitate the admission process for eligible students.

Transfer Credit

Generally, a maximum of one third of the didactic hours required for a master's degree may be transferred from another VCU program or outside institution and, if not applied previously towards another degree, may be applied towards a degree. A maximum of 25 percent of course work other than research applied toward all doctoral programs at VCU may be transferred from another VCU program or outside institution if not previously applied toward another degree. Acceptance of transfer credit is made at the school level. (Various schools may have more stringent requirements.)

All transfer work must be at the "A" or "B" grade level from an accredited institution or university. "Credit" or "pass" grades can be accepted only if approved by petitioning the Graduate Advisory Committee, or equivalent, of the student's school or college. Students must be in good standing both at Virginia Commonwealth University and at the institution from which the credits were earned. Some programs will not accept credits earned as a nondegree-seeking graduate student for transfer. VCU will not accept credits which do not apply to a graduate degree at the offering institution for transfer, nor will it accept credits from unaccredited institutions for transfer.

Thesis/Dissertation Examinations

General regulations applying to thesis/dissertation committees and competency examinations are as follows.

A graduate advisory committee shall be appointed for each candidate for a master's degree from whom there is a requirement to produce a thesis or its equivalent in the form of a research project, performance, exhibit, or other production. The committee will coordinate and supervise the preparation of the thesis or its equivalent. The committee shall have a minimum of three faculty,

one of whom should be from a discipline other than the discipline of the candidate. The chair of the committee will be designated as the candidate's faculty adviser. Master's candidates for whom a thesis or its equivalent is not required will have an adviser appointed by the department.

A graduate dissertation committee shall be appointed for each doctoral candidate. The committee will have a minimum of four faculty members, including a chair, who will serve as the candidate's faculty adviser. At least two members must be from within the candidate's discipline and at least one from another discipline.

Upon satisfactory completion of all program requirements for admission to candidacy, the doctoral matriculant will take written and/or oral comprehensive examinations administered by the student's major department or school. Successful completion of the examinations shall entitle the student to advance to doctoral degree candidacy status. The candidate is then allowed to proceed with the research and preparation of the dissertation and any other doctoral degree requirements designated by the department.

In the event of failure, the student may be permitted to retake the comprehensive examination one time only. The re-examination requires the approval of the appropriate graduate program committee.

All research, thesis, and dissertation credits taken as part of the final project (thesis/dissertation/project) for awarding a graduate degree are to be graded each semester as "S," "U," or "F." An individual department may terminate a student who does not progress satisfactorily as indicated by a "U" grade in research, thesis/dissertation/project course work. A student who receives a final grade of "F" in the thesis or dissertation will be terminated from the graduate program.

The final date for completion of a graduate thesis/dissertation is the last day of classes of the semester for which the student has applied to graduate. (See the calendar in the front of this *Bulletin* for exact dates.) By this day, final copies of the thesis/dissertation with all appropriate signatures must be submitted to University Library Services for binding. The graduate degree will not be awarded, nor will the graduate diploma be released, until this material has been submitted to the library for binding. Students should contact their graduate program directors regarding internal schedules for submission of copy, defense, and approval.

Satisfactory Academic Progress

Students must continue to make satisfactory progress toward their degrees. Unsatisfactory grades and unprofessional conduct are areas that may warrant review for possible termination from the program.

Specifically, a student will receive no credit for a course in which a grade of less than a "C" is given.

A student who receives a grade of "C" or less on six semester hours or 20 percent of the semester hours attempted – whichever is greater – or, a student who receives a grade of "D" or "F," will be reviewed for possible academic termination by their graduate program faculty. The semester hours used in this computation do not include courses graded on a "S/U" basis.

Graduation Requirements

Candidates for degrees are eligible for graduation upon completion of all academic requirements in effect at the time of the first registration, provided the students are continuously enrolled and provided the requirements are met within the time limit specified by the school or program. Students failing to satisfy the time requirement and who are readmitted to a program shall satisfy requirements in effect at the time of reacceptance into the degree program.

All degrees are conferred by the VCU Board of Visitors upon recommendation of the graduate faculty. Degrees are granted at the close of the semester or summer session in which students complete their work. Degrees will not be granted unless all financial obligations have been resolved with VCU's accounting office. No degrees will be conferred unless students make formal application for graduation. **A student must be enrolled at the time of application (i.e., the semester in which the student graduates).**

Application forms may be obtained from Records and Registration. Some schools require additional forms which must be cleared through the dean's office of the school in question.

Graduation applications must be submitted by students to their advisers or deans no later than the dates indicated on the calendar appearing in the front of this *Bulletin*. Students should schedule conferences with their advisers well ahead of the deadline and should note that the application requires the approval of the adviser, the department chair, or the school director of graduate studies, and the dean. Students may not apply the same credits towards two master's degrees.

Graduate credit hours earned towards a VCU certificate may be applied to degree requirements for master's or PhD programs. The determination of the acceptability of specific courses to be used for both the certificate and the graduate degree will be the responsibility of that master's or PhD program or school.

At least one half of the required courses in a program will be those designated as exclusively for graduate students. The grade-point average for graduation must be based on all graduate courses attempted after acceptance into the program.

In addition to the specific requirements listed by department, the following general requirements must be met for graduation. Degree applicants:

- must apply for graduation by the dates specified in the University Calendar; and
- must have achieved an overall grade-point average of 3.0 ("B").

The total number of semester credits required for graduation depends upon the major. Specific information may be found under the degree program descriptions.

Reapplying for Graduation

Candidates who do not graduate at the end of the semester for which they have made applications must reregister and reapply.

Students must be enrolled at the time of application/reapplication (i.e., the semester in which the student graduates).

Time Limit for Completion of Degree Requirements and Eligibility of Courses

The time limit for a graduate degree will not extend beyond a period of seven years, which, at the master's level, includes five years with two possible one-year extensions which may be granted, upon written petition through the adviser or graduate program director, by the dean of the School of Graduate Studies.

Course work completed before matriculation and applied toward the degree, including course work at VCU and that transferred from other institutions, will be evaluated by the program/department to determine whether it can be used to fulfill degree requirements. For course work which was taken more than seven years prior to the completion of the VCU degree, the program/department will evaluate the course work for acceptability and report those courses deemed acceptable to the dean of the School of Graduate Studies.

Grade Reports

Final grade reports are sent to students at the end of each semester. Grade reports are mailed to the official mailing address on file. Students must submit in writing any change of address to Records and Registration, P.O. Box 842520, Richmond, VA 23284-2520.

Transcripts

Official transcripts of a student's academic record will be issued only by Records and Registration upon written request of the student. Transcripts given directly to students do not carry the University seal and are not official. The seal is attached when the transcript is mailed directly from the University to the receiving party.

Repeated Courses

Students receiving grades below "B" shall repeat a course only upon the advice of their program directors. Both the original grade and the repeat grade shall be included in the calculation of the grade-point average.

Grade Review Procedure

If a student thinks that a grade is inaccurate, the situation should be discussed with the faculty member. This will allow the faculty member to explain how the final grade was determined and, if an error is detected, to submit a change of grade.

If the student still thinks that the grade was assigned unfairly, a written appeal should be submitted to the department chair. Upon receipt of the written appeal, the department chair shall provide the student with a copy and explanation of the Grade Review Procedure and shall ensure that the requirements of the Grade Review Procedure are followed.

If the department chair is unable to resolve the complaint, then the dean of the school in which the course was offered will form a grade review committee as described in the Grade Review Procedure policy and will submit its decision to the dean of the school. The decision communicated by the dean of the school in which the program resides is the final decision and will be distributed to the student, faculty member(s), and department chair.

In cases concerning grades awarded for the fall semester, the written appeal must be submitted to the department chair no later than 30 calendar days after the beginning of the following spring semester. In cases concerning grades awarded for the spring semester or summer sessions, the written appeal must be submitted no later than 30 calendar days after the beginning of the following fall semester.

Grading System

Work quality is measured by the four-point grade system with the following equivalents:

Grade Symbol and Meaning	Grade-Point Value per Semester Credit
A	4.0
B	3.0
C	2.0
D	1.0
F	0.0
P/F (Pass/Fail)	0.0
PR	0.0
S/U (Satisfactory/Unsatisfactory)	0.0

All other grades are temporary, carry no credit, and are not used in the computation of a grade-point average. Refer to the following pages for an explanation of the use of the grades of satisfactory and unsatisfactory in relation to thesis/dissertation/research classes.

The number of grade points earned is computed by multiplying the grade-point value for the letter grade by the number of semester credits for the course. As an example, a student receiving an "A" (i.e., four grade points) in a three-credit course receives 12 grade points.

The grades of accepted transfer courses are not included in the computation of the VCU grade-point average. Graduate students are not designated as special honors graduates (i.e., cum laude, magna cum laude, summa cum laude) on transcripts or diplomas upon completion of their programs.

No graduate student shall be awarded degree credit for remedial work. Students advised to take any level course for remedial work should be notified in writing that the course credit shall not apply to the degree they are pursuing. Other bodies may rule later, should the student wish to apply the credit to some other degree.

Grade of Audit (AU)

Class size permitting, students may register for courses on an audit basis. A student may register for audit only during add/drop and late registration periods as a new registration and not as a change from credit to audit. Auditing a course means a student enrolls in a course, but does not receive academic credit upon completion of the course. A student who registers on an

audit basis is subject to attendance regulations of that class and may be administratively withdrawn by an instructor for a violation of class requirements for audit students, before or after the normal eight-week withdrawal deadline. A student who registers for audit may be subject to other course requirements at the discretion of the instructor. Audit students are charged the regular rate of tuition and fees. An audit course is counted as part of the student's semester load in terms of classification as a full-time student. Courses taken for audit, however, do not satisfy minimum enrollment requirements for students receiving graduate teaching or research assistantships, graduate fellowships, or University graduate scholarships.

Grade of Continued (CO)

The grade of "CO" may be assigned as an interim grade for those courses which run over several grade reporting periods. The "CO" indicates that the course is not expected to be completed in a single semester and that students must reregister for the course. Upon completion of the course, a final grade will be assigned to the current semester, and the previous "CO" grade(s) will remain. This grade may be assigned only in courses approved for such grading.

Grade of Incomplete (I)

If because of circumstances beyond their control, students are unable to meet all the requirements of a course by the end of a semester, the mark of incomplete ("I") may be given. The awarding of a mark of "I" requires an understanding between instructor and student as to when and how the course will be completed. This understanding must be recorded on an Incomplete Grade Assignment Form which is submitted instead of a final course grade. The maximum time limit for submission of all course work necessary for removal of an Incomplete is the end of the last day of classes of the next semester following the semester in which the Incomplete was incurred (i.e., an Incomplete awarded in the fall semester must be converted by the last day of classes in the spring semester, and an Incomplete awarded in the spring or summer semester must be converted by the last day of classes in the fall semester). At that time, an unremoved grade of Incomplete is changed automatically to a failing grade. Individual departments and schools may have more stringent time limits. An extension of the time limit is possible, but must be approved, prior to the expiration date stated above, by the instructor and the dean of the school through which the course is offered. Written approval indicating the new time limit must be filed with the dean of the School of Graduate Studies.

Grade of Pass (P)

This grade is awarded for certain courses to denote satisfactory completion of requirements. Courses assigned the grade of "P" will not be computed in the grade-point average.

Grade of Progress (PR)

The mark of "PR" may be assigned only in courses approved for such grading. Unlike the mark of "I," "PR" will not automatically be changed to a failing grade at the end of the succeeding semester.

Grades of Satisfactory (S), Unsatisfactory (U), or Fail (F) in Research, Thesis, and Dissertation Courses

All research, thesis, and dissertation credits taken as part of the final project (thesis/dissertation/project) for awarding a graduate degree are to be graded each semester as "S," "U," or "F." There is no limit to the number of these credits a student may take while pursuing completion of the degree as long as the student receives a grade of "S" for each credit. An individual department may terminate a student who does not progress satisfactorily as indicated by a "U" grade in research, thesis/dissertation/project course work. A student who receives a final grade of "F" in the thesis or dissertation will be terminated from the graduate program.

Grade of Withdrawn (W)

The grade of "W" indicates that the student has officially withdrawn from a course or has been dropped for nonattendance. No student who has officially withdrawn from a course or who has been dropped for nonattendance may attend subsequent meetings of the course.

Course Listings

Identification of Symbols

I	A course offered in the first semester
II	A course offered in the second semester
I, II	A course offered in each semester
I and II	A course continued through two semesters
S	A course offered in summer sessions

Course Interpretation

A single number listing for a course, such as Business 648, indicates that it is a one-semester course and may be offered each semester or only one semester each year.

Courses listed with a double number, such as Theatre 603, 604 and designated as semester courses, consist of two one-semester courses, either semester of which may be taken without the other.

Courses listed with a double number, such as Speech 601-602, are designated as continuous courses and consist of two one-semester courses, the first of which can be taken without the second, but the second of which cannot be taken without the successful completion of the first.

The University reserves the right to withdraw any course or program.

Course Numbering

All schools and programs within VCU use the following course numbering system. All course numbers consist of three digits (XXX). The first digit relates to the course level as follows:

- A. **0XX Noncredit Courses.** Such courses are offered for students to make up deficiencies in previous training or to improve certain basic skills prior to full-time enrollment in undergraduate credit courses.
- B. **1XX and 2XX Undergraduate, Lower Level.** Courses with these numbers are offered primarily for undergraduate students and may not be used for graduate credit, although graduate students may be required to register for courses at this level to gain a necessary foundation for other course work.
- C. **3XX and 4XX Undergraduate, Upper Level.** Courses offered for advanced undergraduates and usually constitute the major portion of specific program work leading to the baccalaureate degree. On occasion, students will be advised by their graduate advisers to enroll in a 4XX course.
- D. **5XX Introductory Graduate Courses.** Graduate students enroll for credit in these courses through the normal graduate advising system. Departments may limit the number of 500-level courses applicable to a graduate degree program. Advanced undergraduates may enroll in these courses for credit with consent of the offering department. Credit is applicable toward only one degree.

First year, First Professional (Medicine and Dentistry). Courses normally open to students enroll in the MD and DDS programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.
- E. **6XX, 7XX, and 8XX Graduate Courses.** Graduate students enroll for credit in these courses through the normal graduate advising system.

6XX Second Year, First Professional (Medicine, Dentistry, and Pharmacy). Courses normally open only to students enrolled in the MD, DDS, and PharmD programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

7XX Third and Fourth Year, First Professional (Medicine, Dentistry, and Pharmacy). Courses normally open only to students enrolled in the MD, DDS, and PharmD programs. Certain courses of this group may be designated by the department and approved by the Graduate Council for graduate credit.

University Resources and Services

University Library Services

University Library Services (ULS) is a vibrant community where ideas are generated, engaged, and shared. It is a dynamic center of culture and knowledge, serving as a conduit for recorded information in all its forms.

ULS administers the major research libraries on both campuses and provides numerous electronic resources, federal and state documents, patents, and a wide variety

of microform and media resources. The combined collections in James Cabell Library on the Academic Campus and Tompkins-McCaw Library on the MCV Campus total more than 1.23 million volumes. Cabell Library's growing collections support the programs of the Academic Campus. The library houses more than 940,000 volumes and 6,900 journal titles. The comprehensive collections of Tompkins-McCaw Library is a designated resource library for the Southeastern states in the National Network of Libraries of Medicine.

A selective depository for U.S. government documents and a state depository for the Commonwealth of Virginia, Cabell Library is also the only United States Patent and Trademark Depository Library in Virginia. The combined Government Documents collections include items available in print, microform and electronic formats.

ULS is extensively automated, with almost 900 databases available for searching and more than 100 public access workstations. A large collection of microform and audiovisual materials round out the libraries' collections.

Both libraries provide an assortment of services, including reference assistance from professional librarians, library orientation tours and bibliographic instruction, computer-assisted literature searches, brown bag lunches and seminars on Internet navigational tools and resources, self-service photocopiers, and microform reader-printers.

The on-line catalog serves as the gateway to both print, nonprint, and electronic resources. Electronic databases, and a broad array of CD-ROMs covering all disciplines, constitute the backbone of ULS's electronic resources. Increasingly, many of the databases are available through the Web. The catalog links both libraries and enables patrons to determine the status of library materials. Except for the basement of Cabell Library, computer workstations are located on all floors of both libraries.

Through interlibrary loan, students may borrow books and obtain photocopies of articles not owned by ULS from the collections of academic and public libraries throughout the country. VCU students also may borrow specific books from other Richmond academic libraries by inquiring at the Cabell Library Reference Desk and Tompkins-McCaw Library Service Desk for a special borrower's pass.

ULS document delivery, a free-based service to retrieve, photocopy, and deliver articles owned by ULS, is available to VCU students, faculty, and staff.

Media resources, located in room 301 of Cabell Library and on the second floor of Tompkins-McCaw Library, consist of nonprint resources, including cassette tapes, compact discs, computer software, models, slides, and video and laser discs. Media Resource Services at Cabell Library also houses music scores. Additionally, films and videos from the Richmond Area Library Consortium Film/Video Library Cooperative are available to VCU faculty.

There are many services for persons with disabilities. Cabell Library has wheelchair ramp to enter the building on the first floor through automatic doors. Accessible restrooms are in the basement and second floor levels, and elevators provide access to all floors. Special audio and visual equipment is available to aid in using library materials, including the Kurzweil

"Reading Edge," a synthesized-voice reading machine; the Voyager/Visualtek Reader for enlarging printed text; a large-print microfiche reader; and a personal computer with screen magnification and synthesized voice screen reader. Staff at the Reference Desk can provide special research assistance and orientations by appointment. ULS will waive the fee for document delivery service and provide assistance with retrieving and photocopying materials from the collection within 48 hours of the request.

Tompkins-McCaw Library has a wheelchair ramp with a monitored entrance. Accessible restrooms are available on the first floor. Elevators provide access to all floors. Specialized equipment includes a personal computer with a braille printer, software for screen magnification and scanning, and synthesized voice for screen reading. A Voyager/Visualtek Reader and large-print microfiche reader also are available. Staff at the document delivery service will waive the fee and provide assistance with retrieving and photocopying materials from the collection within 48 hours of the request for the physically challenged patron.

Most of ULS's reprographics and printing equipment is VCUCARD-compatible. The VCUCARD also can be used for checking out library materials.

ULS is a member of the Center for Research Libraries, the Richmond Area Library Consortium, the Association of Southeastern Research Libraries, the Richmond Area Film/Video Cooperative, the Southeastern/Atlantic Regional Medical Library Services, and the Virtual Library of Virginia (VIVA) initiative (<http://www.viva.lib.va.us>).

ULS strives for excellence in all of these endeavors, keeping uppermost in mind at all times the importance of the highest quality service to the students, faculty, and staff of the University.

For more information about ULS, please visit the Web site at <http://www.library.vcu.edu/>.

Research

While Virginia Commonwealth University is one of the leaders in teaching among institutions of higher education in the state, it is also an institution which commits a significant portion of its resources to research and scholarly activities. VCU is fully committed to the proposition that a broad-based program of research investigations enhances the teaching mission of the University, while, at the same time, it improves the quality of services provided to the community. During the fiscal year ending on June 30, 1997, the University received more than \$96.1 million in sponsored program support from a variety of federal agencies, industries, and private organizations. The extensive and diverse nature of VCU's research programs is directly related to the excellence of the University's faculty. Prospective graduate students can anticipate working in a lively intellectual environment. Many faculty who are directly involved in graduate education programs are recognized nationally and internationally in their fields of endeavor.

Computing Services

Computing support is provided by three primary centers: University Computing Services-Academic Campus, University Computing Services-MCV Campus, and University Computing Services-University Computer Center. Basic services from these centers include counseling help in the use of all University computing resources (from personal computers to mainframes), Help Desk assistance via telephone or e-mail, teaching short courses, advice on acquisition of computer systems, operation of local computer facilities and data networks. In addition, University Computing Services-Academic Campus and University Computing Services-MCV Campus provide optical scanning for test grading, faculty evaluation and other surveys, and microcomputer software site licensing for their respective campuses. A University-wide information service is available electronically using the World Wide Web, which also provides access to information from academic, government and private sources world wide.

University Computing Services-Academic Campus. University Computing Services-Academic Campus (UCS-AC) operates UNIX multi-user computer systems, UNIX servers for client-server applications, numerous SUN and SGI workstations, an Origin 2000 ANB SGI Challenge XL Supercomputer, and four public access terminal facilities which are strategically located around the campus: the James Branch Cabell Library, the School of Business Building, the Hibbs Building, and the General Purpose Academic Building. UCS-AC also supports the Faculty Center for Instructional Technology (FCIT), located in Cabell Room B-43, and a training facility located in Cabell Room 320.

UCS-AC provides a range of services, including direct end-user support, network support services, UNIX support services, training, and consulting services.

The Student Lab in Cabell Room B-8, the telephone Help Line, the Customer Service Window in Cabell Room B-9, and UCS-AC's Reception Desk in Cabell Room B-30 comprise the hub of our direct end-user support services. The Student Lab currently contains 46 Macintosh and PC microcomputers connected to the campus network, 27 terminals connected to the Academic Campus data network, and three laser printers, as well as equipment for the physically challenged. The Help Line receives an average of 850 calls per month. Customer Service Window staff assist users with optical scanning services (e.g., test grading); computer systems backups; computer account management for all VCU systems; licensed software distribution; and IBM mainframe telephone Help Line support.

Network support services include the installation and configuration of network cards, network software, and/or network application software, as well as training and support for the above.

UNIX support services include support for AIX, IRIX, HP-VX, Solaris, SUNOS, computer systems and applications, such as maintaining the user databases and mailing lists, maintaining the VCU connection to the World Wide Web, providing electronic mail, and USENET resources, available from an easy-to-use menu system. The department also provides a WWW server with

FrontPage Extensions on the main VCU Web server for departmental Web pages and on the faculty/staff AIX system for individual pages.

Finally, the department provides a broad range of consulting services, including configuration, installation, and troubleshooting support for Windows/DOS, Macintosh OS, microcomputer hardware and software, UNIX, IBM MVS, Softswitch, computer procurement, optical scanning, Lotus Smartsuite and Lotus Notes are two of the newer products supported by the department. UCS-AC is also actively involved in the design, development and upkeep of VCU's World Wide Web sites.

A variety of software packages are available on the UNIX multi-user computers. The more popular packages include the following TCP/IP (Telnet/FTP), Lynx (a Web browser), Zmodem (communications); USENET (electronic conferencing, newsgroups); WordPerfect (text processing); SAS, SPSS, SPLUS (statistical data analysis); SAS/CALC (spreadsheets) and UNIFY (databases). The programming languages include FORTRAN, C, C++, FORTRAN 77, FORTRAN 90, Lisp, and Pascal. Also, the timesharing systems are widely used for electronic mail and access to the Internet which provides entry to information and library resources throughout the world. A menu interface is maintained on these machines for easy use.

The SGI supercomputer is reserved for numerically intensive research. Software currently available includes C, C++, FORTRAN, GAMESS, Gaussian 94, Sybyl and MATLAB.

Application for access to the UNIX multi-user systems as well as for accounts on the IBM Mainframe and VAX systems operated by other offices of the Office for Information Technology may be made at the UCS-AC Customer Service Window, Cabell Room B-9 or on-line via Web kiosk pages. For AIX accounts, apply via <http://www.vcu.edu/cgi-bin/reqacct>.

University Computing Services - MCV Campus. University Computing Services - MCV Campus (UCS-MCV) manages a VAXcluster (VMS) consisting of multiple VAXs and UNIX servers, including IBM RS/6000 and SGI devices, that provide interactive computing to public and private workstations around the campus. The VAXs provide a rich variety of software packages for statistical analysis (SAS, SPSSX, GLIM), molecular modeling (CHEMX, FRODO, SYBYL), DNA sequence analysis (GCG), simulation (SPICE), numerical methods (IMSL, NAG, LINPACK), and graphics (SAS/GRAPH, GKS). Computer languages include FORTRAN, SAS, Pascal, BASIC, C, and COBOL. Other areas include database (INGRES, Datatrieve), forms management (FMS), data entry (EasyEntry), word processing (WordPerfect), and text processing (TeX). In addition, the VAXs are used extensively for electronic mail (connected to BITNET and the Internet) and information dissemination for the academic community.

A microcomputer lab with IBM-compatible and Apple Macintosh systems is available. External devices such as optical scanners, slide-makers, plotters, and digitizers are connected to these microcomputers. IBM/AIX and SGI graphics workstations are also available. Many departments and schools maintain their own microcomputer labs and graphic stations (SGI and SUN).

A fiber-optic backbone supporting FDDI and Ethernet protocols connects 25 buildings on campus. This backbone interconnects Ethernet and Token Ring networks supporting Novell, TCP/IP, and DECnet protocols.

Application forms for access to the VAX and UNIX systems, as well as for accounts on the IBM mainframes (at the University Computer Center) and the DECsystems (at University Computing Services - Academic Campus) are available from UCS-MCV.

University Computer Center. The University Computer Center (UCC) operates as a centralized computer services utility that provides mainframe computer resources to all students, faculty, and staff (both academic and administrative) within the University. Located between the Academic and MCV Campuses in the Richmond Plaza Building, 110 South 7th Street, the UCC provides many services to administrative staff, including personal computer support.

The UCC provides computer utility services on IBM MVS/XA and VM mainframe computers for administrative and academic functions of the University. The UCC also has two RISC computers running the UNIX operating system to support the University Library interconnections. The MVS/XA runs on a 3090 CPU, and the VM runs on a 4381 dual processor. Services provided include large data-storage capacity (200 gigabytes), mainframe processing power, extensive networking facilities (Telnet, Internet, BITNET, Profs, VCU e-mail), batch processing, and on-line systems. These on-line systems include TSO (a versatile programming tool) and CICS (providing access to hundreds of application programs used extensively throughout the University). A partial list of programming languages and products available at the UCC includes FORTRAN, COBOL, SAS, PL/1, C, Pascal, Assembler, Mantis, DYL280, SPSS, SQL, QMF, IMAGINE, and Prolog. The VCU Library System, NOTIS, is one of the many application systems currently running on the MVS/XA mainframe. Access to UCC facilities is available at more than 1,500 terminals located throughout the University. Dial-up and Telnet facilities are also available.

The UCC maintains a public access INFO system. This is an electronic package of information about VCU. It is accessible to everyone, including University visitors. The INFO package is menu driven, available 24 hours a day, and requires no computer ID.

Communications. The fiber-optic backbones on the Academic and MCV Campuses, and the UCC are linked using the TCP/IP suite of protocols to form the VCUnet. VCUnet provides access to BITNET, VERnet, (the Virginia Education and Research Network), and the Internet.

Virginia Center on Aging

The Virginia Center on Aging, established at Virginia Commonwealth University by the Virginia General Assembly in 1978, is a statewide resource for aging-related research, education, service, training, and technical assistance. It serves as a focal point for the collection, assessment, and maintenance of data on elders in the Commonwealth; designs and tests innovative demonstration projects in education and service delivery; and

assists public and private organizations in meeting the needs of older citizens.

The Virginia Center on Aging and the Department of Gerontology maintain the Information Resources Center, a broad collection of print and audiovisual materials on aging that is available on loan or to rent. Short reports, training manuals, and vertical files may be obtained at cost. The Virginia Center on Aging also administers the Alzheimer's and Related Diseases Research Award Fund which provides seed grants of \$16,500 each to researchers in Virginia in order to investigate biomedical, psychosocial, clinical, public policy, and other aspects of dementing illnesses.

Housing

Requests for on-campus housing information should be addressed to University Housing, Virginia Commonwealth University, Gladding Residence Center, 711 West Main Street, Room 103, Richmond, VA 23284-2517, (804) 828-7666. Graduate housing is available primarily on the MCV Campus, although a few spaces are designated for graduate students in Academic Campus residence halls.

In general, most graduate students live off campus because of VCU's limited amount of available on-campus student housing. Off-Campus Housing offers assistance in the location of non-University controlled residences that rent to students on a nondiscriminatory basis; however, the University does not control or monitor privately operated off-campus housing facilities. This service provides free listings of available housing for VCU students, faculty and staff via computer-generated lists of rental apartments, rooms and houses; roommate requests; and houses for sale. Most listings are in the Fan District near the Academic Campus. Off-Campus Housing also provides a selection of brochures on topics ranging from tenants' rights to Richmond apartment guides. It is advisable for the student to inspect off-campus accommodations before leasing. Good quality apartments and rooms are limited, and students should make arrangements early. Because the listings are updated constantly, requests should be made no more than four to six weeks prior to beginning a search for housing. Address requests to Off-Campus Housing, University Student Commons, 907 Floyd Avenue, Richmond, VA 23284-2032, (804) 828-6492.

University Student Health Service and Health Insurance

The University Student Health Services (USHS) offers quality primary health care for the treatment of acute and chronic illness. In addition to diagnosis and treatment, the service emphasizes prevention of illness through screening, counseling, and health education. Full-time students are required to participate and pay the student health fee. Part-time students electing to participate in the service must pay the full student health fee.

The service is staffed by physicians, physician assistants, nurse practitioners, registered nurses, pharmacists, and health educators. Services offered by USHS

include general medical, allergy, and gynecology clinics, pharmacy and laboratory services, after-hours emergency care, and health education and public health programs.

All educational activities sponsored by USHS are available to students, including educational literature, video cassettes, weight reduction classes, and health-related programs on topics of interest to students.

Accidental injury and hospitalization are not covered by USHS, and students are urged to take advantage of the University-sponsored health plan. Information on this insurance program, which provides benefits to students at group rates, may be requested from USHS.

Virginia law requires that full-time students submit immunization records prior to enrollment for the first time at VCU. The immunization record is mailed to students upon acceptance and should be returned to the Academic Campus Student Health Services.

The USHS office on the Academic Campus is located in Suite 159, Gladding Residence Center, 711 West Main Street. The USHS office on the MCV Campus is located on the third floor of the VMI Building at 1000 East Marshall Street, Room 305. For information, call (804) 828-8828 (Academic Campus), or (804) 828-9220 (MCV Campus).

University Counseling Services

University Counseling Services (UCS) provides a wide range of services that meet the psychological, social, vocational, and educational needs of students. The mission of UCS is to provide assistance to the VCU community in such a way that students can meet their academic goals while also having the opportunity to develop personally, emotionally, and socially. Our intent is to enable students to live productive, responsible, and satisfying lives.

To fulfill this mission, UCS provides services to promote student self-understanding and positive growth, as well as to assist students who are experiencing stress or crisis in their daily living. Staff is committed to rendering quality care in a multicultural context. Education and prevention services such as the Academic Success Program, workshops offered to resident halls and student organizations, as well as consultation to faculty and University departments are central to the services offered at UCS. Expertly lead group counseling, individual counseling as well as couples counseling is offered by the UCS staff.

To better understand the needs of students, UCS is committed to research that will provide evaluative data regarding its service delivery and information about student needs. UCS is committed to training graduate students in psychology, social work, rehabilitation and medicine to function as competent professionals in their chosen field.

University Counseling Services is located on the second floor of the Student Commons, room 226 on the Academic Campus as well as on the third floor of Hunton Hall on the MCV Campus. The Academic Campus office is open Monday - Thursday from 8:00 A.M. until 6:00 P.M. and Friday from 8:00 A.M. until 4:30 P.M. The MCV Campus office is open Monday - Friday from 8:00 A.M. until 4:30 P.M. For information, call (804) 828-6200 (Academic Campus) or (804) 828-3964 (MCV Campus).

Career Services

The University Career Center assists students in identifying and achieving career goals. The center's library offers computerized career search programs, a complete career information system (books, videos, cassettes), and information on employers (annual reports, recruiting brochures, directories) and on educational opportunities.

Students have the opportunity to participate in career planning groups and to meet with staff members for career counseling and skills/interests assessments. Two popular topics for individual sessions are resume reviews and referrals to the Alumni Career Advisers Network. The network allows students to talk with VCU alumni already active in their career fields. Students learn job search skills by participating in mock interviews and small-group workshops on such topics as interviewing techniques. An extensive video collection also is available for individual viewing.

The center maintains a job bank of both part-time and full-time openings. Students can gain full-time and part-time job listings and campus interview sign-ups and become part of a referral database by registering with the *1stPlace!* registration system and resume writing program.

Students graduating within the academic year use the University Career Center to interview with business, industry, government, and education representatives who visit VCU seeking prospective candidates for anticipated openings in their organizations. To take full advantage of this service, graduating students need to register early for the Campus Interview Program, as the first visits are scheduled for October and some recruiters visit the campus only once a year. The center sponsors an annual campus-wide career fair, a part-time employment and summer jobs fair, and an Education Job Fair.

All graduate students are urged to use the resources of the University Career Center located at the University Student Commons, First Floor, (804) 828-1645. For additional information and resources, you can locate the University Career Center's Web page at <http://www.vcu.edu/safweb/careers/ucchome.html>.

Recreational Facilities

The Cary Street Recreation Complex includes a gymnasium which features basketball, volleyball, badminton, fitness equipment, free weight and machine weight room, racquetball courts, a multipurpose field and jogging track, and outdoor basketball courts. Numerous recreational activities are offered, including instructional sessions in aerobics, weight training, open recreation, and tournaments.

The MCV Campus Recreation and Aquatic Center houses two basketball courts, two volleyball courts, one indoor tennis court, one outdoor tennis court, four handball/racquetball courts, two squash courts, a fitness center, a multipurpose room and a 25 meter swimming pool with a spa.

The addition of the new \$27 million Stuart C. Siegel Center to be completed in Fall 1998 will include over

34,000 square feet for the recreation component and when the main arena is used for recreation, another 45,400 square feet will be available. This center also will include an aerobic/multipurpose studio, weight/cardio-vascular fitness center, a multipurpose gym for indoor soccer and floor hockey, and a Wellness Resource Center. The main offices for Recreational Sports will be relocated to this facility.

Camping and other wilderness recreation equipment can be rented at the Outing Rental Center. In addition, students can participate in a variety of outdoor adventures through the outdoor adventure program located at the Outing Rental Center. Call (804) 828-6219 for details.

Students from both campuses may use the University swimming pools located in the Franklin Street Gymnasium on the Academic Campus and the MCV Campus Recreation and Aquatic Center on the MCV Campus. University identification is required. Graduate students also are eligible to participate in numerous intramural and club sports activities on either campus. For specific information, students should contact the Recreational Sports staff on the Academic Campus: (804) 828-6219; or on the MCV Campus: (804) 828-6100.

University Student Commons and Student Activities

The University Student Commons is the gathering place for students, faculty and staff on the Academic Campus. Located at 907 Floyd Avenue, the Commons provides an array of programs, facilities and services to meet the needs of daily life on campus. All the facilities and services in the Commons are conveniently accessible to people with mobility impairments.

The lower level of the Commons houses the Student Activities Center, Break Point games room and the Common Ground, a place to eat, visit with friends and access computers for a quick Web search or e-mail check. The first floor of the Commons houses on-line@vcu, the University Career Center, as well as McDonald's and Ukrop's Fresh Express, and a satellite office for the VCUCARD Office. Ballrooms and other meeting rooms, as well as offices for the Commons, New Student Programs and Health Promotions are located on the second floor of the building.

In addition, the Commons houses Commuter Student Services, the Off-Campus Housing Office, a theater area that is used regularly for showing films on Friday evenings, as well as two Wachovia ATM machines.

Larrick Student Center

A variety of activities and social opportunities are offered to students on the MCV Campus at the Jonah L. Larrick Student Center. The lower level of the circular building houses a cafeteria which provides food on a contractual basis for students living in the dormitories and for off-campus students who elect to be on the meal plan. Upstairs, a large central lounge which can accommodate up to 350 people for dances, social mixers, lectures, and other functions is surrounded by smaller meeting rooms which include offices of the student center director and the MCV Student Government Association. Additional

upstairs space houses a computer room, billiard tables, table tennis, television, and an area for listening to music. Reservations for use of the activities areas should be made with the director of the Larrick Student Center, (804) 828-3438.

Organizations

More than 170 student clubs and organizations exist on campus, reflecting the social, cultural, recreational, educational, political, and religious interests of the student body. Various types of organizations include fraternities and sororities, departmental professional and interest groups, service-oriented groups, and numerous special interest organizations representing a wide variety of activities and interests.

A list of registered student organizations, policies affecting these groups, and information and materials necessary to form new organizations are available in the Student Activities Center, Virginia Commonwealth University, 907 Floyd Avenue, Room 018, P.O. Box 842035, Richmond, VA 23284-2035, (804) 828-3648.

Student Identification Cards

Students should carry their graduate VCUCARD with them at all times and should be ready to show them to any authorized University official who might request their identification. Students may obtain or validate their VCUCARD cards during registration. The cards are required for numerous University functions, including borrowing books from the library and use of the University shuttle system. Any student who loses a VCUCARD should contact the VCUCARD Office for a replacement. There will be a charge for replacement. See the Web site at <http://www.vcu.edu/vcucard/> for additional information.

Automobiles

Limited on-campus parking is available to students on a first-come, first-served basis. For information, students should contact the University Parking Offices: Academic Campus, (804) 828-8726; MCV Campus, (804) 828-0501.

University Mail Services

The United States Postal Service (USPS) provides self-service postal vending machines in the lobby of the Mail Services office at 1000 East Marshall Street on the MCV Campus and in the University Student Commons on the Academic Campus. Students may mail packages through the USPS from the Student Commons Postal Center. A full-service USPS Station at 8th and Marshall Streets supports MCV Campus students. All students living in residential housing have dormitory mail boxes. Use of a nine-digit zip code is important and should be included on all mail. Mail for dormitory residents should be addressed as follows:

Student's Name
Room Number and Dormitory Name
Street Address
Richmond, VA and nine-digit Zip Code

Interdisciplinary and Cooperative Graduate Study

Master of Interdisciplinary Studies

Sherry T. Sandkam

Associate Dean, School of Graduate Studies and Director, Master of Interdisciplinary Studies Program PhD, Virginia Commonwealth University; higher education; credentialism.

The Master of Interdisciplinary Studies program offers students a coherent method of combining regular graduate studies in two or more selected disciplines. It is intended for students who wish to pursue a clearly defined, multidisciplinary program rather than a professional curriculum or a specialization in a traditional discipline. The Master of Interdisciplinary Studies (MIS) offers a variety of opportunities for interdisciplinary study, including, but not limited to, cooperative ventures with Virginia State University, off-campus interdisciplinary study in the arts, and environmental studies.

Program Description

Before entering the program, students identify two or more disciplines in which to pursue graduate study. They then complete regular graduate courses within each of the chosen disciplines, plus additional electives in other fields. When regular course work is completed, they select a special project for additional study and complete three to six credits of approved independent study, special topics, directed study, or thesis.

Administration

At Virginia Commonwealth University, the on-campus MIS program is administered by the associate dean of graduate studies who works closely with graduate faculty advisers from relevant disciplines. The off-campus interdisciplinary arts program is administered by the School of the Arts. The interdisciplinary track in environmental studies is administered by the Center for Environmental Studies.

Admission

To be admitted to the MIS program at VCU, students must provide the following specific requirements in addition to the general requirements for graduate admissions stated in Part I of this *Bulletin*:

- an overall minimum 2.8 GPA (on a 4.0 scale) in the last 60 credits of undergraduate work or, in some cases, a minimum 3.0 GPA in at least nine hours of graduate work; and

- a statement explaining the kind of interdisciplinary curriculum desired and specific areas of study intended.

Applications for admission may be obtained from the School of Graduate Studies, Virginia Commonwealth University, 901 West Franklin Street, Room B-1, P.O. Box 843051, Richmond, VA 23284-3051, or in the Office of Academic Advising and Nontraditional Studies, 812 West Franklin Street, Room 1, P.O. Box 842002, Richmond, VA 23284-2002.

Degree Requirements

In addition to the general requirements stated in Part I of this *Bulletin*, Master of Interdisciplinary Studies program students must complete a minimum total of 39 graduate semester credits, including:

- three six-semester credits of approved directed research, independent study, special project, or thesis work; and
- at least nine and not more than 15 graduate-level semester credits in each of at least two disciplines. No more than 15 credits in any one discipline (exclusive of the directed research, independent study, special project, or thesis requirement) may be applied toward an MIS degree.

Transfer Credits

Up to six semester credits of graduate courses may be transferred into the MIS program from institutions other than Virginia Commonwealth University. All such transfer credits, however, must conform to the regulations stated in Part I of this *Bulletin*.

Interdisciplinary Track in Environmental Studies

The Center for Environmental Studies was created in 1993 as a focus for the growing number of multidisciplinary environmental initiatives at VCU. The center's objectives complement the broader University missions of teaching, research, and community outreach, and provide the Commonwealth with a unique academic resource. The interdisciplinary graduate program in environmental studies is administered by the School of Graduate Studies and the Center for Environmental Studies.

Program Description

The Center for Environmental Studies offers students the opportunity for advanced, graduate-level training in Environmental Studies for full-time and part-time students. The program offers studies in environmental planning, environmental science, environmental health, and environmental technology. The unique curriculum is designed to provide graduates with the ability to communicate effectively across traditional discipline boundaries, while fully developing specific areas of expertise. Graduates of the center's academic programs hold positions as environmental professionals in government and in the nonprofit and private sectors.

As part of the requirements of the Master of Interdisciplinary Studies, students must successfully complete:

- three credits of ENS 590 or ENS 591;
- ENS 601 Survey in Environmental Studies;
- ENS 603 Environmental Research Methods;
- one statistics course (500-level or above); and
- three to six credits of ENS 692, ENS 697, or ENS 698 to satisfy thesis/project requirements of the MIS.

Admission Requirements

Applicants should have successfully completed undergraduate training and hold a baccalaureate degree. Admissions to the program are drawn generally from applicants with an undergraduate grade-point average above 2.8 (on a 4.0 scale or equivalent), satisfactory scores on a current (less than five years old) standardized graduate admissions test deemed appropriate by the Center for Environmental Studies. Applicants holding an undergraduate degree from recognized foreign institutions should display an acceptable level of English proficiency by achieving a score of 600 or above on the TOEFL examination.

To Apply

Applicants for admission to the program must complete forms provided by the School of Graduate Studies and indicate Master of Interdisciplinary Studies – Environmental Studies as the curriculum. Graduate applications can be requested from the School of Graduate Studies. A limited number of merit-based University graduate fellowships and assistantships are available to applicants on a competitive basis. Inquiries should be addressed to the Center for Environmental Studies, Virginia Commonwealth University, P.O. Box 843050, Richmond, VA 23284-3050 or the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051. For more information about the Center for Environmental Studies, browse the World Wide Web at <http://www.vcu.edu/cesweb/>.

Graduate Courses in Environmental Studies

Core Environmental Studies Courses

ENS 590 Research Seminar in Environmental Studies. An interdisciplinary examination of problems and issues related to Environmental Studies.

ENS 591 Topics in Environmental Studies. Variable credit, 1-3 credits per semester; may be repeated with different topics for a maximum of 6 credits. Prerequisites vary by topic; see the *Schedule of Classes* for specific prerequisites. An in-depth study of a selected environmental topic.

ENS 601 Survey in Environmental Studies. Provides a foundational understanding of issues central to environmental studies. Lectures will address the theoretical and scientific basis for a variety of pertinent issues, including: and water quality and quantity, pollution prevention, environmental law and policy, population growth, global climate change, conservation, and human and ecological health.

ENS 602 Environmental Technology. This course gives students the opportunity to develop skills not available in the traditional academic setting. Students will take 2-4 workshops offered by the Center for Environmental Studies in its Environmental Technology Training Workshop series. Students will complete an additional project related to each workshop or series of workshops for evaluation purposes.

ENS 603 Environmental Research Methods. Provides students with an understanding of statistical and research methods as they apply to environmental research. Students will complete projects on available data sets (Virginia Water Quality Data – DEQ, Virginia Air Quality Data – DEQ). This course would emphasize the application of current data analysis methodologies, including the graphical display of summary data, statistical modeling and prediction, and Geographic Information Systems (GIS).

ENS 691 Topics in Environmental Studies. Provides an in-depth study of a selected environmental topic. Potential topics include: Environmental Epidemiology, Remote Image Sensing, Geographic Information Systems, Ecological Assessment.

ENS 692 Independent Study. Variable credit, 1-3 credits per semester; may be repeated with different topics for a maximum of 6 credits. An in-depth study of a selected environmental topic.

ENS 693 Internship in Environmental Studies. Provides students with a workplace experience in a public or private agency related to Environmental Studies. Each credit hour represents 60 clock hours of work. Possible Internship Opportunities: Virginia Economic Development Partnership, Department of Environmental Quality, Department of Game and Inland Fisheries, Department of Conservation and Recreation, Virginia Environmental Endowment, Alliance for the Chesapeake Bay, Chesapeake Bay Foundation, James River Association, Virginia Power, James River Corporation.

ENS 697 Research. Planning, preparation, completion, and presentation of research in environmental studies.

ENS 698 Thesis. Planning, preparation, completion, and presentation of research in environmental studies.

The following course groupings represent examples of courses students may take in fulfillment of program requirements. The three groupings are representative of course work and serve only as suggestions. Students will determine their own course of study under the supervision of the graduate program coordinator. Please consult the *Schedule of Classes* for current course offerings and this *Bulletin* for current curriculum guidelines and course prerequisites.

Environmental Planning

USP 621/GEO 621 Introduction to Geographic Information Systems
 USP 626 GIS Applications for Planners
 USP 628 Land Use Planning
 USP 635 Legal and Legislative Foundations of Planning
 USP 650 Environmental Planning
 USP 652 Environmental Analysis
 MAT 639 Studies in Operations Research
 MAT 647 Multiattribute Utility Theory
 REC 601 Foundations of Recreation
 PAD 601 Principles of Public Administration

Environmental Science

- BIO 502 Microbial Biotechnology
- BIO 503 Fish Biology
- BIO 510 Conservation Biology
- BIO 514 Stream Ecology
- BIO 518 Plant Ecology
- BIO 522 Evolution and Speciation
- BIO 591 Special Topics in Biology
- BIO 606 Quantitative Ecology
- BIO 626 Physiological Ecology
- BIO 691 Special Topics in Biology
- CHE 504 Advanced Organic Chemistry I
- CHE 507 Introduction to Natural Products
- CHE 532 Advanced Analytical Chemistry
- CHE 591 Special Topics in Chemistry
- CHE 605 Physical Organic Chemistry
- CHE 620,621 Advanced Inorganic Chemistry I,II
- CHE 691 Special Topics in Chemistry
- PHY 507 Materials Characterization
- PHY 591 Topics in Physics

Environmental Health

- PMH 511 Basic Industrial Hygiene I
- PMH 512 Basic Industrial Hygiene II
- PMH 571/NUR 571 Principles of Epidemiology
- PMH 600 Introduction to Public Health
- PMH 617 International Health
- BME 511 Fundamentals of Biomechanics
- BME 613 Biomaterials
- BME 635 Modeling for Biomedical Engineers
- PMC 535 Introduction to Toxicology

Post-Baccalaureate Certificate in Environmental Studies

Andrew D. Lacatell

Program Coordinator, Center for Environmental Studies (1993) BA 1993 University of Richmond;MS 1995 Virginia Commonwealth University;MPH 1997 Medical College of Virginia, Virginia Commonwealth University

Environmental crises and discussion of environmental issues are central features of modern industrial societies. Continuing technological advancement and economic growth demand increased public understanding of environmental constraints and the effects of human activity on the environment. When environmental questions are explored in depth, scientific knowledge, policy considerations, and ethical questions are necessarily joined. The curriculum in environmental studies is structured to provide a multidisciplinary introduction to biophysical and social factors which affect the quality of life on earth.

The environmental studies certificate is for students who already hold a bachelor's degree in another field and wish to pursue studies in the environmental field. The certificate can help prepare students for work in such fields as industrial pollution control, municipal water treatment, environmental planning and analysis, biological monitoring, and science writing and reporting.

The Post-Baccalaureate Certificate in Environmental Studies requires 36 credits, which includes four environmental courses and two statistics courses. Electives to complete the certificate may be selected from the ENS-listed courses and from courses in related departments. Consult the ENS program coordinator or adviser for course approvals. At least one course must be taken from the Natural Sciences, and one from the Social Sciences.

Of the 36 credits, 24 credits must be at the 300 level or above. A maximum of 11 of the environmental studies-related credits and all 6 of the statistics credits may be transferred from course work completed before or after receiving the bachelor's degree. At least 18 approved credits must be taken at Virginia Commonwealth University.

Post-baccalaureate certificate students must apply for admission using an undergraduate admission form. Normally, a GPA of 2.7 or better is required for admission. Please contact the Center for Environmental Studies for the most current curriculum guidelines.

Required Courses for Certificate	<i>Credits</i>
USP/ENS 331 Environmental Systems OR USP/ENS/GEO 332 Environmental Management	3
ENS/POS 311 Politics of the Environment	3
ECO 325 Environmental Economics	3
ENS 490 Research Seminar in Environmental Studies	3
STA 210 Basic Practice of Statistics OR BUS 301 Business Statistics	3
Three additional credits in statistics above STA 210 (Students may not receive credit for both STA 210 and BUS 301.)	3
	18

Additional Recommended Courses

- BIO 151-152,L151-L152 Introduction to Biological Sciences and Laboratory
- CHE 101-102,L101-L02 General Chemistry and Laboratory

Center for Public Policy

The Center for Public Policy offers a doctoral degree in public policy and administration. The center was established to serve as the focus of the University's interdisciplinary efforts in teaching, research, and service related to public policy. See Part III of this *Bulletin* for details about the PhD program.

Master of Public Health Program

The graduate program in public health is offered through the School of Medicine's Department of Preventive Medicine and Community Health and leads to a Master of Public Health degree. The program is closely linked with local, state, and national public health agencies, organizations, and professionals in order to enhance the student's appreciation and understanding of applying public principles to practice. The MPH program provides the knowledge and skills necessary for a broad range of positions in academia, private industry, and local, state, national, and international health organizations.

Graduates of the MPH program are expected to comprehend the complex matrix of psychosocial, cultural, economic, political, and biological factors which influence sick care systems, prevention activities, and other health issues of our time; to be able to identify, analyze, diagnose, and interpret public and community health issues to design, implement, and evaluate community health programs; and to be able to apply specific skills and knowledge to the surveillance of disease and injury.

See Part I of this *Bulletin* for School of Graduate Studies rules on admissions and general academic policies.

For further information on the Master of Public Health program, see the program description in Part X of this *Bulletin*.

Commonwealth Graduate Engineering Program

Thomas W. Haas

Professor and Director PhD, Princeton University; polymer engineering.

The Commonwealth Graduate Engineering Program is a collaborative effort of the University of Virginia, Virginia Commonwealth University, Virginia Polytechnic Institute and State University, Old Dominion University, George Mason University, and Mary Washington College. See Part IX of this *Bulletin* for information on VCU's graduate programs in biomedical engineering.

Administration

At VCU, the director of the Commonwealth Graduate Engineering Program works closely with an advisory committee composed of the dean of the School of Engineering at VCU, the engineering school deans at the University of Virginia and Virginia Polytechnic Institute and State University, and representatives from the State Council of Higher Education, the Department of Telecommunications, local businesses and industries, the Richmond Chamber of Commerce, and the Richmond Metropolitan Development Council.

Program Description

Students having baccalaureate degrees in engineering or strong backgrounds in the sciences may work toward a master's degree in engineering on the Academic Campus of Virginia Commonwealth University. Graduate engineering courses are taught using interactive television lectures/demonstrations from the University of Virginia and Virginia Polytechnic Institute and State University. In addition to the required engineering courses, elective courses are available in applied mathematics, mathematical statistics, chemistry, operations research, physics, and computer science in classes at Virginia Commonwealth University. Academic programs available are:

- Aerospace and Ocean Engineering
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Engineering Administration
- Industrial Engineering and Operations Research
- Manufacturing Systems Engineering
- Materials Science
- Mechanical Engineering
- Sanitary Engineering
- Systems Engineering

Degree Students

Students enrolling in the program should apply for admission in a given academic area of study and may

select courses from any of the participating institutions, consistent with selected degree requirements.

The degree awarded is the Master of Materials Science or Master of Engineering degree from the University of Virginia or the Master of Science or Master of Engineering, depending upon the program, from Virginia Polytechnic Institute and State University. Neither university requires a thesis nor time spent in residence for these degrees.

Nondegree Students

Qualified individuals may enroll in a particular course without pursuing a formal graduate degree program of study. Admission will be based on the individual's academic preparation and the availability of space.

Admission

Students are accepted for admission either to the University of Virginia or to Virginia Polytechnic Institute and State University, depending upon their degree programs. Applicants should have a "B" average, but a successful professional experience may strengthen the admission credentials of those with marginal academic records. Three recommendations from persons who are qualified to give information concerning the applicants' probable success in the program and the completion of the Graduate Record Examination (GRE) also are required.

Master of Science Program in Geriatric Physical Therapy

Geriatric physical therapy is a joint program offered by the Department of Physical Therapy and the Master of Science in Gerontology culminating in a Master of Science degree in Physical Therapy with a specialty in geriatric physical therapy. The faculty includes the combined graduate faculties of physical therapy and gerontology.

Graduate students in this program may prepare for positions in teaching, administration, clinical practice, or research related to the programs of the aged population, including positions as chief physical therapists in any kind of facility dealing with geriatric patients where they could provide leadership in service, research, and teaching.

See Part I of this *Bulletin* for School of Graduate Studies rules on admissions and general academic policies. For further information on the Master of Science in Geriatric Physical Therapy program, see the program description in Part V of this *Bulletin*.

Certificate Program in Aging Studies

The Certificate in Aging Studies program was designed primarily to meet the needs of persons who are working already with the elderly, but who have no academic training in gerontology. The certificate program provides students with a comprehensive overview of gerontology and stimulates the application of gerontological research to

problems in applied areas. The certificate program also is a minor option for graduate students in other disciplines.

The Certificate in Aging Studies program is designed to meet the needs of those individuals who desire graduate training in gerontology, but who do not desire the full completion of the master's program. This program is complementary to the MS program. Certificate students who wish to enter the MS program must make formal application and abide by the admission requirements outlined in this *Bulletin*.

For further information on the Certificate in Aging Studies, see the program description in Part V of this *Bulletin*.

MSW and Certificate in Aging Studies

The School of Social Work, in cooperation with the Department of Gerontology, provides students with a unique opportunity in social work and gerontology. Students in the MSW program interested in work with the elderly or in gerontological programs may earn a Certificate in Aging Studies while completing Master of Social Work degree requirements.

Interested students must meet the admission requirements of the MSW program of the School of Social Work and of the Certificate in Aging Studies of the Department of Gerontology. Admission into one program does not guarantee admission into the other. In order to meet the requirements of the MSW degree and the Certificate in Aging Studies, students complete a total of 65 graduate credits. All foundation and specialization courses of the MSW program are completed, and core courses (nine credits) of the Certificate in Aging Studies are completed. Other requirements are met by (1) completion of the MSW research credits in which students undertake a project focused on aging; (2) completion of second-year field instruction practicum requirements (six credits) in a social work setting related to aging; and (3) completion of an independent study course in gerontology which integrates research and practicum courses.

Additional information may be obtained from the Department of Gerontology, 1010 East Marshall Street, Richmond, VA 23298-0228, Attention: MSW-Gerontology Certificate Adviser.

Certificate in Applied Social Research

The Department of Sociology provides limited, specialized training in the methods and techniques of applied social research. This certificate meets the needs of students who wish to acquire these skills without pursuing a graduate degree or who are enrolled in a graduate program and wish to fulfill specific job or career needs.

For further information on the Certificate in Applied Social Research, see the program description in Part IV of this *Bulletin*.

Graduate Programs in Statistical Areas and Operations Research

See degree programs or tracks and cross-listed courses in statistics in the following areas:

Biostatistics (MS, PhD) – School of Medicine
 Business (MBA, MS, and PhD concentrations in decision sciences) – School of Business
 Mathematical Sciences (MS in
 Statistics/Mathematical Sciences and MS in
 Operations Research/Mathematical Sciences) –
 College of Humanities and Sciences
 Psychology (PhD) – College of Humanities and
 Sciences
 Sociology (MS and Certificate in Applied Social
 Research) – College of Humanities and Sciences

Combined MD/PhD Degree Program

Many future physicians, especially those interested in academic and research careers, need to start in-depth training in research while still in school or residency training. This need can be met effectively by completing the requirements for the PhD degree concurrently with the study of medicine. The MCV Campus medical curriculum, with free time for elective courses and research, provides an excellent opportunity for interested students to enter a combined MD/PhD program. For further information, see the program description in Part X of this *Bulletin*.

Combined PharmD/PhD Degree Program

The School of Pharmacy offers a combined PharmD/PhD program in pharmaceutical sciences. Interested pharmacists should contact the program director in the School of Pharmacy for details. Students must apply to, and be accepted by, each program separately.

Interdisciplinary PhD Programs

The Schools of Medicine and Allied Health Professions offer PhD programs in Anatomy/Physical Therapy and Physiology/Physical Therapy. These research degrees are planned primarily as physical therapy faculty development programs; other needs may be met for individual students. Interested physical therapists should contact the Department of Anatomy or the Department of Physiology.

Other interdisciplinary PhD programs include the PhD in Urban Services, the PhD in Social Work, and the PhD in Public Policy. These programs are outlined in the School of Allied Health Professions, the School of Education, the Center for Public Policy and the School of Social Work sections of this *Bulletin*.

Interdisciplinary Studies in Developmental Disabilities

The Virginia Institute for Developmental Disabilities (VIDD) promotes and facilitates interdisciplinary training of human service professionals who are preparing to work with children or adults with developmental disabilities and their families.

Through careful selection of course work and practica from one's own field of study, VIDD, and other

departments within the University, students work closely with their advisers to develop a nine semester-hour course sequence which will provide competency in Interdisciplinary Studies in Developmental Disabilities.

For more information, contact VIDD at (804) 828-3876, Virginia Commonwealth University, P.O. Box 843020, 301 West Franklin Street, Richmond, VA 23284-3020.

Dual Degree Programs in Criminal Justice and Divinity

The dual degree program in Criminal Justice and Divinity is offered cooperatively by Virginia Commonwealth University, the School of Theology of Virginia Union University (STVU), and the Union Theological Seminary in Virginia (UTS).

The Master of Divinity/Master of Arts in Criminal Justice offer academic and practical training to equip professionals for a highly specialized, demanding ministry within the criminal justice system.

Students must be accepted for admission to Virginia Commonwealth University's graduate program in criminal justice, and also to the Master of Divinity program at either Union Theological Seminary in Virginia, or to the School of Theology of Virginia Union University. Each school has its own separate requirements and standards for admission. Tuition and other expenses also vary among the schools; payment is made to the school where the student is taking classes. All three schools offer a variety of types of financial assistance to students.

In place of electives offered at their own institutions, or through the Richmond Theological Consortium, UTS

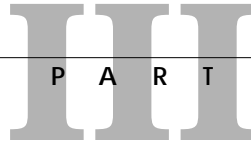
and STVU Master of Divinity students will take criminal justice courses at VCU. Academic advising for students will be cooperative, with thesis supervision provided by a VCU faculty member. Faculty teams from the cooperating schools will be used for an integrative seminar in the final semester. A steering committee with representatives from all cooperating schools will monitor the quality of the program and recommend changes. A model program of study is included in this *Bulletin*.

For more information about admission requirements, cost, and financial aid, please contact:

Dr. John Carroll
Dean of the Faculty
Union Theological Seminary
3401 Brook Road
Richmond, VA 23227
(804) 278-4230 or (800) 229-2990

Dr. Jay Albanese
Department of Criminal Justice
Virginia Commonwealth University
816 West Franklin Street
Richmond, VA 23284-2017
(804) 828-1050
jsalbane@vcu.edu

Dr. John Kinney
Dean of the School of Theology
Virginia Union University
1500 North Lombardy Street
Richmond, VA 23220
(804) 257-5715



Center for Public Policy

Robert D. Holsworth, BA, PhD

Director, Center for Public Policy

Melvin I. Urofsky, BA, MA, JD, PhD

Director, PhD in Public Policy and Administration

The purpose of the PhD in Public Policy and Administration program is to prepare students for scholarly and leadership roles in government, universities, research organizations, and other settings where knowledge and research skills in public policy and administration are needed. The PhD program is committed to accomplishing this mission by creating an intellectually vibrant atmosphere for scholarship involving an active faculty from a broad spectrum of academic disciplines and substantial interaction with government agencies and community groups.

The PhD in Public Policy and Administration is a degree program of the University's Center for Public Policy. The center was established to serve as the focus of the University's interdisciplinary efforts in teaching, research, and service related to public policy. The center, as well as the doctoral program, is designed to involve faculty and academic units from across the University.

Faculty

Faculty for the PhD program are drawn from graduate faculty across the University. A list of participating faculty and academic units is available from the program office.

Requirements for Admission

Admission is open to qualified persons without regard to age, physical disability, national origin, race, religion, or gender. Admission is competitive since it is limited by the number of places available. The admission process is intended to assure a reasonable fit between the student's professional and research interests and faculty expertise. Consequently, otherwise qualified applicants may be denied admission.

Applicants to the program must hold a master's degree or a recognized post-baccalaureate degree in one

of the professions such as law or medicine from an accredited institution of higher education. A standardized test score, less than five years old, is required. Accepted examinations include the Graduate Record Examination (GRE), the Graduate Management Admissions Test (GMAT), the Law School Admissions Test (LSAT), and the Miller's Analogies Test (MAT). Professional experience is not required, but is considered desirable.

In order to apply for admission to the PhD in Public Policy and Administration program, prospective students must submit:

- a VCU Application for Graduate Study;
- transcripts from all previous colleges or universities;
- scores from a standardized examination (GRE, GMAT, LSAT, or MAT);
- three letters of reference;
- a personal statement describing reasons for applying to the program; and
- a current professional résumé.

International applicants must submit the International Application and TOEFL scores.

All students admitted to the program must have completed prior to admission, or are required to complete during their first year, the following graduate-level courses (or their equivalent):

- research methods (equivalent of PAD 623);
- statistics (equivalent of PAD 624); and
- public policy, economics, or administration/management.

The primary admissions deadline is March 15 for enrollment to begin the following fall semester. A small number of special admissions may be made in the fall (October 15 application deadline) for entry the following spring semester. These admissions are made in exceptional circumstances only. Applicants who wish to be considered for the October 15 deadline must include

a letter requesting and justifying early admission. If the request for early consideration is not accepted, the application will be held over to the March 15 application date.

While University rules allow up to nine credit hours of course work to be taken as a special student prior to formal admission, taking such courses in no way guarantees admission to the program. Graduate courses designated "doctoral students only" may not be taken prior to formal admission, although they may be taken by fully admitted doctoral students in other programs.

Application packets may be obtained from the program office or the School of Graduate Studies. International applicant materials are available from the International Admissions Office.

Requirements for the PhD

The PhD program is structured around a core curriculum and several areas of concentration. The curriculum is designed to provide a sound intellectual foundation for the pursuit of theoretical and applied research in administrative and policy studies. The program includes courses in public policy and administration, research methods, public policy economics, political and organizational process, and social philosophy.

In addition to the core, the program offers three concentration areas including health policy, public management in state and local government, and urban policy.

These concentrations offer students the opportunity to build a tailored program of study within a broad area of scholarship. The range of core and affiliate faculty expertise from both the Academic and Medical Campuses at VCU gives doctoral students considerable flexibility in designing their studies and research.

Students take a minimum of 36 credits or 12 courses in addition to any prerequisites that might be necessary. Seven of these courses are part of the core and five are concentration courses. Required courses generally will be available on an evening or weekend schedule.

Course work in the PhD program has a strong orientation toward research, both applied and theoretical. Where appropriate, course work may be linked to funded University projects or to external agency based analytical work. Courses emphasize research, writing, and presentation skills.

Core Curriculum

Core courses include:

PPA 711 Seminar in Public Policy and Administration I
 PPA 712 Seminar in Public Policy and Administration II
 PPA 721 Survey of Applied Research Methods in Public Policy and Administration
 PPA 713/PHI 713 Ethics and Public Policy

And one course in each of the following areas:

Advanced Quantitative Methods
 Public Policy Economics
 Institutional Processes and Behavior

Concentrations

In addition to the core, all students will take five courses in their selected area of concentration. Each concentration features a required seminar as one of these courses.

Health Policy:	PPA 730 Seminar in Health Policy
Public Management in State and Local Government:	PPA 740 Seminar in Public Management
Urban Policy:	PPA 750 Seminar in Urban Policy

The remaining four courses will be selected from a list designated by the concentration committee for each area. At least one of these must be a methodologically oriented course relevant to the student's area. The concentration committee will approve the program of study for each student in the concentration.

Qualifying Examination

After completing all of the core courses in the PhD program, each student takes a comprehensive qualifying examination on the core. The examination is designed to evaluate the mastery students have achieved over the body of knowledge represented by the core. It is intended to measure the ability of students to organize, integrate, and creatively apply the knowledge in the field to important problems. Although organized around the courses in the core, the examination is not restricted to material covered in those courses. It is expected that doctoral students will read well beyond the confines of individual courses.

In order to continue in the program, students must attempt the qualifying examination no later than the next regular semester following their completion of the core course requirements, and they must pass the exam by the end of the second regular semester after completing the core course requirements. A student may attempt the examination twice. Examinations are offered twice per year.

Dissertation

After completing the qualifying examination and course work for the concentration, students must prepare a dissertation involving original research that contributes to the body of knowledge in the field. A committee approved by the director of the program supervises the dissertation work. The chair of the committee must be a core or affiliate faculty member of the PhD program. One member must be from outside the program.

The first formal step in the dissertation process is the development and defense of a dissertation prospectus that frames the problem to be studied, provides background on the problem, presents a review of relevant literature, and justifies the methodology to be used. The defense of the prospectus as well as the completed dissertation must be done orally to the dissertation committee. The dissertation defense is conducted in a forum open to other students and to faculty.

Continuous Enrollment Requirements and Expectations

To remain in good standing, students must maintain continuous registration for each fall and spring semester (except for official leaves of absence) until they have completed all requirements, including the dissertation. Students are required to enroll for a minimum of nine semester hours each calendar year. This includes enrollment during the completion of the dissertation. A minimum grade-point average of 3.0 on a 4.0 scale must be maintained. Compliance with other relevant University regulations also is required.

While the University provides an array of computing facilities, most students find it desirable to have personal access to computing capacity, including Internet connection. The primary mode of communication between the program office and students is through the Internet and e-mail. Several classes use computer-based interactive technology, such as newsgroups.

Graduate Courses in Public Policy and Administration (PPA)

PPA 711 Seminar in Public Policy and Administration I.

Semester course; 3 lecture hours. 3 credits. Doctoral students only. Provides a critical and comparative review of public policy and administration focusing on the empirical and theoretical literature in the field. Emphasizes the development of the policy studies field and its epistemological foundations. Includes alternative approaches to policy analysis, the place of analysis in the decision-making environment, and the role of policy in shaping administrative institutions.

PPA 712 Seminar in Public Policy and Administration II.

Semester course; 3 lecture hours. 3 credits. Prerequisite: PPA 711. Doctoral students only. Continuation of PPA 711. Examines the key intellectual paradigms in public administration and their historical development. Pays particular attention to the influence of institutional and organizational design on establishing and achieving public purposes; includes the role of administration in formulating and implementing public policy.

PPA 713/PHI 713 Ethics and Public Policy. Semester course; 3 lecture hours. 3 credits. Doctoral students only. An examination of the main theories of morality and justice. These theories' implications for public policy will be discussed.

PPA 715 U.S. Political Processes and Institutions. Semester course; 3 lecture hours. 3 credits. This course examines the operation of the major national political institutions in the United States, the processes that help to define and shape those institutions, and the contexts in which these entities operate. The course familiarizes students with a broad range of scholarship and with the principal theoretical debates about U.S. politics.

PPA 716 Public Policy Economics. Semester course; 3 lecture hours. 3 credits. This course is designed to introduce students to a set of applied micro-economic models that can be used to understand and evaluate important policy issues. Students will be shown how these models can be used as tools to design, to predict the effects of, and to evaluate public policies. Specific models used in this course will include consumer theory, production theory, cost theory and the theory of economic organization. Discussions of policy analysis and evaluation will rely upon theoretical approaches to welfare economics.

PPA 720 Public Organization Design and Behavior. Semester course; 3 lecture hours. 3 credits. Doctoral students or permission of the

instructor. An intensive examination of public sector organization design and behavior. Reviews theories, models, and latest research findings as vehicles for understanding the design of effective public organizations.

PPA 721 Survey of Applied Research Methods in Public Policy and Administration.

Semester course; 3 lecture hours. 3 credits. Prerequisites: PAD 623 and PAD 624 or equivalent; doctoral students only. Research designs, including assumptions, applications and limits of various research methodologies. Includes quantitative and qualitative methods, including focus groups; probability and nonprobability sampling; mail, telephone, and in-person interviewing; design of instruments; evaluation research, experiments and quasi-experiments; content analysis; observational and unobtrusive methods; cost-benefit and forecasting models; sources for secondary data analysis; and ethics of research.

PPA 722 Survey of Data Analysis Techniques for Public Policy and Administration.

Semester course; 3 lecture hours. 3 credits. Prerequisites: PAD 623, PAD 624, and PPA 721, or equivalents; doctoral students only. Levels of measurement and selection of appropriate analytical tools; creation of indexes and scales; reliability and validity of measures; univariate, bivariate, and multivariate analysis; the nature of causality and statistical control; the elaboration of relationships and the logic of survey analysis; graphical presentation of data; and analysis of qualitative data. Focus will be kept on integrating data and analysis into decisions regarding research design. SPSS/PC computer software will be used to illustrate analysis techniques on General Social Survey (GSS) or other relevant data sets.

PPA 730 Seminar in Health Policy. Semester course; 3 lecture hours. 3 credits. Examines key issues and alternative policy responses in health. Presents a framework for understanding health policy in terms of the regulatory environment, developing initiatives, and emerging trends. Designed to assist students to build a program of research in health policy.

PPA 740 Seminar in Public Management. Semester course; 3 lecture hours. 3 credits. Doctoral students only. Examines key theoretical and empirical literature in public sector administration with an emphasis on state and local government. Covers the management of human resource, financial, and information systems. Includes the impact of leadership, organization design, and policy on the conduct of public activities. Designed to assist students to build a program of research in public management.

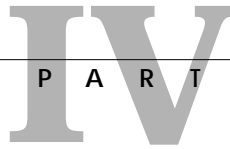
PPA 745 Administrative Theory. Semester course; 3 lecture hours. 3 credits. Doctoral students or permission of the instructor. Explores contemporary theoretical frameworks that shape thinking, research, and theorizing about public affairs and administration.

PPA 750 Seminar in Urban Policy. Semester course; 3 lecture hours. 3 credits. Doctoral students only. Examines key issues in urban policy. Explores public policy as it relates to the natural, built, social, economic, and political environments of urban life. Designed to assist students to build a program of research in urban policy.

PPA 791 Topical Seminar. Semester course; 1-3 credits. May be repeated for a maximum of six credits. Prerequisite: Doctoral standing and permission of program director. Doctoral students or permission of the instructor. An in-depth study of a selected topic in public affairs, policy, or administration.

PPA 792 Independent Study. Semester course; 1, 2, or 3 credits. May be repeated for a maximum of 6 credits. Prerequisite: Doctoral standing and permission of program director. Permission of the instructor. Independent study and research in selected areas of public affairs, policy, and administration under the guidance of a graduate faculty member.

PPA 898 Dissertation Research. Semester course; 1-12 hours. May be repeated for credit. Prerequisite: Admittance to doctoral candidacy. Research on an approved dissertation subject.



College of Humanities and Sciences

Stephen D. Gottfredson, BA, MA, PhD

Dean

Albert T. Sneden, BS, PhD

Associate Dean

John H. Borgard, AB, MA, PhD

Associate Dean and Assistant Vice Provost for Academic Affairs

Laura J. Moriarty, BCJ, MS, PhD

Assistant Dean

The College of Humanities and Sciences was organized in 1966 (then the School of Arts and Sciences) as a combination of several existing departments at Richmond Professional Institute: biology, chemistry, English, foreign languages, and history and political science. The Departments of Philosophy and Religious Studies, Mathematical Sciences, Physics, Psychology, Sociology and Anthropology, and Political Science were developed or added subsequently.

Arts and Sciences began its first graduate programs in 1969 with the master's programs in psychology and sociology. Master's programs in biology and mathematical sciences and a doctoral program in clinical psychology were soon to follow in 1971. In 1974, English/English education began a master's program cooperatively between the Department of English and the Division of Teacher Education of the School of Education. In that same year, the graduate program in chemistry, a cooperative venture between the Departments of Chemistry on the Academic Campus and Pharmaceutical Chemistry on the MCV Campus, was transferred administratively to the School of Arts and Sciences. Beginning in 1976, a master's degree was created in mass communications while in 1978, a doctoral program in social policy and social work started in cooperation between the Department of Sociology and Anthropology and the School of Social Work.

In July 1981, the School of Arts and Sciences and the Department of Mass Communications were organized into the College of Humanities and Sciences and the School of Mass Communications. The Master of Fine Arts in Creative Writing commenced in 1983 followed by the MS in Physics in 1984. Three years later, the Department of Mathematical Sciences established the MS in Computer Science program, and finally, a master's degree in history was initiated in 1994 through the Department of History.

Effective July 1, 1994, the Departments of Criminal Justice, Public Administration, and Urban Studies joined the college from the dissolved School of Community and Public Affairs. Each department brought to the college both master's and post-baccalaureate certificate programs within their disciplines. The Public Administration program was merged with Political Science to form the Department of Political Science and Public Administration. The Doctor of Public Administration program was initially incorporated into the newly merged department, and now resides in the Center for Public Policy.

Graduate Programs

The College of Humanities and Sciences offers the following graduate degree programs:

- MA in English
- MA in History
- MFA in Creative Writing
- MPA in Public Administration
- MS in Biology
- MS and PhD in Chemistry
- MS in Computer Science
- MS in Criminal Justice
 - justice
 - forensic science
- MS in Mass Communications
 - advertising
 - mass communications
- MS in Mathematical Sciences
 - applied mathematics
 - mathematics
 - operations research
 - statistics
- MS in Physics

MS and PhD in Psychology
 clinical
 counseling
 general
 MS in Sociology
 MURP in Urban and Regional Planning

Post-baccalaureate certificates:

Applied Social Research
 Criminal Justice
 Computer Science
 Environmental Studies
 Planning Information Systems
 Public Management
 Statistics
 Urban Revitalization

In addition to these degree programs, the College of Humanities and Sciences offers selected graduate courses in the Departments of Foreign Languages and Philosophy and Religious Studies. It does not offer graduate degree programs in these departments.

Requirements for Admission

In addition to the general requirements for admission to graduate studies as stated in Part I of this *Bulletin*, persons seeking admission to any of the graduate programs in humanities and sciences should:

1. have a bachelor's degree in the discipline in which application for graduate study is made or, in some programs as noted, a bachelor's degree in some other appropriate area;
2. submit Graduate Record Examination (GRE) scores (some departments require the scores on the advanced GRE within the discipline; some departments accept LSAT and MAT scores in lieu of GREs.); and
3. have submitted letters of recommendation which comment on the applicant's ability to undertake graduate study in the specified area.

All applications will be considered in terms of the specific requirements for admission noted in the description of the individual programs and of the applicant's ability to perform satisfactorily in the program for which he/she has applied. The judgment of that ability will be based on the supporting material submitted with the application. Some graduate programs must limit enrollment to a fixed number of the best-qualified applicants. Final action on admission is taken by the dean of the School of Graduate Studies in consultation with the College of Humanities and Sciences and the department concerned.

Applicants whose applications reach the University after July 1 for the fall semester and after November 15 for the spring semester may not have their applications processed in time for registration. The applicant whose application arrives late may be considered for admission as a special student, but there is no guarantee that the special student will be accepted later into a degree program. Refer to the Graduate Curriculum Requirements chart in the back of this *Bulletin* for specific deadlines for all graduate programs.

Registration

Although most students register for the first semester, which begins in August, they may arrange to begin graduate work during the spring semester except for the program in clinical and counseling psychology.

Scholarships, Assistantships, Fellowships and Other Financial Assistance for Graduate Students

(Also see departmental listings.)

The College of Humanities and Sciences seeks to attract and support graduate students of the highest caliber and to prepare them, through research and instruction, to meet local and national needs for highly trained men and women. Recognizing that financial limitations may inhibit some qualified students from applying, the college attempts to inform students of the options of various loans, grants and work-study opportunities that are available to them and to assist them in financing their education by offering various forms of financial aid and by facilitating the process of seeking financial assistance from external sources. Additionally, the college believes that the experience of being a teaching or research assistant reinforces the learning that takes place in the classroom. The value of teaching assistants is also recognized as being beneficial to the college's undergraduate programs.

Types of financial aid that are available to graduate students falls into three basic categories: aid that does not have to be repaid (grants, scholarships, and tuition waivers); aid that does have to be repaid (loans); and aid that enables students to earn a portion of their school costs (work-study, graduate teaching assistantships, graduate research assistantships).

Offers of financial aid are based on financial need and/or skill and competency. Financial need is determined by information contained in the Financial Aid Form (FAF) completed by the student. Not all financial aid is based on financial need. To ascertain your eligibility for the different types of financial aid, contact the VCU Financial Aid Department at 901 West Franklin Street, P.O. Box 843026, Richmond, Virginia 23284-3026, (804) 828-6669, and the department to which you will be applying. The University library has reference books listing other types of scholarships and grants. International students should contact: Center for International Programs at 916 West Franklin Street, P.O. Box 843043, Richmond, Virginia 23284-3043, (804) 828-6016.

Graduate Teaching Assistantships (GTAs) and Graduate Research Assistantships (GRAs) are forms of financial aid that provide teaching and research positions for graduate students within their field of study. These are not loans and do not have to be repaid because the student is actually earning income for services rendered. Usually Graduate Assistants must work the equivalent of 20 hours per week. Assistantships are awarded to students who have demonstrated academic excellence. Individual departments award the assistantships, which usually include payment of tuition; the teaching and/or research duties of graduate assistants

vary among departments. Graduate students interested in seeking these teaching and research positions are advised to contact the departments to which they will apply for admission.

Graduate students applying for financial assistance should remember to:

- apply early;
- use your federal tax forms to complete the Financial Aid Form (FAF);
- save copies of all forms you complete, including your tax returns; and
- check with the department to which you are applying for admission regarding application requirements and deadlines.

Students should assume they are eligible; not ineligible.

The Student Adviser and the Graduate Committee

All departments offering graduate degrees in the College of Humanities and Sciences provide graduate students with advising either through a single adviser, the student's graduate committee, or a departmental graduate committee. For details, students should consult the departmental director of graduate studies or the departmental chair.

Requirements for Graduate Degrees

- Full-time graduate status shall consist of a minimum of nine and a maximum of 16 credits per semester. No more than 12 semester credits may be earned in a summer semester. See Part I of this *Bulletin* for course load requirements for students awarded graduate assistantships.
- Graduate students are required to maintain an overall grade-point average of 3.0 ("B"). Students who do not maintain a "B" average during the course of their program may be dropped from the program at any time on recommendation of the appropriate department committee to the dean of the School of Graduate Studies. If students earn less than a "B" on 20 percent or more of all attempted credits, their graduate status must be reviewed for continuation by the appropriate department committee.
- At least half of the credits required in the student's program must be those designated as exclusively for graduate students; that is, those at the 600 level or above.
- Graduate students must have earned an overall grade-point average of 3.0 ("B") in order to receive a degree.

In addition to these requirements and those set forth in Part I of this *Bulletin*, students must meet the requirements for specific degrees set forth in the departmental listings. Students should also consult the Continuous Enrollment Policy stated in Part I of this *Bulletin*.

Students are required to submit in advance of the date when they expect to receive a degree a Graduation Application Form to the dean of the College of

Humanities and Sciences. Deadlines for the submission of the Graduation Application Form are listed in the calendar at the front of this *Bulletin*; for departmental deadlines the student should consult the departmental adviser. Individual departments may require additional forms.

Appeal Procedures

Graduate students in the College of Humanities and Sciences have the right to appeal course grades or other academic actions on the grounds of a breach of due process. See Part I of this *Bulletin* for a summary of the Grade Review Procedure. An appeal of an academic action other than a grade review is governed by the Graduate Student Academic Appeal Procedure. A copy of this document can be obtained from department offices.

School of Mass Communications

Brennen, Bonnie *Assistant Professor* PhD, University of Iowa.
 Cook-Tench, Diane *Associate Professor and Director of the VCU Adcenter* BA, Minneapolis College of Art and Design; advertising.
 Cotzias, Constantin G. *Associate Professor* MBA, New York University.
 Crutchfield, George Thomas *Professor* MS, Florida State University; editing.
 Dodd, Joyce W. *Associate Professor* MA, University of Richmond; broadcast journalism.
 Donohue, Thomas R. *Professor* PhD, University of Massachusetts; mass media effects.
 Kennamer, J. David *Associate Professor* PhD, University of Wisconsin-Madison; communications theory, research methodology.
 Lavery, Roger *Associate Professor* MS, University of Illinois.
 Nicholson, June O. *Associate Professor and Acting Director* MA, The American University; print journalism.
 Smith, Ted J. III *Associate Professor* PhD, Michigan State University; media-government relations, research methodology.
 Thomas, Clarence *Associate Professor and Director of Graduate Studies* PhD, University of Florida; media history, media and society, media management, broadcasting.
 Torchia, Jerry *Associate Professor* BFA, University of Florida.
 Wirt, Wilma H. *Associate Professor* MA, University of Texas; urban journalism reporting.

The School of Mass Communications has two programs which each lead to a Master of Science degree.

The first program, **Mass Communications**, allows students to select course work from a wide variety of mass communications areas. After completing four required MAC core courses (see MAC core courses), students are allowed flexibility in the selection of MAC elective courses (see listing of MAC graduate courses). MAC elective courses cover areas such as media management, public relations, professional journalism, scholastic journalism, etc. Students also select a minor area of study outside of the School of Mass Communications (see other areas of study in this *Bulletin*).

The second program, **Advertising**, is housed in the VCU Adcenter. (See Advertising Admission and Degree Requirements.) The Adcenter's mission is to educate extraordinary creative and strategic thinkers who can impact the future of the advertising industry. The program provides advanced preparation in creative and strategic career development. Creative thinking concentrations include art direction and copywriting. Strategic thinking concentrations include account management, account planning and media planning. For more information, refer to the Web site at www.adcenter.vcu.edu.

Admission Requirements (Mass Communications Program)

The program is open to graduates of accredited colleges and universities. Applicants for this program must satisfy the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences (see Humanities and Sciences guidelines in this *Bulletin*). In addition, the following requirements represent the minimum acceptable standards for admission:

- A baccalaureate degree in an area appropriate to the mass communications degree program and a grade-point average that indicates the applicant's ability to pursue graduate work. Although the type of undergraduate degree is not critical to admission, the program requires approved undergraduate curricula or the equivalent in order to receive full admission.
- At least one course in basic statistics. Applicants who do not meet this requirement may enroll in a statistics course at VCU during their first semester. The course must be approved by the School of Mass Communications' director of graduate studies.
- Micro- and macro-economics are required. Applicants who do not meet this requirement may enroll in ECO 210-211 or ECO 600.
- At least one acceptable journalistic writing course. Additional writing courses may be required. Contact the director of graduate studies for information. Evidence of professional competence may be substituted for these requirements.
- Acceptable scores on the GRE.

Applicants must also submit:

- Three recommendations from persons who are qualified to give information concerning the applicant's probable success in graduate school.
- A letter detailing career goals and how the MS degree program in mass communications applies to those goals should accompany the application for admission.

Provisional admission may be granted under certain circumstances. For example:

- An applicant does not meet all minimum standards. Prerequisite course work should be completed early in the program before a candidate starts taking MAC 600-level courses.
- An applicant has marginal GRE scores.

Degree Requirements (Mass Communications Program)

The master's program requires a minimum of 33 credit hours beyond the baccalaureate degree. The hours are divided as follows:

I. MAC Core Courses

MAC 611 Research Methods in Mass Communications
 MAC 612 Mass Communications Theory
 MAC 613 Mass Media and Society
 MAC 616 Mass Communications Law

Credits
12

II. MAC (Internal) Elective Courses (See listing of MAC courses)	9
III. Minor (External) Courses (Students must select a minor which is different from their undergraduate major)	9
Thesis Registration or Additional MAC Course	3

Thesis/Comprehensive Exam Options

In the thesis option, candidates must register for three hours of MAC 699 Thesis Registration. In the comprehensive examination option, one additional three-hour approved graduate elective course is required, followed by comprehensive written and oral examinations.

All candidates must establish a three-member examination/thesis committee by the third full-time semester or equivalent. The candidate must nominate a chairperson and a second member from the School of Mass Communications graduate faculty. In addition, the candidate must nominate a third member from the graduate faculty. The committee chair will advise the student and arrange the written and oral examinations.

A student may be placed on probation or dropped from the program for failing to maintain minimal academic standards (see Humanities and Sciences guidelines).

Admission Requirements (Advertising)

1. A baccalaureate degree in any area of study and a grade-point average that indicates the applicant's ability to pursue graduate work.
2. Three letters of recommendation from persons who are qualified to give information concerning the applicant's probable success in graduate school.
3. Ten samples of nonreturnable work reflecting the applicant's ability to develop communications work. Applicants for advertising copywriting, advertising account management, advertising account planning and advertising media planning should send writing samples or sample advertising plans. Applicants for advertising art direction should send 8 1/2" x 11" color photo copies of their work. (Applicants in the areas of copywriting and art direction are accepted largely on the basis of creative work submitted for review.) This "portfolio" package should be sent directly to the Adcenter at 1313 East Main Street, Suite 103, Richmond, VA 23219.
4. The Adcenter screening profile will further demonstrate an applicant's problem solving abilities.
5. A personal interview is strongly recommended.

Degree Requirements (Advertising)

The master's program, with an emphasis in advertising, requires 36 hours of graduate level courses. (See breakdown of the 36 hour total.) Students must present a final major project, in portfolio form, before a committee review made up of three faculty members and one outside professional.

Breakdown of the advertising track (36 hour minimum total):

Account Management Curriculum

First Semester

MAC 650 Perspectives in Advertising	3
MAC 651 Creative Thinking for Advertising	3
MAC 699 Thesis (Advanced Account Management)	3
Computer Software Techniques for Account Managers	

Second Semester

BUS 570 Concepts and Issues in Marketing	3
MAC 660 Advertising Account Planning Research	3
BUS 691 Topics in Business – Research for Advertising	3

Third Semester

MAC 613 Mass Media and Society	3
MAC 661 Advertising Media Research and Planning	3
MAC 617 Advanced Research Methods	3

Fourth Semester

MAC 655 Advertising Strategic Campaigns	3
BUS 507 Fundamentals of Accounting	3
Elective (selected from the list that follows)	3

Electives

MAC 612 Mass Communications Theory	
MAC 616 Mass Communication Law	
BUS 641 Organizational Behavior	
BUS 676 Marketing Strategy	

Copywriting Curriculum

First Semester

MAC 640 Copywriting Techniques	3
MAC 650 Perspectives in Advertising	3
MAC 651 Creative Thinking for Advertising	3
Computer Software Techniques for Copywriters	
Video Techniques	

Second Semester

MAC 641 Advanced Copywriting Techniques	3
MAC 652 Advertising Concept Development	3
MAC 613 Mass Media and Society	3
Video Techniques II	

Third Semester

MAC 653 Advertising Advanced Concept Development	3
Elective (selected from the list that follows)	3
MAC 654 Advertising Radio and Television Development	3

Fourth Semester

MAC 655 Advertising Strategic Campaigns	3
Elective (selected from the list that follows)	3
MAC 699 Thesis (Advertising Portfolio Development)	3

Electives

BUS 691 Topics in Business – Research in Advertising	
MAC 612 Mass Communications Theory	
MAC 616 Mass Communication Law	
MAC 617 Advanced Research Methods	
BUS 641 Organizational Behavior	
BUS 676 Marketing Strategy	

Art Direction Curriculum

First Semester

MAC 630 Advertising Layout and Typography	3
MAC 650 Perspectives in Advertising	3
MAC 651 Creative Thinking for Advertising	3
Computer Software Techniques for Art Directors	
Video Techniques	

Second Semester

MAC 631 Advanced Art Direction/Advertising Layout Techniques	3
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MAC 652 Advertising Concept Development	3
MAC 613 Mass Media and Society	3
Video Techniques II	

Third Semester

MAC 653 Advertising Advanced Concept Development	3
Elective (selected from the list that follows)	3
MAC 654 Advertising Radio and Television Development	3
Multimedia/Web Development Techniques	

Fourth Semester

MAC 655 Advertising Strategic Campaigns	3
Elective (selected from the list that follows)	3
MAC 699 Thesis (Advertising Portfolio Development)	3

Electives

BUS 691 Topics in Business – Research in Advertising	
MAC 612 Mass Communications Theory	
MAC 616 Mass Communication Law	
MAC 617 Advanced Research Methods	
BUS 641 Organizational Behavior	
BUS 676 Marketing Strategy	

Graduate Courses in Mass Communications (MAC)

MAC 501 Journalistic Writing. Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisite: School's permission. A concentrated course in journalistic writing, including news, features, sports, columns, and editorials. Typing skill required. See School of Mass Communications for details.

MAC 502 Editing the News. Semester course; 2 lecture and 4 laboratory hours. 4 credits. Prerequisite: School's permission. A concentrated course in editing for journalistic publications. Course will include copy editing, headline writing, publications page make-up and design, and editorial decision making.

MAC 519 Journalism in the Schools. Semester course; 3 lecture hours. 3 credits. Study of school newspapers, magazines, and yearbooks: problems relating to staff selection, content of publications, copy layout, advertising, and business phases.

MAC 603 Scholastic Yearbooks. Semester course; 3 lecture hours. 3 credits. Prerequisite: School's permission. The organization, staffing, content, illustration use, production techniques, typography, style, theme, advertising, and business functions of a scholastic yearbook. The role of the yearbook adviser will be emphasized.

MAC 604 Broadcasting in High Schools. Semester course; 3 lecture hours. 3 credits. Prerequisite: School's permission. An examination of radio and television as student media in high schools. Broadcasting principles, directing and producing high school broadcast programs, using basic broadcast equipment. Emphasis is upon the role of the adviser-teacher.

MAC 611 Research Methods in Mass Communications. Semester course; 3 lecture hours. 3 credits. Fundamentals of mass communications research techniques (content analysis, survey research, experimental design, historiography), including an overview of computer applications, statistics, theory development, and trends in the published literature.

MAC 612 Mass Communications Theory. Semester course; 3 seminar hours. 3 credits. Nature, function, and application of mass communications theory; structure, content, and effects of media systems; social and technological events accounted for by a generalized theory of mass communications.

MAC 613 Mass Media and Society. Semester course; 3 seminar hours. 3 credits. A study of the mass media of the United States, with special attention to their historical development and their impact on other institutions. Consideration of ethical and legal aspects of the media, and problems such as access, control, and accountability.

MAC 614 Media-Governmental Relations. Semester course; 3 seminar hours. 3 credits. Study of the interaction between the media and the government, and the role of the press in the governmental process as a disseminator, opinion-maker, and adversary.

MAC 615 Depth Reporting. Semester course; 3 seminar hours. 3 credits. Prerequisites: Three undergraduate reporting courses or permission of instructor. A thorough examination of one or more issues in the forefront of the news, the environment, education, health care, science and others relevant to today's readers.

MAC 616 Mass Communication Law. Semester course; 3 lecture hours. 3 credits. An intensive examination of media rights and restrictions, including libel, privacy, access to information, copyright, free-press fair-trial. Attention will be given to First Amendment theory, research techniques and administrative regulation of broadcasting and advertising.

MAC 617 Advanced Research Methods. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAC 611. An examination of a mass medium through design and execution of a research project using one of the traditional research techniques of the field. Students will have major and minor projects for systematic study of a medium.

MAC 618 Media Economics and Management. Semester course; 3 colloquium hours. 3 credits. Prerequisites: MAC 611 and 617. Advanced work in media management research based on an examination of major contemporary issues and challenges concerning media management and economics. Student interaction with faculty, media managers and each other will lead to the design and implementation of major problem-solving projects.

MAC 619 Media and Public Opinion. Semester course; 3 lecture hours. 3 credits. A study of the role of the mass media in the formation and change of beliefs and attitudes, the involvement of the media with policy makers in shaping public opinion and public policy, and the interaction of media and public opinion polling.

MAC 620 Seminar in Mass Communications History. Semester course; 3 credits. An examination of historical methodology and content as related to the investigation and writing of mass communication history in the United States. Special attention is placed on the adaptation and the use of historical method by mass communications historians.

MAC 621 Advanced Public Relations. Semester course; 3 lecture hours. 3 credits. Students will explore a variety of case studies, decision-making analyses and advanced public relations programming in relation to private and public policy-making at the senior levels of management.

MAC 622 TVR Documentary. Semester course; 3 credits. Prerequisite: Permission of instructor is required. Research, development, and production of a television documentary. Class members will work on single theme documentary as a team. Topic will be decided by the instructor in conjunction with the schedule of the Public Broadcasting Station in Virginia. Knowledge of documentary history and development is preferred.

MAC 630 Advertising Layout and Typography. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Utilizes in-class workshops and projects to develop students' ability to incorporate effective typography into the visual elements of advertising. Focuses on various typographic design trends and layout techniques to effectively communicate information in various print media. Introduces new computer technology that helps students address cutting-edge issues in modern advertising.

MAC 631 Advanced Art Direction/Advertising Layout Techniques. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MAC 630 and MAC 651. This course explores management issues affecting advertising art directors in complex projects; that encompass more than one media. Focus is on skills needed to manage studio artists, photographers, illustrators, engravers and printers in the production of advanced advertising layouts. Problem-solving exercises will be used to address common issues.

MAC 640 Copywriting Techniques. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on developing ability to create well-written, creatively focused advertising copy work. Addresses headline

and body copy issues through presentation of students' work and research on major copywriters and their work.

MAC 641 Advanced Copywriting Techniques. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MAC 640 and MAC 651. Applies student's knowledge of copywriting to larger, more complex advertising projects that encompass more than one media. Emphasizes the fine tuning of a student's creative ability and copywriting skills. Utilizes intensive copywriting projects to show the students' growing ability to develop and present professional quality work.

MAC 650 Perspectives in Advertising. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on trends in effective advertising programs throughout the twentieth century and addresses future developments that will affect the advertising business. Explores varying approaches to communication and allows students the opportunity to enhance organizational, writing, and research skills through presentations and reports.

MAC 651 Creative Thinking for Advertising. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on developing the creative skills necessary for solving advertising communication problems. Enables students to maximize and strengthen creative abilities through lecture, brainstorming sessions, and team-oriented strategy sessions focusing on real case projects.

MAC 652 Advertising Concept Development. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MAC 651, MAC 641 for copywriting majors; MAC 651, MAC 630 for art direction majors. Develops students' ability to create visually effective work that targets specific groups of consumers, through ongoing review and discussion sessions designed to pinpoint strategies and create relevant visually oriented ideas quickly. Emphasizes a teamwork approach to art direction and concept development.

MAC 653 Advertising Advanced Concept Development. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MAC 652, MAC 641 for copywriting majors; MAC 652, MAC 631 for art direction majors. Focuses student toward creative solutions to communication problems. Addresses specific strategies including briefs and concept work that require extensive copy. Emphasizes a team approach to copywriting and art direction.

MAC 654 Advertising Radio and Television Development. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Explores different styles and techniques used in creative radio and television advertising. Focuses on a wide range of broadcast styles including classic radio program work. Addresses headline and body copy issues through presentation of students' work and research on major copywriters and their work.

MAC 655 Advertising Strategic Campaigns. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAC 652, MAC 654 for copywriting majors; MAC 654, MAC 652 for art direction majors; MAC 660 for account executive majors. Involves all the skills and concepts learned in the three disciplines of art direction, copywriting and account management. Provides a culminating experience in which students are required to organize an entire advertising campaign for a particular product or service.

MAC 660 Advertising Account Research and Planning. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: MAC 650 and MAC 651. Develops student's ability to choose the most effective research methods for determining both the correct target market for a product and specific issues most pertinent to that market, in regards to positioning the product. Research work with consumer groups will demonstrate student's ability to develop thoughtful questions that will deliver valuable insight.

MAC 661 Advertising Media Research and Planning. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Emphasizes effective use of research information in the areas of media planning, buying and placement. Focuses on new techniques used in the planning and execution of effective media buying. Requires the presentation of media plans and documents that demonstrate the student's ability to both research the information and present it in the most effective manner.

MAC 691 Topics in Journalism Education. Semester course; 1-3 credits. May be repeated for 6 total credits. Prerequisite: Permission of instructor and director of graduate studies. Specialized areas of scholastic journalism will be covered, including: contemporary newspaper design, student press law rights and responsibilities, media ethics, desktop publishing, technology in the classroom, legal issues in communications, editorial writing, magazine layout and production, intensive journalistic writing, and advanced feature writing.

MAC 692 Independent Study. Semester course; 1-3 credits. Prerequisite: Permission of instructor and director of graduate studies. A maximum of three credits may be submitted toward the master's degree.

MAC 693 Practicum in Mass Communications. Semester course; 1-6 credits. May be repeated for credit. Credits may not be applied toward the graduate degree. Prerequisite: Permission of coordinator of graduate studies. Student participation in planned educational experience under the supervision of Mass Communications faculty. The practicum may include supervision of writing, editing and broadcast laboratories, participation in faculty research, and assistance with lower-division undergraduate advising. Graded Pass/Fail.

MAC 695 Fieldwork/Internship. Semester course; variable; 1, 2, or 3 credits per semester. Maximum total of three credits toward graduation. Prerequisite: Permission of director of graduate studies. Selected students will receive on-the-job training under the supervision of an instructor and the employer. Internships are available in newspapers, magazines, public relations, advertising, radio, and television.

MAC 699 Thesis. 1-3 credits. May be repeated, but a maximum of three credits may be submitted toward the master's degree.

Department of Biology

Blem, Charles R. *Professor and Curator of the Herpetology and Ornithology Collections* PhD, University of Illinois; physiological ecology of terrestrial vertebrates, ornithology.

Brown, Bonnie *Assistant Professor* PhD, Old Dominion University; ecological and aquaculture, genetics, vertebrate and invertebrate aquaculture, biological oceanography.

Carchman, Richard A. *Associate Professor (Pharmacology and Toxicology)* PhD, State University of New York, Downstate Medical Center; cyclic nucleotide metabolism in malignant transformation, macrophage function, toxicology.

Chinnici, Joseph P. *Associate Professor (Human Genetics)** PhD, University of Virginia; genetics, genetic resistance to toxins.

Conway, Carolyn M. *Assistant Professor* PhD, University of Miami; cellular, developmental, and reproductive biology.

Eggleston, William B. *Assistant Professor* PhD, University of Wisconsin-Madison; drosophila and maze genetics, transposable elements, genetics and molecular biology.

Fine, Michael L. *Associate Professor (Physiology and Biophysics)** PhD, University of Rhode Island; neurobiology, animal behavior, marine biology, fish communication.

Fisher, Robert W. *Associate Professor* PhD, Syracuse University; developmental biology, nitrogen fixation.

Garcia, Margot W. *Associate Professor (Urban Studies and Planning)** PhD, University of Arizona; environmental planning, water policy.

Garman, Gregory C. *Associate Professor and Director of Center for Environmental Studies* PhD, University of Maine; ichthyology.

Gates, James E. *Associate Professor and Associate Chair (Microbiology and Immunology)** PhD, University of Missouri; microbiology.

Kester, Karen M. *Assistant Professor* PhD, University of Maryland; insect ecology and behavior, insect-plant interactions.

Lin, Peck-Sun *Professor (Radiation Oncology)** PhD, South Dakota State University; radiation oncology.

Matthews, Benjamin F. *Assistant Professor (Plant Molecular Genetics Laboratory, USDA)** PhD, Syracuse University; plant biochemistry, tissue culture, molecular biology.

McCowan, Sara M. *Associate Professor* PhD, Virginia Commonwealth University; microbial physiology and genetics.

Mikulecky, Donald C. *Professor (Physiology)** PhD, University of Chicago; theoretical biology, network thermodynamics, mathematical modeling.

Mills, Richard R. *Professor and Curator of the Invertebrate Collection* PhD, Virginia Polytechnic Institute and State University; insect physiology.

Moncrief, Nancy D. *Professor (Virginia Museum of Natural History)** PhD, Louisiana State University; mammalogy, mammal population biology and genetics.

Pagels, John F. *Professor and Curator of the Mammal Collection* PhD, Tulane University; mammalogy, ecology, and distribution of mammals.

Peters, Gerald A. *Professor* PhD, University of Michigan; plant physiology, biological nitrogen fixation, and symbiotic associations.

Plunkett, Gregory M. *Assistant Professor* PhD, Washington State University; plant systematics and evolution.

Porter, Joseph H. *Professor (Psychology)** PhD, University of Georgia; biopsychology animal learning and behavior, behavioral pharmacology.

Ryan, John J. *Assistant Professor* PhD, Virginia Commonwealth University; molecular immunology and physiology.

Seidenberg, Arthur J. *Associate Professor* PhD, University of Illinois; parasitology, invertebrate ecology.

Smock, Leonard A. *Professor and Chair* PhD, University of North Carolina at Chapel Hill; aquatic ecology, aquatic entomology, wetlands ecology.

Stewart, Jennifer K. *Associate Professor (Physiology and Biophysics)** PhD, Emory University; endocrine physiology.

Tombes, Robert M. *Assistant Professor (Massey Cancer Center)** PhD, University of Washington; human physiology.

Webb, Stanley R. *Associate Professor (Pathology)** PhD, Purdue University; virology.

Wu, Fang-Sheng *Associate Professor (Microbiology and Immunology)** PhD, Michigan State University; plant tissue culture, plant genetic engineering.

Young, Donald R. *Professor and Director of Graduate Studies* PhD, University of Wyoming; coastal plant physiological ecology.

* Department in parentheses indicates affiliate appointment.

+ Affiliate appointment in parentheses indicates home department.

The Department of Biology offers programs leading to a Master of Science degree. Areas of specialization include molecular and cellular biology, terrestrial and aquatic ecology, systematics, and physiology and developmental biology.

In addition to the courses offered by the Department of Biology, graduate students may request permission from the Department of Biology to enroll in graduate courses offered at the Medical College of Virginia Campus in the Departments of Anatomy, Biochemistry and Molecular Biophysics, Biostatistics, Human Genetics, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, and Physiology.

Admission Requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies and the College of Humanities and Sciences, the following requirements of the Department of Biology represent the minimum acceptable standards for admission:

- bachelor's degree in biological or related science or equivalent;
- appropriate college-level background in mathematics, chemistry, and physics;
- three letters of recommendation pertaining to the student's potential ability as a graduate student in biology;
- student's written statement concerning career and research interests;
- transcripts of all previous college work; and
- satisfactory scores on the GRE (both the general and the advanced test in biology).

Admission to the Biology Graduate Program is based upon undergraduate performance, satisfactory scores

on the GRE, and letters of recommendation. Most entering graduate students in the Department of Biology have a 3.0 grade-point average or above on undergraduate work and a combined score of 1,000 or more on the verbal and quantitative sections of the GRE. Students who do not meet the minimum entrance requirements, but nevertheless wish to pursue an advanced degree in biology, are encouraged to contact the Graduate Committee in Biology to discuss their interests and concerns. Admission on a provisional basis may be possible for students temporarily lacking the necessary requirements for full admission. Deficiencies must be removed by the end of the first year of residence. Courses that are remedial or designed to remove deficiencies will not be accepted toward the fulfillment of the course requirements for the master's degree.

Degree Requirements

Master of Science degree candidates are required to take a minimum of 30 semester credits of which:

- 19 credits must be courses designated exclusively for graduate students;
- a minimum of two and a maximum of four credits must be BIO 690 Research Seminar;
- a minimum of six and a maximum of nine credits must be BIO 698 Thesis; and
- at least five lecture or lecture laboratory courses must be taken from at least three different instructors (excluding Thesis, Research Seminar, and Independent Study).

All graduate students are required to write a thesis proposal and a formal thesis following a prescribed format. The thesis proposal must be approved by the student's graduate committee and the chair of the department to initiate thesis research. At the earliest possible opportunity, students must take STA 543 or an equivalent statistics course approved by the chair of the department. Students entering the program with a statistics background equivalent to STA 543 may petition the chair of the department to have this requirement waived.

A maximum of six semester hour credits from graduate work taken at other institutions may be transferred if they meet approval of the department.

Receipt of a grade of "C" or lower in two courses constitutes automatic dismissal from the graduate program in biology.

Each student will be required to pass a final examination which will be primarily a defense of the thesis.

Continuous enrollment in the graduate program is required. Interruption in continuous enrollment for any reason will require that students reapply to the Department of Biology Graduate Committee.

Graduate Minor in Biology

A minimum of nine semester hours excluding seminar and limited to a maximum of three credits of BIO 692 Independent Study.

Graduate Courses in Biology (BIO)

BIO 502 Microbial Biotechnology. I. Semester course;3 lecture hours. 3 credits. Prerequisites:MIC 504 or equivalent,BIC 503-504 or equivalent.Discussion of the application of basic principles to the solution of commercial problems. The course will cover the historical principles in biotransformations as related to primary and secondary metabolism,as well as recombinant DNA technology and monoclonal antibodies and products resulting from the application of recombinant DNA technology.

BIO 503 Fish Biology. Semester course;3 lecture and 3 laboratory hours. 4 credits. Prerequisite:BIO 317 or equivalent.Classification, behavior, physiology, and ecology of fishes. Laboratories will emphasize field collection of fish and identification of specimens.

BIO 504 Comparative Animal Physiology. Semester course;3 lecture and 4 laboratory hours. 4 credits. Prerequisites:BIO 218 and CHE 301,L301,302,and L302. Comparative physiology of animals with a molecular emphasis.

BIO 507 Aquatic Microbiology. Semester course;2 lecture and 4 laboratory hours. 4 credits. Prerequisites:BIO 303 and 307 or equivalents. This course will involve a practical approach to the methods used to culture, identify, and enumerate specific microorganisms that affect the cycling of elements in aquatic systems and those that affect or indicate water quality.

BIO 510 Conservation Biology. Semester course; 3 lecture hours. 3 credits. Prerequisites:BIO 310 and 317 (or equivalents) or permission of instructor. Explores the accelerated loss of species due to increasing human population pressure and the biological,social,and legal processes involved in conserving biodiversity.

BIO 514 Stream Ecology. Semester course;3 lecture and 3 laboratory hours. 4 credits. Prerequisite:BIO 317.A study of the ecology of streams and rivers. Laboratory emphasis is on the structure and functioning of aquatic communities in mountain to coastal streams.

BIO 518 Plant Ecology. Semester course;3 lecture and 2 laboratory hours. One three-day field trip is required. 4 credits. Prerequisite:BIO 317.A lecture, field,and laboratory course concerned with the development,succession,and dynamics of plant communities and their interrelations with climate, soil, biotic, and historic factors.

BIO 520 Population Ecology. Semester course; 3 lecture hours. 3 credits. Prerequisites:BIO 310 and 317 or permission of instructor. Theoretical and empirical analysis of processes that occur within natural populations, including population genetics, population growth and fluctuation,demography, evolution of life history strategies, and interspecific interactions. Quantitative models will be used extensively to explore ecological concepts.

BIO 521 Community Ecology. Semester course;3 lecture hours. 3 credits. Prerequisites:BIO 317 or equivalent.Theoretical and empirical analysis of the structure and function of natural communities, ecosystems, and landscapes.

BIO 522 Evolution and Speciation. Semester course;3 lecture hours. 3 credits. Prerequisite:BIO 310 or equivalent.Evolutionary principles, with emphasis on genetic and environmental factors leading to changes in large and small populations of plants and animals, and the mechanisms responsible for speciation.

BIO 524 Endocrinology. Semester course; 3 lecture hours. 3 credits. Prerequisites: BIO 218 and CHE 301, L301, 302, and L302 or equivalent. Hormonal control systems at the organ, tissue, and cellular level. Although the major emphasis will be on vertebrate endocrine systems, some discussion of invertebrate and plant control systems will be covered.

BIO 530/GEN 501 Human Genetics. I. Semester course;3 credits. Prerequisites:BIO 310 and CHE 301,L301,302,L302, or equivalents. Emphasizes a broad approach,at an advanced level,to human genetics. Explores topics including cytogenetics, pedigree analysis, gene mapping, aneuploid syndromes, inborn error of metabolism,neonatal

screening, cancer, genetic engineering, behavior and intelligence, prenatal diagnosis, and genetic counseling.

BIO 580 Eukaryotic Biotechnology. Semester course; 3 lecture hours. 3 credits. Prerequisites: BIO 310 and BIO L310, or graduate standing in Biology or related fields. Discussion of principles, concepts, techniques, applications, and current advances in cellular and molecular biology aspects of biotechnology for animal and plant cells. The course will cover molecular construction of foreign genes; DNA cloning; technologies for DNA, RNA, and protein analyses; nonvector and vector-mediated genetic transformation; gene regulation in transgenic cells; cell and tissue culture; cell fusion; and agricultural, medical, and other industrial applications.

BIO 585 Virology. Semester course; 3 lecture hours. 3 credits. Prerequisites: 16 credits in biology including BIO 218 or equivalent, and eight credits in chemistry. A comprehensive introduction to virology encompassing viruses of vertebrates, invertebrates, plants, and bacteria. Topics include physical and chemical characterization, classification, detection, replication, genetics, diseases, immunology, epidemiology, and interactions of neuromotor disorders of infants and children. Critically surveys current theory and practice in neuromotor therapeutics for children and adults.

BIO 591 Special Topics in Biology. Semester course; 1-4 credits. An in-depth study of a selected topic in biology. See the *Schedule of Classes* for specific topic(s) and prerequisites. If several topics are offered, students may elect to take more than one.

BIO 606 Quantitative Ecology. Semester course; 3 lecture hours. 3 credits. Prerequisites: BIO 501 and STA 543 or equivalent. Principles and applications of mathematical ecology at the community level, including experimental design, sampling techniques, assumptions and limitations; and the use of cluster analysis, gradient analysis and ordination to evaluate, summarize and compare large data sets.

BIO 626 Physiological Ecology. Semester course; 4 lecture hours. 4 credits. Prerequisite: BIO 317 or equivalent. This course examines the physiological adjustments and adaptations made by organisms in response to their environment.

BIO 630 Patterns of Mammalian Reproduction. Semester course; 3 lecture hours. 3 credits. A comprehensive ecological and evolutionary study of specializations and adaptive radiation in mammalian reproductive anatomy, the reproductive cycle, seasonality of reproduction, and factors affecting litter size and developmental state of neonates. Human reproductive biology is included when pertinent.

BIO 675 Physiology of the Cell. Semester course; 3 lecture and 3 laboratory hours. 4 credits. Prerequisites: CHE 301, L301, 302, L 302, and at least one of the following biology courses: BIO 302, 303, 311, or equivalents. Physiological principles of cellular function in bacterial, plant, and animal cells. The lecture topics include gases, electrolytes, radiations, temperature, membrane transport, bioelectricity, and cell movements. The laboratory will stress investigative techniques.

BIO 690 Research Seminar. Semester course; 1 credit. May be repeated for credit. Independent reading and study in selected areas of biology leading to an oral presentation by students.

BIO 691 Special Topics in Biology. Semester course; variable; 1-4 credits. An advanced study of a selected topic in biology. See the *Schedule of Classes* for specific topic(s) and prerequisites. If several topics are offered, students may elect to take more than one.

BIO 692 Independent Study. Semester course; hours to be arranged. credits to be arranged. A course designed to provide an opportunity for independent research in any area of biology outside the graduate student thesis area. Determination of the amount of credit and permission of instructor, adviser, and department chair must be obtained prior to registration for this course.

BIO 698 Thesis. Semester course; hours to be arranged. credits to be arranged. Independent research by students in areas of systematics, environmental, developmental, behavioral, cellular, and molecular biology, and comparative physiology.

Department of Chemistry

Chlebowski, Jan F. *Professor (Biochemistry and Molecular Biophysics)** PhD, Case Western Reserve University; biosynthesis and regulation of enzyme structure and function.

Crawley, Charlene D. *Assistant Professor* PhD, University of Delaware, analytical chemistry.

El-Shall, M. Samy *Professor* PhD, Georgetown University; physical chemistry.

Farrell, Nicholas P. *Professor* PhD, University of Sussex; inorganic chemistry.

Fenn, John B. *Research Professor* PhD, Yale University; mass spectrometry.

Haas, Thomas *Professor (Director, Commonwealth Graduate Engineering Program)* (Biomedical Engineering)** PhD, Princeton University; biomedical materials.

Hawkridge, Fred M. *Professor and Chair (Biochemistry and Molecular Biophysics)** PhD, University of Kentucky; analytical chemistry.

Houston, Todd A. *Assistant Professor* PhD, University of Michigan; organic chemistry.

Muddiman, David C. *Assistant Professor* PhD, University of Pittsburgh; analytical chemistry.

Ottenbrite, Raphael M. *Professor* PhD, University of Windsor; organic chemistry, polymer chemistry.

Ruder, Suzanne M. *Associate Professor* PhD, Washington State University; organic chemistry.

Rutan, Sarah C. *Professor* PhD, Washington State University; analytical chemistry.

Shillady, Donald D. *Professor* PhD, University of Virginia; physical chemistry, quantum chemistry.

Silvers, Stuart J. *Associate Professor* PhD, Yale University; physical chemistry, molecular spectroscopy.

Snedden, Albert T. *Professor and Associate Dean, College of Humanities and Sciences* PhD, Brandeis University; organic chemistry, natural products.

Terner, James *Professor* PhD, University of California at Los Angeles; physical chemistry, biophysics, resonance raman spectroscopy.

Topich, Joseph *Associate Professor* PhD, Case Western Reserve University; chemistry education, inorganic chemistry.

Vallarino, Lidia M. *Professor* PhD, University of Milano; inorganic chemistry.

Watton, Stephen P. *Assistant Professor* PhD, Northwestern University; inorganic chemistry.

Yu, Robert K. *Professor (Biochemistry and Molecular Biophysics)** PhD, University of Illinois; chemistry and metabolism of glycoconjugates, mechanism of auto-immune diseases; control of cellular-differentiation and proliferation; NMR spectroscopy.

* Department in parentheses indicates affiliate appointment.

* Affiliate appointment in parentheses indicates home department.

The Department of Chemistry offers programs leading to the Master of Science and Doctor of Philosophy degrees. The programs provide opportunities for concentrated study in analytical, inorganic, organic, polymer, or physical chemistry, or chemical physics. A plan of study is worked out for each student to ensure a sound basis for research. In keeping with the University's commitment as an urban institution, the department also offers part-time programs leading to these degrees.

Admission Requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies (Part I of this *Bulletin*) and the College of Humanities and Sciences, students are expected to have a bachelor's degree from an accredited college or university with 30 semester credits in chemistry. Admission on a provisional basis is possible for a student temporarily lacking this expected chemistry background. Acceptance is based upon undergraduate performance, satisfactory scores on the GRE and letters of recommendation.

Graduate students in the Department of Chemistry may receive financial support via teaching or research assistantships or fellowships. Admission forms for graduate study and applications for fellowships and assistantships are available on request by writing to the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051.

Degree Requirements

Entering graduate students are required to take proficiency examinations in analytical, inorganic, organic, and physical chemistry. These examinations are at the level of sound undergraduate courses and are offered preceding the start of the school's fall semester, preceding the start of the spring semester, and after the end of spring semester. These are used to evaluate the student's strengths and weaknesses, and the student's program is planned accordingly.

MS Requirements

Students preparing for the MS degree must demonstrate competency in analytical, inorganic, organic, and physical chemistry. New students who do well on the proficiency examinations may, by decision of the chemistry faculty, be considered to have demonstrated the necessary competency. The proficiency examinations may be repeated and must be completed by the end of the second semester of study. The MS student is expected to earn a minimum of 18 semester credits in graduate courses in chemistry, not including credit for seminar, and 12 semester credits in research. The credit hours must include a course selected from each of the four areas:

- **Analytical:** CHE 532 Advanced Analytical Chemistry;
- **Inorganic:** CHE 620 Advanced Inorganic Chemistry I; CHE 621 Advanced Inorganic Chemistry II;
- **Organic:** CHE 504 Advanced Organic Chemistry I, CHE 604 Advanced Organic Chemistry II, CHE 605 Physical Organic Chemistry, CHE 606 Methods of Structural Determination in Organic Chemistry; and
- **Physical:** CHE 510 Atomic and Molecular Structure, CHE 511 Chemical Thermodynamics and Kinetics, CHE 610 Applied Quantum Chemistry, CHE 615 Chemical Thermodynamics, CHE 616 Chemical Kinetics.

Additional graduate courses to be taken will be determined in consultation with the faculty research adviser and the faculty of the Department of Chemistry. Graduate students may elect to take courses offered on the MCV Campus. Among the courses of interest to chemistry students taught at the MCV Campus are medicinal chemistry, stereochemistry, heterocyclic chemistry, general biochemistry, circuit design and analysis, and molecular modeling. The School of Medicine section of this *Bulletin* should be consulted for other courses. Students are expected to participate in the department's seminar program each semester and to present at least two formal talks in the seminar program. An acceptable

research thesis and a final oral examination on the thesis are required. Full-time students should complete these degree requirements in two years.

PhD Requirements

Students seeking the PhD degree must demonstrate competency in analytical, inorganic, organic, and physical chemistry. Students who do exceptionally well in the proficiency examinations may, by decision of the chemistry faculty, be considered to have demonstrated the necessary competency. The proficiency examinations may be repeated and must be completed by the end of the second semester of study.

Students preparing for the PhD degree must have a minimum of 24 credits in graduate courses, not including credit for seminar or research. Credits must include a course selected from each of the four areas listed above. Other graduate courses to be taken will be determined in consultation with the faculty research adviser and the faculty of the Department of Chemistry. Students are expected to participate in the department's seminar program and present at least two formal talks in the seminar program. In addition to course work and seminar, the PhD requires a minimum of 30 credits in CHE 697 (directed research), and the total of all credits must be at least 60.

The student is required to complete written and oral examinations in his or her major field to become a PhD candidate. The oral examination includes the presentation and defense of the proposed dissertation research. The student must conduct a substantial original investigation under the supervision of his adviser and must prepare a dissertation reporting the results of the research and analyzing its significance in relation to existing scientific knowledge. An oral defense of the dissertation will be held. Full-time students should complete the degree requirements in about four years.

PhD in Chemical Physics Option

Students entering the chemical physics program must pass proficiency examinations in two areas of chemistry other than physical chemistry and two areas of physics (mechanics, electricity and magnetism). Students entering with a bachelor's or master's degree in chemistry who have not taken the courses previously may satisfy the physics requirement with an "A" or "B" in PHY 301, 302, and 376. Students entering with a bachelor's or master's degree in physics who have not taken the courses previously may satisfy the chemistry requirement with an "A" or "B" in two of the three courses, CHE 301-302, CHE 406, and CHE 409.

Students in the chemical physics program are required to complete CHE 510, CHE 612, PHY 576, PHY 580, and PHY 641 plus three courses from the following list: CHE 504, 532, 550, 610, 611, 615, 616, 620; PHY 550, 507, 532, 535, 635; MAT 517, 518. A minimum of four graduate courses must be in chemistry. All graduate students seeking the PhD degree must complete 30 hours of CHE 697 (research), as part of fulfilling the requirements for the degree. However, students electing the chemical physics option may substitute 15 credits of PHY 697 for 15 credits of CHE 697.

All other requirements are the same as those stated above.

Additional information and a more detailed description of the graduate program may be obtained from the Department of Chemistry.

Graduate Courses in Chemistry (CHE)

CHE 504 Advanced Organic Chemistry I. Semester course; 3 lecture hours. 3 credits. An integrated study of certain free radical and ionic reaction mechanisms with emphasis on electronic effects and stereochemical consequences of these reactions.

CHE 507 Introduction to Natural Products. Semester course; 3 lecture hours. 3 credits. A study of the biosynthetic origins, isolation, structure elucidation, and uses of naturally occurring organic compounds. Emphasis is placed upon three major classes of compounds, carboaromatics, terpenes, and alkaloids.

CHE 510 Atomic and Molecular Structure. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 301 and PHY 208. Survey of the pertinent aspects of quantum mechanics. Line spectra, atomic structure, and molecular bonding.

CHE 511 Chemical Thermodynamics and Kinetics. Semester course; 3 lecture hours. 3 credits. The concepts and principles of thermodynamics and their application to chemical problems. The rates and mechanisms of chemical reactions including collision and transition state theories.

CHE 532 Advanced Analytical Chemistry. Semester course; 3 lecture hours. 3 credits. Theories and principles of thermodynamics and kinetics relevant to analytical methods, including acid-base, redox, and metal complexation equilibria, nonaqueous systems, kinetics, and an introduction to surface chemistry.

CHE 550 Introduction to Polymer Chemistry. Semester course; 3 lecture hours. 3 credits. A study of macromolecular compounds that includes classifications, methods of preparation, mechanisms, stereochemistry, and applications. Physical characterizations, such as structure and property correlations, kinetics, thermodynamics, and molecular weight determinations are emphasized.

CHE 580 Mechanical Properties of Plastics and Polymers. Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing or consent. This course provides a link between the more practical aspects of plastics and the fundamental properties of the polymers from which they are made. Topics covered deal with the structure of polymers with emphasis on relationships with mechanical properties; rubber elasticity; the glass transition and other secondary transitions; time and temperature dependency; yield and fracture; crystallization and morphology; influence of polymer processing on mechanical properties.

CHE 591 Topics in Chemistry. Semester course; variable; 1-6 credits per semester. Maximum total of nine credits for all topics courses. An in-depth study of a selected topic in chemistry. See the *Schedule of Classes* for specific topic(s) and prerequisites.

CHE 604 Advanced Organic Chemistry II. Semester course; 3 lecture hours. 3 credits. An integrated study of the mechanism and stereochemistry of organic reactions and their application to organic synthesis. Emphasis is placed on addition and condensation reactions, carbanions, carbenes, and other reactive intermediates.

CHE 605 Physical Organic Chemistry. Semester course; 3 lecture hours. 3 credits. The theory and application of physical methods in the study of the behavior of organic compounds. Topics covered include homogeneous kinetics, equilibria, acid-base catalysis, and the quantitative correlation of structure and reactivity as they apply to the understanding of the mechanisms of organic reactions.

CHE 606 Methods of Structural Determination in Organic Chemistry. Semester course; 3 lecture hours. 3 credits. Lecture and

laboratory problems illustrating the application of instrumental analytical techniques for the solving of organic structural problems.

CHE 607 Organic Synthesis of Natural Products. Semester course; 3 lecture hours. 3 credits. Prerequisite: CHE 604 or permission of instructor. A study of the criteria for, applications of reactions to, and design of, complex organic syntheses, including functional group protection and control of stereochemistry.

CHE 610 Applied Quantum Chemistry. Semester course; 3 lecture hours. 3 credits. Prerequisite: CHE 510. Quantum mechanics applied to chemical problems in UV, IR, and NMR spectroscopy and the electronic structures of atoms and molecules; development of the self-consistent field equations.

CHE 611 Molecular Spectroscopy. Semester course; 3 lecture hours. 3 credits. Prerequisite: CHE 510. This course teaches the interaction of radiation and molecules; the rotation, vibration, and electronic motion of molecules; molecular spectra and recent developments in laser spectroscopy.

CHE 612 Statistical Thermodynamics. Semester course; 3 lecture hours. 3 credits. Prerequisites: CHE 510 or PHY 580. The principles of quantum and classical statistical thermodynamics with application to selected chemical and physical systems.

CHE 615 Chemical Thermodynamics. Semester course; 3 lecture hours. 3 credits. The study of the laws of thermodynamics and their application to pure phases, solutions, and changes in state.

CHE 616 Chemical Kinetics. Semester course; 3 lecture hours. 3 credits. A study of the rates and mechanisms of chemical reactions, reaction rate theory, kinetic theory of gases, and theories of catalysis.

CHE 620 Advanced Inorganic Chemistry I. Semester course; 3 lecture hours. 3 credits. The application of modern physical techniques for the determination of the symmetry, molecular structure, bonding, and reaction mechanisms of inorganic compounds.

CHE 621 Advanced Inorganic Chemistry II. Semester course; 3 lecture hours. 3 credits. Prerequisite: CHE 620 or permission of instructor. A coordinated study of synthetic methods, stereochemistry, and reaction mechanisms including catalysis of inorganic, organometallic and bioinorganic compounds.

CHE 630 Electroanalytical Chemistry. Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHE 532 or permission of instructor. Presents the theory and application of electroanalytical techniques including cyclic voltammetry, potential step methods, microelectrode voltammetry and spectro-electrochemistry.

CHE 631 Separation Science. Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHE 532 or permission of instructor. Discusses theories and principles of separation science as applied to chemical problems with emphasis on current techniques, instrumentation, and applications.

CHE 632 Chemometrics. Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHE 409 or permission of the instructor. Computer methods for experimental design and data analysis of spectroscopic, electrochemical and chromatograph data. Topics include sampling theory, detection limits, curve resolution, Fourier transform-based instruments, and factor analysis.

CHE 633 Mass Spectrometry. Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHE 532 or permission of the instructor. Topics include mass spectrometry ionization methods, mass analyzers, theory of unimolecular decompositions, and techniques used for ion structure determination.

CHE 634 Surface Science. Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHE 532 and 633 or permission of the instructor. Topics include types of surfaces requiring surface analysis, electron-surface scattering (AES, UPS, XPS, HREELS, LEED, STM, SEM), photon-surface scattering (IR,

NMR, EXAFS), Molecule/Ion-Surface scattering (ISS, RMBS), chemisorption techniques and work function measurements.

CHE 635 Spectrochemical Analysis. Modular course; 3 lecture hours. 1.5 credits per module. Maximum two modules per semester. Prerequisite: CHE 532 or permission of instructor. Topics include instrumental components, such as lasers, photomultipliers, array detectors, monochromators, lock-in and boxcar detection, waveguides and optical fibers, atomic spectroscopic methods, fluorescence, Raman and circular dichroism spectroscopies.

CHE 690 Research Seminar. Semester course; 1 credit. May be repeated for credit. In addition to reports presented by students, staff, and visiting lecturers, current problems and developments in chemistry are discussed.

CHE 691 Topics in Chemistry. Semester course; variable; 1-6 credits per semester. Maximum total of nine credits for all topics courses. An advanced study of selected topic(s) in chemistry. See the *Schedule of Classes* for specific topic(s) and prerequisites.

CHE 697 Directed Research. Semester course; 1-15 credits. May be repeated for credit. Research leading to the MS and PhD degree.

Department of Criminal Justice

- Albanese, Jay S. *Professor and Chair* PhD, Rutgers University; organized crime, white collar crime, professional ethics.
- Clement, Mary J. *Associate Professor* PhD, Washington State University, JD/MSW T. C. Williams School of Law and Virginia Commonwealth University; law, juvenile justice, women and criminal justice.
- Duhart, Detis T. *Assistant Professor* PhD, Florida State University; research methods, criminology, fear of crime.
- Geary, David P. *Associate Professor* PhD, Marquette University; justice policy administration, policing, international justice systems.
- Gordon, Jill *Assistant Professor* PhD, University of Cincinnati; research methods, juvenile justice, corrections.
- Hague, James L. *Professor* JD, LLM, University of Michigan School of Law and University of Virginia; criminal law, criminal procedure, jurisprudence, courts and judicial process.
- Hooker, James E. *Associate Professor Emeritus* MA, Washington State University; criminal justice management, law enforcement.
- Moriarty, Laura J. *Associate Professor* PhD, Sam Houston State University; research methods, victimology, criminology.
- Pelfrey, William V. *Professor* PhD, Florida State University; criminology, crime analysis.
- Smith, Michael R. *Assistant Professor* JD, PhD, University of South Carolina and Arizona State University; law enforcement, criminal procedure.

The graduate program in criminal justice is designed to provide advanced educational preparation for students and criminal justice professionals pursuing careers in the field of criminal justice. Such preparation includes understanding the range of theory, research, and policy in criminal justice. The curriculum is directed especially toward assisting students in developing the advanced knowledge, skills, and abilities required by criminal justice professionals.

The Master of Science in Criminal Justice (MS) requires 36 semester hours of course work.

The curriculum provides for the group of core courses and approved electives noted on the curriculum outlines that follow.

The Post-baccalaureate Certificate in Criminal Justice (CCJ) program offers an abbreviated graduate-level course sequence of 15 credit hours for individuals with an academic and/or professional background in criminal justice.

The graduate program (MS and CCJ) is designed to accommodate both full- and part-time students. Nearly all courses are offered in the evenings after 4:00 P.M. Internship opportunities are available for students without field experience.

MS in Criminal Justice – Justice Option

Students are expected to complete CRJ 501 as one of their first courses. CRJ 550, 601, 616, 620, and 641 are also required, as are four approved elective courses (12 credits) approved by the student's adviser. The criminal justice elective courses described in the following text can include up to six semester hours of relevant elective courses outside criminal justice which require approval by the student's adviser. Students who do not have criminal justice experience are encouraged to complete an approved internship (CRJ 693).

Also, the student is required to make a choice between the thesis and the comprehensive examination tracks. The thesis track is especially for students who have an interest in research or wish to increase their chances of acceptance into a doctoral program. The latter track is appropriate for those seeking greater overall mastery of the criminal justice field and includes a comprehensive examination of the field. The pattern of choice available is indicated in the curriculum outlines shown on the following pages.

MS in Criminal Justice – Forensic Option

The objective of the Master of Science degree program in Forensic Science is to prepare students for careers as forensic scientists in government and private laboratories. Broad exposure to the specializations within the field is offered, including drug analysis, DNA analysis, trace evidence, criminalistics, and legal issues. A strong emphasis on lab courses provides students with significant laboratory work prior to graduation. Required lab courses are taught at the Virginia Division of Forensic Science Lab, which is nationally accredited by the American Society of Crime Laboratory Directors.

Post-Baccalaureate Certificate in Criminal Justice (CCJ)

This certificate program offers specialization for individuals interested or involved in law enforcement, corrections, juvenile justice or the courts. It combines survey and theory courses with research, management, and policy courses on the justice system. The courses in the CCJ program are the same as the master's-level courses, and are fully transferable to the MS program with grades of "B" or better and upon acceptance into the master's degree program.

Five courses are required for the certificate (CCJ), as specified in the chart that follows. To receive the certificate, the student must achieve a "B" average in the five courses with no more than one "C" grade and complete the 15-hour certificate program within three years.

Admissions

Beyond the general School of Graduate Studies standards listed in Part I of this *Bulletin*, admissions will be based on:

- Full Admission
 - An undergraduate grade-point average that exceeds 2.7 overall.
 - A satisfactory score on the GRE. Call 1-800-GRE-CALL for exam information.
 - Previous evidence of ability to perform graduate-level work (where applicable).
 - Professional experience in criminal justice (where applicable).
 - For admission to the Forensic Science Program, students must have completed 24 undergraduate credits in natural science lab courses, including 8 credits of organic chemistry with lab. Students must have earned at least a 3.0 grade-point average in lab courses.
- Provisional Admission
 - In rare cases, applicants who do not meet the requirements for full admission may be accepted provisionally upon recommendation of the departmental admissions committee. The conditions for earning full admission are stated in the provisional acceptance letter sent by the dean of the School of Graduate Studies. Conditions usually include the requirement that the student complete the first nine hours of departmental graduate courses with a grade of "B" or better in each course.
 - Provisional admission does not constitute a waiver of the requirement to submit a GRE test score.

Application deadline for receipt of all materials is April 1 each year for fall admission, and November 1 for spring admission. There are no spring admissions in the Forensic Science Program.

Transfer Credit

At the time of a student's acceptance into the program, a maximum of six semester hours of appropriate graduate credit may be applied toward a Master of Science degree in the Department of Criminal Justice. The credits to be transferred must be approved by the department.

Financial Information

Information and application forms for financial aid information may be secured from the VCU Financial Aid Operations Center, 901 West Franklin Street, Room 107, Richmond, VA 23284-3026, (804) 929-7370. There often are part-time research/teaching/advisement positions within the Department of Criminal Justice for graduate students. These are hourly positions, which are posted by the department each semester.

Requirements for the Degree of Master of Science in Criminal Justice

(In addition to general graduation requirements)

- Students must complete a minimum of 36 graduate semester credits, approved by the chair, with an overall grade-point average of 3.0 or above.
- Forensic Science students must complete 36 credits as outlined in the accompanying list. There are seven required courses, including a forensic science internship (CRJ 793).
- Students without acceptable experience in administration of justice may complete a supervised field placement (CRJ 693) under the direction of the department and the immediate supervision of a qualified person in an approved agency or facility. Applications for all internships must be submitted a semester in advance at department offices.

Correspondence and Information

General program information can be obtained by accessing the department's home page at <http://www.has.vcu.edu/crj/>. Application forms and other material may be obtained from the School of Graduate Studies, Virginia Commonwealth University, 901 West Franklin Street, Room B1, Richmond, VA 23284-3051, (804) 828-6916.

Master of Science in Criminal Justice – Justice Option

Core	<i>Credits</i>
CRJ 501 Criminal Justice Assessment	3
CRJ 550 Professional Ethics and Liability	3
CRJ 601 Research Basis of Criminal Justice	3
CRJ 616 Justice Policies and Administration	3
CRJ 620/SOC 620 Seminar in Criminology	3
CRJ 641 Jurisprudence	3
	18
Approved Electives	
Electives must be approved by the adviser and can include up to six credits of course work outside the department	12
Thesis Research Track	
CRJ 798 Thesis Research	3
CRJ 799 Thesis	3
	6
OR	
Comprehensive Examination Track	
CRJ 684 Comprehensive Exam Writing	3
CRJ 685 Comprehensive Exam Oral Defense	3
	6

Master of Science in Criminal Justice – Forensic Science Option

Core Requirements (7 courses/21 credits)	
CRJ 571 Survey of Forensic Science	
CRJ 670 Forensic Evidence and Criminal Procedure	
CRJ 671 Drug Analysis (lecture/laboratory)	
CRJ 673 Trace Evidence (lecture/laboratory)	
CRJ 675 Serology and DNA (lecture/laboratory)	
CRJ 677 Expert Testimony in Forensic Science	
CRJ 793 Forensic Laboratory Internship	
Electives (5 courses or 15 credits)	
CRJ 672 Advanced Drug Analysis (lecture/laboratory)	
CRJ 674 Criminalistics (lecture/laboratory)	

CRJ 676 Forensic Biology and DNA (lecture/laboratory)
 CRJ 680 Forensic Psychiatry
 PMC 535 Introduction to Toxicology
 PMC 644 Forensic Toxicology
 BIO 530/GEN 501 Human Genetics
 BIS 543/STA 543 Statistical Methods I
 CLS 501,502 Instrumental Methods of Analysis I,II
 Other electives permitted with permission of adviser

Post-Baccalaureate Certificate in Criminal Justice

The five courses required are as follows:

CRJ 501 Criminal Justice Assessment	3
CRJ 601 Research Basis of Criminal Justice	3
Select three from the following courses:	9
CRJ 550 Professional Ethics and Liability	
CRJ 616 Justice Policies and Administration	
CRJ 620/SOC 620 Seminar in Criminology	
CRJ 641 Jurisprudence	
Graduate Elective	

Credits

15

Graduate Courses in Criminal Justice (CRJ)

CRJ 501 Criminal Justice Assessment. Semester course; 3 lecture hours. 3 credits. Survey of the American criminal justice system, and the relationships among crime, law, police, courts, and corrections. Review of contemporary criminal justice literature.

CRJ 550 Professional Ethics and Liability. 3 credits. The ethical basis for decision making in criminal justice. How ethical considerations affect every important decision in criminal justice, especially as they involve the liberty interests of others. These decisions include: police stop and arrest decisions, prosecutor charging decision, defendant plea decisions, defense strategy decisions, judicial evidentiary rulings, sentencing decisions, among others. The consequences of unethical decisions on management ability, civil and criminal liability faced by criminal justice professionals.

CRJ 571 Survey of Forensic Science. Semester course;3 lecture hours. 3 credits. History and current status of forensic science as the intersection of crime, law, biology, and chemistry. Review of specialties within the field,analytical techniques employed,and career opportunities in the field.

CRJ 591 Topic Seminar. Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for a maximum of six credits. Periodic seminar in contemporary criminal justice topics. Topics to be determined.

CRJ 601 Research Basis of Criminal Justice. Semester course; 3 lecture hours. 3 credits. Examines principles of design,method, and analysis in criminal justice research.Issues of reliability, validity and the applicability of research findings in practice.

CRJ 612 Criminal Justice Politics and Planning. Semester course; 3 lecture hours. 3 credits. Assesses political and public policy issues as they relate to the administration of justice planning and policy strategies. Emphasizes planning implications of interagency relationships, the impact of social change in the criminal justice process, and community involvement in the control and prevention of crime.

CRJ 616 Justice Policies and Administration. Semester course; 3 lecture hours. 3 credits. Analyzes the legal,philosophical,political,and management influences that shape the criminal justice policy and its administration.Organization and management principles as they apply to the justice system with emphasis on leadership and human resource development.

CRJ 620/SOC 620 Seminar in Criminology. Semester course; 3 lecture hours. 3 credits. Examination and analysis of social,psychological, and economic theories and correlates of criminal behavior. Typologies of offenders.

CRJ 622 Comparative Criminal Justice Systems. Semester course; 3 lecture hours. 3 credits. Study of crime, law, and criminal justice from an international perspective, emphasizing their comparative aspects.

CRJ 631 Administrative Issues in Criminal Justice. Semester course;3 lecture hours. 3 credits. Application of organizational theory and administrative behavior to criminal justice policy, management, and operation.Administrative concepts, program planning and development,and innovative management practices.

CRJ 641 Jurisprudence. Semester course;3 lecture hours. 3 credits. Examines the theoretical underpinnings of law and justice. Studies the evolution of theories of jurisprudence within the context of evolving concepts of responsibility and law. Systems of law will be contrasted and emphasis will be placed on contemporary developments in substantive laws.

CRJ 660 Seminar in Legal Process. Semester course;3 lecture hours. 3 credits. Studies the formal and informal procedures of various criminal justice systems. Advanced study of criminal procedure and the major legal constraints and authorizations placed upon arrest,prosecution, trial,sentencing and appeal.

CRJ 670 Forensic Evidence and Criminal Procedure. Semester course;3 lecture hours. 3 credits. Presents the law of criminal procedure and rules of evidence as applied to forensic science. Explores issues of scientific versus legal burdens of proof, legal terminology, and trial procedure.

CRJ 671 Drug Analysis. Semester course;3 lecture and/or laboratory hours. 3 credits. Chemical and pharmacological aspects of commonly abused drugs. Drug classification and analysis using chromatography and spectroscopy.

CRJ 672 Advanced Drug Analysis. Semester course; 3 lecture and/or laboratory hours. 3 credits. Isolation and identification of abused drugs emphasizing the analysis of unknowns, problems encountered in analysis, and chain of custody issues.

CRJ 673 Trace Evidence. Semester course;3 lecture and/or laboratory hours. 3 credits. Presents the physical and chemical properties and analysis of arson and explosives, gun shot residue, paint and blood spatter analysis, and crime scene documentation.

CRJ 674 Criminalistics. Semester course;3 lecture and/or laboratory hours. 3 credits. Microscopic analysis and identification of fingerprints, questioned documents, fibers, glass fragments, and hair. Evidence collection and preservation.

CRJ 675 Serology and DNA. Semester course;3 lecture and/or laboratory hours. 3 credits. Identification and analysis of blood and body fluids, species determination,electrophoresis, introduction to DNA.

CRJ 676 Forensic Biology and DNA. Semester course; 3 lecture and/or laboratory hours. 3 credits. Extraction and purification of DNA, sample evaluation,analysis, and interpretation of genetic testing.

CRJ 677 Expert Testimony in Forensic Science. Semester course; 3 lecture hours. 3 credits. Examines forensic testimony in the courtroom, communication of scientific findings to a general audience, public speaking skills, trial preparation and cross-examination in moot court format. (This course should be taken near the end of the degree program.)

CRJ 680 Forensic Psychiatry. Semester course;3 lecture hours. 3 credits. Guilty mind requirements in criminal law. Competency to stand trial,insanity defense, mental disorder and crime. Behavioral profiling of serial murders and sex offenders. Issues in the use of clinical and statistical prediction methods in criminal justice.

CRJ 684 Comprehensive Exam Writing. Semester course;3 lecture hours. 3 credits or 1 credit extension.Students choosing this option will write a multquestion comprehensive exam over a period of 10 weeks. To be taken at the completion of course work for a master's degree. Pass/Fail grades only.

CRJ 685 Comprehensive Exam Oral Defense. Semester course; 3 credits or 1 credit extension. Prerequisite: Completion of CRJ 684. A continuation of CRJ 684, the student orally explains and responds to questions on the written answers to the comprehensive exam. This course may be taken only after successful completion of CRJ 684. Pass/Fail grades only.

CRJ 692 Directed Independent Study. Semester course; 1-3 credits. May be repeated for a maximum of six credits. Provides an opportunity for an advanced student to pursue an independent research project or extensive literature review under the supervision of an instructor. The instructor's review and approval of the study proposal must precede independent work by student.

CRJ 693 Internship. Semester course; 3 credits. Provides student an opportunity to relate theory to practice through observation and experience in an approved agency. Students must apply for this internship a semester in advance. Pass/Fail. The internship should be taken near the end of the degree program.

CRJ 763 Seminar in Social Justice. Semester course; 3 lecture hours. 3 credits. Examines the philosophical and historical underpinnings of the principles of justice and their relationship to equality, liberty, government, and law.

CRJ 793 Forensic Laboratory Internship. Semester course; 3 lecture and/or laboratory hours. 3 credits. An internship in a forensic laboratory where a student conducts replication, validation or other analyses in a specialization area of interest. The product of this experience will be a paper suitable for presentation at a professional conference. Pass/Fail. Students must apply for this internship a semester in advance. This capstone course should be taken near the end of the degree program.

CRJ 798 Thesis Research. Semester course; 3 credits and 1 credit extension. Prerequisite: CRJ 601; a graduate statistics course is strongly recommended. A two-semester project resulting in an advanced research paper that involves a comprehensive literature review, approved research design, and an original analysis or replication study. The research proposal is approved in advance by a faculty committee. CRJ 798 involves preparation and oral defense of the thesis prospectus. Grades on a "S," "U," or "F" basis.

CRJ 799 Thesis. Semester course; 1-3 credits. Prerequisite: Completion of CRJ 798. Execution of the research prospectus approved in CRJ 798. The master's thesis will be written according to University guidelines, approved by the student's faculty committee, and defended orally before the faculty committee. Graded on a "S," "U," or "F" basis.

Department of English

Armour, Robert A. *Professor Emeritus* PhD, University of Georgia; film.
 Berry, Boyd M. *Associate Professor* PhD, University of Michigan; Renaissance, Milton.
 Browder, Laura *Assistant Professor* PhD, Brandeis University; drama, creative writing, American studies.
 Coppedge, Walter R. *Professor* PhD, Indiana University; Shakespeare, English Renaissance drama, film.
 Cooper, Elizabeth *Associate Professor* PhD, University of North Carolina; composition and rhetoric, linguistics.
 Cornis-Pope, Marcel *Professor* PhD, University of Timisoara (Romania); literary theory, modern American literature, British Victorian and twentieth-century literature.
 Dance, Daryl C. *Professor Emerita* PhD, University of Virginia; American literature, folklore.
 DeHaven, Tom *Professor* MFA, Bowling Green State University; creative writing, fiction, American studies.
 Donovan, Gregory E. *Associate Professor* PhD, State University of New York at Binghamton; twentieth-century American and British literature, creative writing.
 Duke, Elizabeth F. *Associate Professor* PhD, University of Iowa; linguistics.
 Duke, Maurice *Professor* PhD, University of Iowa; American literature, editing, and professional writing.
 Fine, Richard A. *Professor and Chair* PhD, University of Pennsylvania; American studies, American literature.
 Frankel, Nicholas *Assistant Professor* PhD, University of Virginia; nineteenth-century British literature, film.

Golden, Marita *Professor* MSC, Columbia University; creative writing, fiction, nonfiction.
 Griffin, Claudius W. *Professor* PhD, Indiana University; teaching composition, Shakespeare.
 Harkness, Marguerite *Associate Professor* PhD, State University of New York at Binghamton; twentieth-century British, nineteenth-century British literature.
 Hodges, Elizabeth *Associate Professor* PhD, University of Pennsylvania; rhetoric and composition.
 Hummer, Terry R. *Professor* PhD, University of Utah; contemporary literature, creative writing.
 Ingrassia, Catherine *Associate Professor* PhD, University of Texas at Austin; eighteenth-century British literature.
 Kinney, James J. *Professor* PhD, University of Tennessee; rhetoric and composition, American literature.
 Kuhn, Elisabeth *Associate Professor* PhD, University of California, Berkeley; linguistics.
 Laban, Lawrence F. *Assistant Professor* PhD, Indiana University; British prose fiction.
 Latané, David E. *Associate Professor and Associate Chair* PhD, Duke University; nineteenth-century British literature.
 Longest, George C. *Associate Professor* PhD, University of Georgia; Southern literature, realism.
 Mangum, A. Bryant *Professor* PhD, University of South Carolina; early twentieth-century American literature.
 Marshall, Paule *Professor Emerita* BA, Brooklyn College; creative writing.
 Morse, Charlotte C. *Professor* PhD, Stanford University; Middle English literature, Medieval studies.
 Oggel, L. Terry *Professor* PhD, University of Wisconsin; nineteenth-century American literature and theater, bibliography.
 Pendleton, James D. *Professor Emeritus* MA, University of North Carolina; playwriting.
 Perry, Patricia H. *Assistant Professor* PhD, State University of New York at Stony Brook; composition and rhetoric.
 Priebe, Richard K. *Professor* PhD, University of Texas at Austin; African literature, folklore.
 Reynolds, Elizabeth R. *Professor Emerita* PhD, University of South Carolina; Medieval studies.
 Sange, Gary R. *Associate Professor* MFA, University of Iowa; poetry writing, modern poetry.
 Sharp, Nicholas A. *Assistant Professor* PhD, Ohio State University; Renaissance.
 Tester, William *Assistant Professor* MFA, Syracuse University; contemporary literature, creative writing.
 Woodlief, Ann M. *Associate Professor* PhD, University of North Carolina; American literature.

The English Department offers the Master of Arts in English and the Master of Fine Arts in Creative Writing.

Master of Arts in English

The Department of English offers a program leading to a Master of Arts degree in English with two areas of emphasis or concentration.

The program provides maximum flexibility by allowing each student, in consultation with the student's graduate committee, to select the concentration that will best develop the student's competence in those areas most relevant to scholarly and professional objectives.

Programs leading to the Master of Arts degree in English are:

- **Writing and Rhetoric.** Designed for the candidate who is seeking intensive work in both writing and teaching expository prose or for the candidate who plans to pursue the PhD degree.
- **Literature.** Designed for the candidate who desires intensive work in English or American literature beyond the bachelor's level or for the candidate who plans to pursue the PhD degree.

Admission Requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies (Part I of this *Bulletin*) and the College of Humanities and Sciences, the following requirements, established by the English Graduate Studies Committee, represent the minimum acceptable standards for admission:

- a baccalaureate degree in an area appropriate to the study of literature or writing;
- a grade-point average that indicates the applicant can pursue successfully a graduate degree;
- three letters of recommendation from former instructors; and
- completion of the GRE. (Applicants for the Literature track may, but are not required to submit scores for the GRE subject test in literature.)

Degree Requirements

The English program consists of a minimum of 30 semester credits. After these credits have been attained, students shall be examined over their courses and research as the Graduate Committee recommends. Students may wish also to present a thesis or project, credit for which shall be determined by the MA Committee.

Master of Fine Arts in Creative Writing

Browder, Laura *Assistant Professor* PhD, Brandeis University; drama, creative writing, American studies.

DeHaven, Tom *Professor* MFA, Bowling Green State University; creative writing (fiction, screenwriting) American studies.

Donovan, Gregory E. *Associate Professor* PhD, State University of New York at Binghamton; creative writing (poetry), 20th-century American and British literature.

Golden, Marita *Professor* MSC, Columbia University; creative writing (fiction, nonfiction).

Hummer, Terry R. *Professor* PhD, University of Utah; contemporary literature, creative writing.

Marshall, Paule *Professor Emeritus* BA, Brooklyn College; creative writing (fiction).

Pendleton, James D. *Professor Emeritus* MA, University of North Carolina; creative writing (playwriting).

Sange, Gary R. *Associate Professor* MFA, University of Iowa; creative writing (poetry).

Tester, William *Assistant Professor* MFA, Syracuse University; contemporary literature, creative writing.

The Master of Fine Arts in Creative Writing is designed to attract students from diverse undergraduate backgrounds who are writers of promise. The program is suited particularly to those interested primarily in the writing of fiction and poetry; however, some emphasis also is placed on the writing of nonfiction, playwriting, and screenwriting.

Graduate students in creative writing are encouraged to develop a strong personal sense of esthetics and ethics and to pursue excellence in writing and scholarship, as well as in teaching, if they are pursuing that career option. Through the workshop experience, as well as personal conferences with the writing faculty, the program aims to help students significantly advance the quality of their writing, to enable them to become expert critics of their own and others' work, and to advise them as they seek to publish their writing.

Admission Requirements

Admission to the MFA program is based most importantly on the candidate's submitted creative writing portfolio (thus students who have produced little or no creative writing prior to their application would not be eligible). The deadline for application to the MFA program is March 1. In addition to the general requirements for admission to graduate programs in the School of Graduate Studies (Part I of this *Bulletin*) and the College of Humanities and Sciences, the following requirements, established by the Creative Writing MFA Committee, represent the minimum acceptable standards for admission:

- A portfolio of promising fiction or poetry, possibly with drama (as a minimum, approximately eight to 10 poems, or 20 or more pages of fiction, or one act from a play, or some combination of these; in all cases, applicants should submit only their strongest creative writing samples) to be submitted to the MFA program director.
- Three recommendations from persons who are qualified to give information concerning the applicant's probable success in graduate school, especially in a creative writing program.
- A scholastic record that is indicative of the applicant's ability to pursue a graduate degree successfully.
- A baccalaureate degree, or its equivalent.
- Completion of the GRE (the subject test in literature is not required for MFA applicants).

Degree Requirements

A total of 48 semester hours is required to complete the degree. The basic course of study required in the program includes: 12 semester hours of graduate creative writing workshops (required), 12 hours of British or American graduate literature courses (required), and six to 12 hours of thesis work (required); the remaining 12 to 18 hours are electives, taken in literature, workshops, or other graduate courses. Beyond the required courses, the student is free to work out a total program of 48 hours, with the advice of the program director or the student's thesis adviser, which is appropriate to the individual student's aims and interests. The thesis work gives students the opportunity to produce a manuscript of publishable quality. Course work also is available in the techniques of teaching creative writing, and the program is flexible enough to include studies undertaken in other departments of the University as well, including Art History, Theater, Philosophy, and the School of Mass Communications.

Graduate Courses in English (ENG)

ENG 500 Practicum in College English. Semester course; 1-6 credits. May be repeated for credit. May not be applied toward degrees in English. Prerequisite: Permission of director of graduate studies. Student participation in planned educational experience under the supervision of English department faculty. The practicum may include classroom teaching, Writing Center tutoring, or participation in research projects.

ENG 528/EDU 528 Children's Literature II. Semester course; 3 lecture hours. 3 credits. May not be taken for credit toward undergraduate English major if student has taken ENG/EDU 351. May not be used to fulfill Literature requirement for MA in English or MFA in Creative Writing, but may be taken as elective credit. A study of classic and current children's books from a variety of literary genre. Magazines and media-related reference resources and journals are reviewed. The creative use of literature, its sociocultural functions, and its contribution to the development of the oral and written expression of children from nursery to grade eight are explored. A focus on children with special problems is included.

ENG 531 Literary Criticism. Semester course; 3 lecture hours. 3 credits. A study of the fundamental concepts involved in the practice of criticism. Some attention is given to the historical development of criticism, but the primary focus is on its methods and aims.

ENG 532/ENE 532 Applied English Linguistics. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Application of linguistics theories and methods to selected teaching problems, such as teaching English grammar and usage, teaching English as a second or foreign language, or teaching standard English to students who speak different dialects.

ENG 552/EDU 552 Teaching English as a Second Language. Semester course; 3 lecture hours. 3 credits. Provides students who plan to teach English to people whose native language is not English with a variety of instructional/learning strategies. Presents and explores current approaches and methodology, as these relate to linguistic features and pedagogy.

ENG 553 Studies in Linguistics. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A general introduction to one area of linguistic study, such as pronunciation, grammar, stylistics, dialects, usage standards, lexicography, onomastics, or semantics.

ENG 561 Medieval Literature. Semester course; 3 lecture hours. 3 credits. A survey of major works of British literature in the Middle Ages with some attention to continental influences upon both Old English and Middle English works. The study will include poetry, prose, and drama from Beowulf to Morte d'Arthur. Some reading in modern English translation, some in Middle English.

ENG 563 Renaissance Literature. Semester course; 3 lecture hours. 3 credits. A survey of British poetry, prose, and drama written in the sixteenth and seventeenth centuries. Attention will be divided among major figures - such as More, Marlowe, Spenser, Shakespeare, Donne, Jonson, Milton, and minor authors.

ENG 565 Restoration and Eighteenth-Century Literature. Semester course; 3 lecture hours. 3 credits. A survey of Restoration and eighteenth-century poetry, drama, fiction, and prose. Readings in major figures of the period including Behn, Dryden, Etherege, Congreve, Steele, Defoe, Swift, Pope, Montagu, Richardson, Fielding, Johnson, Sheridan, and Austen.

ENG 567 Romantic and Victorian British Literature. Semester course; 3 lecture hours. 3 credits. A survey of British literature during the nineteenth century. Readings in the major writers, especially poets and novelists such as Wordsworth, Shelley, Dickens, the Brownings, the Brontes, Eliot, and Hardy.

ENG 569 Twentieth-Century British Literature. Semester course; 3 lecture hours. 3 credits. A survey of the literature of twentieth-century Britain and Ireland. Major figures of the early part of the century such as Conrad, Lawrence, Woolf, Joyce, Yeats, Shaw, Auden will be complemented by the emerging writers of the second half of the century.

ENG 571 American Literature I. Semester course; 3 lecture hours. 3 credits. A survey of the literature of the United States from the Puritan period through the Romantic period.

ENG 572 American Literature II. Semester course; 3 lecture hours. 3 credits. A survey of the literature of the United States from the Age of Realism through the Contemporary period.

ENG 601/ENE 601 Young Adult Literature. Semester course; 3 lecture hours. 3 credits. Examination of literature written for young adults, literature appropriate for young people in middle schools and high schools. Focuses on the content, characteristics, and teaching of such literature.

ENG 605 Introduction to Literary Scholarship. Semester course; 3 lecture hours. 3 credits. An introduction to the forms and practice of modern literary research and criticism. Attention will be paid to bibliographical and textual criticism and to the most commonly employed approaches of literary historians and critics in English and American literature.

ENG 611 The Writer in His Own Time. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of the biographical, intellectual, and sociological influences on a selected British or American writer and his work. The course is designed to discover how the external factors of a writer's life are absorbed and transmuted into art by drawing upon the resources of other disciplines when relevant.

ENG 614 Major Works of Literature. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of the aesthetic backgrounds, composition, and continuing interpretation of a selected work of English or American literature generally regarded as a classic. The intent of the course is to comprehend as fully as possible the literary work of art through studying the aesthetic influences upon it and by applying various critical approaches to it.

ENG 617 Major Literary Modes. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study, through the analysis of selected literary works of several genres, of modes that are useful to understand and judge literature. The study may draw upon the literature of many nations in English translation. The following modes are examples of those that may be studied: the heroic mode, the tragic mode, the comic mode, the ironic mode.

ENG 620 Patterns in Literary Thought. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of significant recurring intellectual attitudes and concepts that have found expression in literature and shaped the development of literary style and thought. The study will draw upon the literature of many nations in English translation.

ENG 624 Literature in Society. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of the ways in which literature often reflects, supports, and influences political and philosophical movements in society. Creative literature, primarily English and American, will be studied in terms of its response to or effect upon social issues.

ENG 627 Literary Genre. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study of a literary genre, such as poetry, fiction, or drama.

ENG 635 Theories of Rhetoric and Composition. Semester course; 3 lecture hours. 3 credits. A study of the contemporary research in rhetorical theory and issues in teaching composition. There is emphasis on both research, including bibliography and design, and practical application.

ENG 636/ENE 636 Teaching Composition. Semester course; 3 lecture hours. 3 credits. A study of the traditional and modern instructional strategies for teaching composition. The validity of strategies will be tested in the student's own writing.

ENG 643/ENE 643 Teaching Basic Writing Skills. Semester course; 3 lecture hours. 3 credits. Emphasis on developing the student's ability to teach fundamental writing skills, including such topics as diagnosis of writing problems, strategies for correcting problems, and methods for evaluating progress.

ENG 651 Topics in Teaching Composition. Semester course; 1-3 lecture hours. 1-3 credits. A course for the examination of a specialized issue, topic, or problem in teaching composition.

ENG 661 Themes in Interdisciplinary Studies. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A study in depth of a theme, topic, or concept involving two or more disciplines.

ENG 666 Creative Writing: Fiction. Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in MFA program or permission of the Creative Writing Committee. Study of the art of fiction writing, with the goal of producing professionally acceptable and publishable fiction. Workshop members shall produce a substantial amount of writing, short stories or a portion of a novel, and in addition shall be able to evaluate and articulate the strengths of their own work. Graded Pass/Fail. All students seeking to enroll must contact the creative writing MFA director.

ENG 667 Creating Writing: Poetry. Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in MFA program or permission of the Creative Writing Committee. Study of the art of poetry writing, with the goal of producing professionally acceptable and publishable poetry. Workshop members shall produce a substantial amount of poetry and in addition shall be able to evaluate and articulate the strengths of their own work. Graded Pass/Fail. All students seeking to enroll must contact the creative writing MFA director.

ENG 668 Creative Writing: Drama. Semester course; 3 workshop hours. 3 credits. May be repeated for credit. Prerequisite: Graduate standing in MFA program or permission of the Creative Writing Committee. Study of the art of playwriting with the goal of creating plays that are suitable for production. Workshop members shall produce a substantial volume of writing, one-act plays, or a portion of a longer play, and, in addition, shall be able to evaluate and articulate the strengths of their own work. Graded Pass/Fail. All students seeking to enroll must contact the creative writing MFA director.

ENG 670 Literary Editing and Publishing. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. A course in which the student learns to edit fiction, poetry, drama, or nonfiction. Genre covered will vary from semester to semester. Attention will be paid to the ways in which editors work with writers in all the technical aspects of editing, revising, and publishing. Ethical responsibilities of editors to authors and their texts will be stressed. Questions considering the publishing world at large will be considered.

ENG 671 Film and Television Scripts. Semester course; 3 lecture hours. 3 credits. Study of the theory and practice of producing shooting scripts for television and motion pictures. Emphasis will be placed on the various kinds of scripts most commonly used by directors and cinematographers (e.g., silent, narrated, and dramatized). Attention will also be paid to the ways in which script writers adapt material to audiences, and the ways in which strict time frames are imposed on scripts. Students will write scripts of various kinds and lengths.

ENG 672 Writing Nonfiction. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Study and practice of writing one or more modes of nonfiction on the professional or preprofessional level, under critical supervision. Emphasis will be placed on such matters as organization, style, revision, and adaptation to particular audiences and publications. Possible kinds of writing could include reports; writing based on statistics; writing textbooks; writing separate chapters of books, and writing reviews, criticism, and advocacy materials.

ENG 673 Teaching Creative Writing. Semester course; 3 lecture hours. 3 credits. A comparative analysis of different approaches to the teaching of creative writing. Attention will be paid to the different ways in which elements such as dialogue, sound pattern, scene development, line break, meter, voice, and distance can be taught. The course is intended for those who teach or plan to teach creative writing.

ENG 692 Independent Study. 1-3 hours. Variable credit. Maximum of six credits. Prerequisite: Permission from department chair. For students in English/English Education to pursue, in depth, a particular problem or topic about which an interest or talent has been demonstrated.

ENG 694 Internship in Writing. Semester course; 1 lecture and 6 practicum hours. 3 credits. Permission of director of MA program

required. Analyses and practices of professional writing in settings such as business, government and industry.

ENG 798-799 Thesis. Continuous course; Hours to be arranged. Credits to be arranged; 1-3 credits per course. Preparation of a thesis or project based on independent research or study and supervised by a graduate adviser.

Selected Undergraduate Courses

After consultation with the student's adviser, a graduate student may take an undergraduate course listed below if the student has not previously taken a course covering the subject matter. No more than two 400-level courses from this list may be used toward the graduate degree. Consult the *Undergraduate and Professional Programs Bulletin* for a description of the courses.

ENG 400 Shakespeare: The Early Works
 ENG 401 Shakespeare: The Later Works
 ENG 402 Chaucer
 ENG 403 Milton
 ENG 449/LIN 449/ANT 449 Introduction to Linguistics
 ENG 450/LIN 450 Modern Grammar
 ENG 451/LIN 451 History of the English Language

Department of History

Bendersky, Joseph W. *Professor* PhD, Michigan State University; German history.
 Briceland, Alan V. *Associate Professor* PhD, Duke University; Virginia, early national, and military history.
 Engel, Arthur J. *Associate Professor* PhD, Princeton University; English history.
 Fuller, Kathryn H. *Assistant Professor* PhD, Johns Hopkins University; U.S. social history.
 Herman, John *Assistant Professor* PhD, University of Washington; East Asian history.
 Jones, Norrece T. Jr. *Associate Professor* PhD, Northwestern University; African-American history.
 Kennedy, Susan Estabrook *Professor and Chair* PhD, Columbia University; modern American and women's history.
 Moitt, Bernard C. *Assistant Professor* PhD, University of Toronto; African history and African Diaspora.
 Mooney, Catherine M. *Assistant Professor* PhD, Yale University; medieval and Renaissance history; women's history.
 Moore, James T. *Professor* PhD, University of Virginia; southern and Virginia history.
 Munro, George E. *Professor* PhD, University of North Carolina; Russian history.
 Schwarz, Philip J. *Professor* PhD, Cornell University; colonial and American constitutional history.
 Toppin, Edgar A. *Distinguished Visiting Professor* PhD, Northwestern University; American and African-American history.
 Trani, Eugene P. *Professor and University President* PhD, Indiana University; American diplomatic history.
 Tunnell, Ted *Associate Professor* PhD, University of California at Berkeley; southern and Civil War history.
 Urofsky, Melvin I. *Professor* PhD, Columbia University, JD University of Virginia; American constitutional and legal history.

The department offers a program leading to a Master of Arts in History. The program allows maximum flexibility by permitting each student, in consultation with the department's director of graduate studies, to select those courses most appropriate to the student's interests, in order to develop the student's competence in pursuit of his or her scholarly and professional objectives.

Admission Requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies (Part I of this *Bulletin*) and the College of Humanities and Sciences, the following requirements, established by the History Graduate Committee, represent the minimum acceptable standards for admission:

- 30 hours of undergraduate history courses, of which 18 should be at the upper-division level;
- a grade-point average that is indicative of the applicant's ability to pursue successfully a graduate degree;
- three recommendations from persons who are qualified to give information concerning the applicant's probable success in graduate school;
- completion of the GRE; and
- submission of a 500-word written statement of intent, indicating why the applicant wishes to pursue a graduate degree in history.

A personal interview is not required, but may be requested by either the applicant or the department's Graduate Committee.

Degree Requirements

The MA in History may be achieved through one of two options. The thesis option requires 30 semester credits, including six credits of HIS 698; or the nonthesis option requires 36 semester credits. Those in the nonthesis track must take a minimum of six semester credits in research-level courses, and also an oral comprehensive exam. All students in both tracks must take HIS 601 as a prerequisite or corequisite for all research courses; students entering in January should take HIS 601 the next time it is offered.

Graduate Courses in History (HIS)

HIS 511 Studies in American History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Study of a selected topic in American history, primarily through lectures and readings.

HIS 515 Studies in European History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Study of a selected topic in European history, primarily through lectures and readings.

HIS 519 Studies in Ethnic and Social History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Study of a selected topic in ethnic or social history, primarily through lectures and readings.

HIS 523 Studies in Virginia and Southern History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Study of a selected topic in Virginia or southern history, primarily through lectures and readings.

HIS 527 Studies in African-American History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Study of a selected topic in African-American history, primarily through lectures and readings.

HIS 591 Special Topics in History. Semester course; 1-3 lecture hours. Variable; 1-3 credits. May be repeated with different topics for a maximum of nine credits. An intensive study of a selected topic in history.

HIS 601 Historiography and Methodology. Semester course; 3 lecture hours. 3 credits. A study of the development of history as a discipline from ancient times to the present. The course examines the evolution of historical theory and philosophy, great historians, schools of interpretation, and problems of historical methodology. This course is a prerequisite for research seminars.

HIS 611 Readings in American History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of major studies and interpretative trends in a particular area of American history through readings and class discussions.

HIS 615 Readings in European History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of major studies and interpretative trends in a particular area of European history through readings and class discussions.

HIS 619 Readings in Ethnic and Social History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of major studies and interpretative trends in a particular area of ethnic or social history through readings and class discussions.

HIS 623 Readings in Virginia and Southern History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of major studies and interpretative trends in a particular area of Virginia or southern history through readings and class discussions.

HIS 627 Readings in African-American History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of major studies and interpretative trends in a particular area of African-American history through readings and class discussions.

HIS 631 Research in American History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of significant problems in a particular field of American history through research, writing, in-class presentations and discussions.

HIS 635 Research in European History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of significant problems in a particular field of European history through research, writing, in-class presentations and discussions.

HIS 639 Research in Ethnic and Social History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of significant problems in a particular field of ethnic or social history through research, writing, in-class presentations and discussions.

HIS 643 Research in Virginia and Southern History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of significant problems in a particular field of Virginia or southern history through research, writing, in-class presentations and discussions.

HIS 647 Research in African-American History. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. See the *Schedule of Classes* for specific topic to be offered each semester. Analysis of significant problems in a particular field of African-American history through research, writing, in-class presentations and discussions.

HIS 691 Special Topics in History. Semester course; 1-3 lecture hours. Variable; 1-3 credits. May be repeated for a maximum of twelve credits. An intensive study of a selected topic in history.

HIS 692 Independent Study. Semester course; 1-3 credits. Maximum of 6 credits. Prerequisite: Permission of department chair. Requires an analysis of an historical problem or topic in depth under faculty supervision.

HIS 693 Internship in History. Semester course; variable; 2-4 credits per semester. Maximum total of six credits. 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 this course.

HIS 698 MA Thesis. 1-6 credits. May be repeated for a maximum of six credits.

Elective Courses

Students may take up to six semester credits of electives from an approved list. The department's graduate committee maintains the list of approved courses, and students may use these courses for credit with the approval of the graduate director. In addition, students who wish to pursue specific areas of study may, with the approval of the graduate director, substitute other courses when appropriate, but in no case shall be able to count more than six semester hours of non-history courses.

Department of Mathematical Sciences

Division of Applied Mathematics and Mathematics

- Abay Asmerom, Ghidewon *Associate Professor* PhD, Western Michigan University; topological graph theory.
- Berglund, John F. *Professor* PhD, Tulane University; topological algebra and harmonic analysis.
- Clark, Gordon W. *Assistant Professor* PhD, University of Texas at Austin; applied mathematics and partial differential equations.
- Deveney, James K. *Professor* PhD, Florida State University; commutative algebra.
- Farley, Reuben W. *Professor* PhD, University of Tennessee; topological algebra.
- Haver, William E. *Professor* PhD, State University of New York, Binghamton; geometric topology.
- Lewis, Andrew M. *Assistant Professor* PhD, University of California at Berkeley; mathematical logic.
- Lohr, C. Michael *Associate Professor* EdD, University of Virginia; mathematical education.
- Morris, J. Richard *Associate Professor and Chair* PhD, University of Alabama; topology.
- Raychowdhury, Pratip N. *Professor* PhD, George Washington University; applied mathematics and mathematical physics.
- Schmeelk, John F. *Professor* PhD, George Washington University; applied mathematics.
- Sedaghat, Hassan *Associate Professor* PhD, George Washington University; topological algebra and applied mathematics.
- Terrell, William J. *Associate Professor* PhD, North Carolina State University; applied mathematics, differential equations and mathematical control theory.
- Vassilev, Janet C. *Assistant Professor* PhD, University of California, Los Angeles; commutative algebra, tight closure, local cohomology, singularity theory.
- Wood, James A. *Professor and Director of Graduate Studies* PhD, University of Virginia; functional analysis.

Division of Computer Science

- Ames, James E., IV *Associate Professor and Assistant Chair* PhD, Duke University; medical applications of computer science.
- Brilliant, Susan S. *Associate Professor* PhD, University of Virginia; software engineering.

- Cheng, Chao-Kun *Associate Professor* PhD, University of Notre Dame; programming languages and compilers.
- Kim, Yanggon *Assistant Professor* PhD, Pennsylvania State University; computer networks, computer architecture, supercomputer, parallel algorithm, VLSI system design, CAD tools, and performance evaluation.
- Murrill, Branson W. *Associate Professor* PhD, College of William and Mary; software engineering.
- Parker, Lorraine M. *Associate Professor* PhD, University of Wales, Great Britain; computer science.
- Primeaux, David *Assistant Professor* PhD, University of Tennessee; artificial neural networks, knowledge base systems, parallel algorithms, ethics.
- Resler, Daniel R. *Assistant Professor* PhD, Queen's University, Ireland; programming languages and compilers.

Division of Operations Research and Statistics

- Bauer, David F. *Professor and Assistant Chair (Biostatistics and Occupational Therapy)** PhD, University of Connecticut; mathematical statistics and nonparametric methods.
- Davenport, James M. *Associate Professor* PhD, Southern Methodist University; statistics.
- Henry, Neil W. *Associate Professor (Sociology and Anthropology)** PhD, Columbia University; multivariate statistics and survey analysis.
- Johnson, Robert E. *Associate Professor (Biostatistics)* PhD, University of North Carolina at Chapel Hill; statistics and biostatistics.
- Lamb, Ron *Assistant Professor* PhD, North Carolina State University; mathematical statistics.
- Mays, D'Arcy P. *Assistant Professor* PhD, Virginia Polytechnic Institute and State University; experimental design, regression analysis, and response surface methodology.
- Mays, James E. *Assistant Professor* PhD, Virginia Polytechnic Institute and State University; exploratory data analysis, quality control, linear models.
- Parnell, Gregory S. *Assistant Professor* PhD, Stanford University; design analysis, risk analysis, and operations research.
- Rein, Steven R. *Assistant Professor* PhD, University of California at Berkeley; time series analysis, stochastic modeling, and statistical computing.
- Williamson, Patricia Pepple *Associate Professor* PhD, Bowling Green State University; Bayesian analysis and decision theory.

* Department in parentheses indicates affiliate appointment.

+ Affiliate appointment in parentheses indicates home department.

The Department of Mathematical Sciences offers programs leading to a Master of Science degree in mathematical sciences or a Master of Science degree in computer science. The Master of Science degree in mathematical sciences offers specializations in several possible areas, including mathematics, applied mathematics, operations research, statistics, statistical computing, applied computational mathematics, discrete structures, and others.

The department also offers mathematical sciences certificates in computer science and statistics.

Admission Requirements for Both Degrees

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies (Part I of this *Bulletin*) and the College of Humanities and Sciences, the following represent the minimum acceptable standards for admission:

- 30 semester credits in undergraduate mathematical sciences, computer science, or related areas of which at least 18 semester credits must represent upper-level courses;
- three letters of recommendation pertaining to the student's potential ability as a graduate student in mathematical sciences; and
- general GRE scores required.

Provisional admission may be granted when deficiencies exist. These deficiencies must be removed by the end of the first year of residence, or its part-time equivalent, when the student's application will be reexamined. Courses that are remedial or designed to remove deficiencies will not be accepted for credit toward the fulfillment of the course requirements for the master's degree.

Degree Requirements for Both Degrees

The program offers maximum flexibility by allowing students, in consultation with their graduate committees, to design a course of study which will best develop competence in those areas most relevant to their scholarly and professional objectives. This program consists of a minimum of 30 semester credits of which at least half must be at the 600 level. Each student in the mathematical sciences or computer science program will select either the thesis or nonthesis option. A student who chooses the thesis option has a choice of writing a research thesis or an expository thesis. A research thesis is one which, in the opinion of the student's thesis adviser and thesis committee, contains significant original research. For this thesis, the student may count six credits of the 698 course appropriate to the discipline (MAT, STA, CSC) in which the degree is offered. Otherwise a student may write an expository thesis. For this type of thesis, the student may count three credits of the 698 course appropriate to the discipline (MAT, STA, CSC) in which the degree is offered. The student who elects the nonthesis option must pass a written examination and may be asked to take an oral examination.

Note that the following courses may not be applied to the credit requirements for the MS degree in mathematical sciences or the MS degree in computer science: CSC 554, CSC 555, STA/SOC 508, SOC 543, STA/SOC 608. In addition, only one of MAT 530, 531 may be applied to the previously mentioned degrees.

Program Leading to the Master of Science Degree in Mathematical Sciences

Nonthesis Option	<i>Credits</i>
Mathematical Sciences	21
(Including both semesters of a 600-level sequence)	
Mathematical Sciences or Allied Field*	6-9
Research Seminar Credits [†]	2-5
Directed Research Credits [†]	0-3
	30
 Thesis Option	
Mathematical Sciences	18
(Including both semesters of a 600-level sequence)	
Mathematical Sciences or Allied Field*	6-9
Thesis Credits	3 or 6
Research Seminar Credits [†]	1-3
Directed Research Credits [†]	0-3
	30

* Courses selected from an allied field must be approved by the department's Graduate Affairs Committee.

† The student who chooses the nonthesis option may receive a maximum total of four credits for 690 Research Seminar and 697 Directed Research. The student who chooses the thesis

option usually will not take directed research, but he/she is not prohibited from doing so. In the thesis option, a total of seven credits for thesis, research seminar, and directed research is the maximum credit permitted.

MS Degrees in the Mathematical Sciences

Students may obtain a designation on their transcripts indicating that their graduate study has emphasized one of the following graduate concentrations by completing the requirements that are listed here for that concentration. A student who has not satisfied the requirements for one of these concentrations, but who has otherwise fulfilled all the requirements for a master's degree, will be awarded a degree of Master of Science in mathematical sciences without any specialty concentration designation.

- **MS in Applied Mathematics/Mathematical Sciences.** MAT 517-518*, a six-credit sequence selected from MAT 617-618, 619, 620, 621, and at least six credits selected from MAT 511, 512, 515, 516, 527-528, 615, 698, STA 513-514. Also, at least one seminar and the thesis (if chosen) must concern topics of applied mathematics.
- **MS in Mathematics/Mathematical Sciences.** MAT 507-508*, a six-credit sequence selected from MAT 601-602, 603-604, 607-608, 611-612, and at least three credits selected from MAT 505, 509, 510, 521, 525, or any otherwise uncounted 600-level course for this concentration. Also, at least one seminar and the thesis (if chosen) must concern topics of pure mathematics.
- **MS in Operations Research/Mathematical Sciences.** MAT 527-528, an approved two-course sequence from 639, 641, 645, 649, and at least one course in two of the following three groups: (a) CSC 509, 691; (b) MAT 511, 515, 516, 525; and (c) STA 503, 533, 613-614, 691. Also, at least one seminar and the thesis (if chosen) must concern topics of operations research.
- **MS in Statistics/Mathematical Sciences.** STA 513-514* and nine additional credits in STA courses, including at least six credits in 600-level STA courses. Three of the 600-level credits must be selected from STA 613-614, STA 645, or STA 691[†] and three credits from STA 623, STA 626, STA 628, or STA 691[†]. Also, at least one seminar and the thesis (if chosen) must concern topics of statistics.

* If a student previously received credit for one or both of these courses or their equivalent, then one or two of the other courses mentioned for this concentration must be taken as substitute(s) to satisfy the minimum requirement of 15 credit hours of course work in the concentration.

† Use of STA 691 to meet this requirement must be approved by the Operations Research and Statistics Division and the Graduate Affairs Committee of the department at the time the course is scheduled.

Program Leading to the Master of Science Degree in Computer Science

Students are required to complete the following:

- A minimum of 30 credits of which at least half must be at the 600 level. Up to six of these credits may be

obtained from courses outside the Department of Mathematical Sciences with the approval of the departmental Graduate Affairs Committee.

- At least 21 credits in courses labeled CSC, a minimum of nine which must be at the 600 level. Only three credits of thesis may count towards this requirement.
- One of the following sequences: CSC 502, 602; CSC 505, 605; CSC 508, 608; CSC 511, 611; CSC 521, 621. Other sequences may be offered as approved by the departmental Graduate Affairs Committee.

Nonthesis Option	<i>Credits</i>
Research Seminar	2-4
Directed Research	0-3

At least one credit of research seminar must concern a topic of computer science.

A total of four credits for research seminar and directed research is the maximum that may be counted toward the degree.

Thesis Option	<i>Credits</i>
Thesis	3 or 6
Research Seminar	1-3
Directed Research	0-3

Other Post-Baccalaureate Programs in Mathematical Sciences

For the students who hold bachelor's degrees in appropriate areas, the Department of Mathematical Sciences offers the following alternative post-baccalaureate degree programs.

Mathematical Sciences Certificates in Computer Science and Statistics

The Department of Mathematical Sciences offers certificate programs in both computer science and statistics. These are designed for students who have received bachelor's degrees in other areas and wish to undertake a study of these subjects.

Students who gain certification through the computer science program are well suited for many professional opportunities available in the scientific community and with government agencies. Further, the certification process is designed to allow interested students to prepare for graduate study in computer science.

The certification program in statistics is designed to allow students with undergraduate majors in various disciplines an opportunity to acquire the formal training in statistics that is currently in demand in industry and government. Some students also may find this program a useful way to prepare for graduate study in statistics.

Students seeking more information or wishing to enter these certificate programs should contact the Department of Mathematical Sciences.

Graduate Courses in Mathematics (MAT)

MAT 501 Introduction to Abstract Algebra. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 211 and 310 (or their equivalents). An introduction to groups, rings, and fields from an axiomatic point of view. Coset decomposition and basic morphisms.

MAT 505 Modern Geometry. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 211 and (MAT 307 or MAT 310). Topic in Euclidean, projective, and non-Euclidean geometries from a modern viewpoint.

MAT 507-508 Analysis I-II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: MAT 211, 307, and 310 or permission of instructor. Theoretical aspects of calculus, sequences, limits, continuity, infinite series, series of functions, integration, differential geometry.

MAT 509-510 General Topology I-II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisite: MAT 211 and MAT 307. Foundations and fundamental concepts of point-set topology. Topological spaces, convergence, connected sets, compactness, product spaces, quotient spaces, function spaces, separation properties, metrization theorems, mappings, and compactifications.

MAT 511 Applied Linear Algebra. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 310. The algebra of matrices, the theory of finite dimensional vector spaces, and the basic results concerning eigenvectors and eigenvalues, with particular attention to applications.

MAT 512 Complex Analysis for Applications. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 307. The algebra and geometry of complex numbers, analytic functions, integration, series, contour integration, analytic continuation, conformal mapping, with particular attention to applications.

MAT 515 Numerical Analysis I. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 310 or (MAT 201 and MAT 185). Knowledge of a programming language recommended. Solutions of equations, interpolation and approximation, numerical integration, iterative methods for solving linear equations, calculation of eigenvalues and eigenvectors. Selected algorithms may be programmed for solution on computers.

MAT 516 Numerical Analysis II. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 515. Numerical solution of initial value problems in ordinary differential equations, 2 point boundary value problems. Introduction to numerical techniques for solving partial differential equations. Selected algorithms may be programmed for solution on computers.

MAT 517-518 Methods of Applied Mathematics. Continuous course; 3 lecture hours. 3-3 credits. Prerequisite: MAT 301 and MAT 307. Vector analysis, matrices, complex analysis, special functions, Legendre and Hermite polynomials. Fourier series, Laplace transforms, integral equations, partial differential equations, boundary-value and initial-value problems.

MAT 520 Game Theory and Linear Programming. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 310. The mathematical basis of game theory and linear programming. Matrix games, linear inequalities and convexity, the minimax theorems in linear programming, computational methods, and applications.

MAT 521 Introduction to Algebraic Number Theory. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 501. Introduction to algebraic numbers and algebraic number fields with emphasis on quadratic and cyclotomic fields. Units, primes, unique factorization.

MAT 523 Discrete Event Simulation. Semester course; 3 lecture hours. 3 credits. Prerequisite: STA 212 and MAT 309 or their equivalents, or permission of instructor. An introduction to the theory and practice of discrete event simulation. Topics include random variable generation, model development and validation, variance reduction techniques, and statistical analysis of output. Applications will be taken from areas such as queuing theory and manufacturing systems. A high-level simulation language will be utilized.

MAT 525 Introduction to Combinatorial Mathematics. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 211, 310, or permission of instructor. Introduction to the problems and methods of solution in the enumeration, existence, and construction of some discrete mathematical structures. Discussion of generating functions, recurrence relations, Ramsey's theorem, matching theory, combinatorial designs, Latin squares, and linear coding theory.

MAT 527-528 Mathematical Foundations of Operations

Research. Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: CSC 201 or 255, MAT 310. (MAT 309 is prerequisite for MAT 528 and STA 503 is strongly recommended for MAT 528). Introduction to the mathematical foundations of deterministic and stochastic operations research, including the simplex method for linear programming, nonlinear optimization, dynamic programming, and some stochastic models. Real world applications will be discussed throughout.

MAT 530 The History of Mathematics. Semester course; 3 lecture hours. 3 credits. Prerequisite: 17 credits at the 200 level or above in mathematical sciences or permission of instructor. Surveys major trends in the development of mathematics from ancient times through the nineteenth century and considers the cultural and social contexts of mathematical activity. Either MAT 530 or MAT 531 (but not both) may be applied to the master's degree in mathematical sciences or the MS degree in computer science. Both MAT 530 and MAT 531 may be applied to the MEd degree in mathematics education.

MAT 531 Expositions in Modern Mathematics. Semester course; 3 lecture hours. 3 credits. Prerequisite: Six credits at the 400 level or above in mathematical sciences. Studies descriptively several major ideas relevant to present-day mathematics, such as the advent of pure abstraction, difficulties in the logical foundations of mathematics, the impact of mathematics and statistics in the twentieth century, and the computer revolution. Either MAT 530 or MAT 531 (but not both) may be applied to the master's degree in mathematical sciences or the MS degree in computer science. Both MAT 530 and MAT 531 may be applied to the MEd degree in mathematics education.

MAT 591 Topics in Mathematics. Semester course; 1-3 credits. May be repeated for credit with different topics. Prerequisite: Permission of the instructor. Open to qualified undergraduates. A study of selected topics in mathematical sciences. See the *Schedule of Classes* for specific topics and prerequisites.

MAT 601-602 Abstract Algebra I, II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisite: MAT 501. A study of algebraic structures (including groups, rings, and fields), Galois theory, homomorphisms, subalgebras, direct products, direct decompositions, subdirect decompositions, free algebras, varieties of algebras.

MAT 603-604 Advanced Probability Theory. Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: MAT 508 and STA 503 or STA 513. A measure-theoretic approach to the theory of probability. Borel sets, probability measures, and random variables. Special topics include characteristic functions, modes of convergence, and elements of stochastic processes.

MAT 607-608 Real Analysis I, II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisite: MAT 508. The real number system, Lebesgue measure, functions of bounded variation, differentiation and integration, the LP spaces, introduction to Banach and Hilbert spaces, general measure theory, and the Lebesgue-Stieltjes integral.

MAT 611-612 Complex Analysis I, II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisite: MAT 508. Elementary functions, analyticity, Cauchy's theorem and integral formula, Taylor and Laurent series, poles, residues, analytic continuation, Riemann surfaces, periodic functions, conformal mapping, and applications.

MAT 615 Topics in Numerical Analysis. Semester course; 3 lecture hours. 3 credits. May be taken twice for credit. Prerequisites: MAT 515-516 and permission of instructor. Special topics in computer methods for numerical analysis selected from such subjects as analysis of numerical methods for solving ordinary differential equations; elliptic, hyperbolic, and parabolic partial differential equations; solutions of large linear systems by iterative methods.

MAT 617-618 Applied Mathematics I, II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: MAT 517 and 518. Partial differential equations; equations of Helmholtz, Laplace, and Poisson; the diffusion equation, integral transforms, Green's function methods, calculus of variation, eigenvalues and eigenfunctions by variational methods, integral equations, and Fredholm and Hilbert-Schmidt theories.

MAT 619 Operational Methods. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 508. Transform methods applied to existence theory, explicit solutions to problems of mathematical physics, distributions of Schwartz and Gelfand-Silov, kernel theorems of Schwartz, mathematical framework of quantum field theory.

MAT 620 Theory of Partial Differential Equations. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 301 and 508. Classification of partial differential equations; elliptic, hyperbolic, and parabolic equation; potential theory, techniques of solving various partial differential equations; application to electromagnetism and solid mechanics.

MAT 621 Boundary-Value Problems. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 517-518. Survey of boundary-value problems, approximate analytic solutions such as Galerkin's method and the Ritz method; application to heat transfer, fluid mechanics, and potential theory.

MAT 639 Studies in Operations Research. Semester course; 3 lecture hours. 3 credits. Prerequisites: At least one graduate-level course in mathematical sciences pertaining to the study area and permission of instructor. Selected areas in operations research will be studied, such as integer programming, nonlinear programming, large scale systems, stochastic models.

MAT 641 Mathematical Programming. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 527. Necessary and sufficient conditions for optimal solutions. Duality theory. Theoretical and practical development of solution techniques for operations research problems. Some current algorithms will be discussed.

MAT 643 Decision and Risk Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 309. This course presents the decision and risk analysis theory and methodology. Decision analysis applies to hard problems involving sequential decisions, major uncertainties, significant outcomes, and complex values. The course includes: decision structuring with influence diagrams and decision trees; modeling uncertainty with subjective probabilities; sensitivity analysis and the value of information; and modeling preferences with utility functions. Decision and risk analysis applications in business and government are considered.

MAT 645 Queuing Theory. Semester course; 3 lecture hours. 3 credits. Prerequisite: STA 503. This operations research course provides a development of some basic queuing systems. Such systems will include birth-death queues, as well as the M/G/1 and GI/M/S queuing systems. Other topics may include the GI/G/1 queues, overflow queues, and some basic queuing networks.

MAT 647 Multiobjective Decision Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisite: MAT 643 or permission of instructor. Introduction to the mathematical foundations of multiattribute utility theory. Topics covered include: structuring objectives; tradeoffs under certainty; unidimensional utility theory; multiattribute preferences under uncertainty; preferences over time; and aggregation of individual preferences. Real world applications will be discussed throughout.

MAT 649 Practical Optimization. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 527 and CSC 255. The application of optimization theory toward the solution of practical problems in operations research. The use and analysis of computer programs available to solve such problems. The algorithms used in these programs will be discussed from a practical and theoretical point of view.

MAT 690 Research Seminar. Semester course; 1 credit. May be repeated for credit. Prerequisite: Graduate standing. Discussion of topics in the mathematical sciences as stimulated by independent reading in selected areas and at least one oral presentation by each student.

MAT 691 Special Topics in Mathematics. Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit. Prerequisite: Permission of instructor. A detailed study of selected topics in mathematics. Possible topics include commutative rings and algebras, topological groups, special functions, Fourier analysis, abstract harmonic analysis, operator theory, functional analysis, differential geometry, Banach algebras and control theory.

MAT 697 Directed Research. Semester course; variable; 1-3 credits per semester. May be repeated for credit. Prerequisite: Graduate standing. Supervised individual research and study in an area not covered in the present curriculum or in one which significantly extends present coverage. Research culminates with an oral presentation and submission of a written version of this presentation to the supervising faculty member.

MAT 698 Thesis. Hours to be arranged. 1-3 credits. A total of 3 or 6 credits may be applied to the MS in Applied Mathematics/Mathematical Sciences or to the MS degree in Mathematics/Mathematical Sciences. May be repeated for credit. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis as described in this *Bulletin*. A grade of "S"(satisfactory), "U"(unsatisfactory) or "F"(failure) may be assigned in this course.

Graduate Courses in Computer Science (CSC)

CSC 502 Concepts of Concurrency. Semester course; 3 lecture hours. 3 credits. Prerequisites: CSC 312 and CSC 401. Software and hardware mechanisms for providing mutual exclusion in uniprocessor and multiprocessor environments. Concurrency problems and solutions in a distributed environment including message passing and remote procedure calls.

CSC 504 Compiler Construction. Semester course; 3 lecture hours. 3 credits. Prerequisites: CSC 401 and CSC 403. Review of programming language structures, translation, loading, execution, and storage allocation. Compilation of simple expressions and statements. Organization of a compiler. Use of bootstrapping and compiler writing languages.

CSC 505 Computer Architecture. Semester course; 3 lecture hours. 3 credits. Prerequisites: CSC 301 and CSC 311. Basic digital circuit combinational logic, data transfer, and digital arithmetic. Memory and memory access, control functions, CPU organization, microprogramming, input/output interfaces.

CSC 506 Computer Networks and Communications. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 312. Theoretical and applied analysis of basic data communication systems. Design of networks in the framework of the OSI reference model. Local and Wide Area Networks. Performance analysis of networks. Error control and security.

CSC 508 Data Base Theory. Semester course; 3 lecture hours. 3 credits. Prerequisites: CSC 401. Design and implementation of hierarchical, network, and relational data base systems. Relational algebra, normal forms, and normalization.

CSC 509 Artificial Intelligence. Semester course; 3 lecture hours. 3 credits. Prerequisites: CSC 401 and CSC 403. Problem spaces, problem-solving methods, game playing, knowledge representatives, expert systems, natural language understanding.

CSC 511 Computer Graphics. Semester course; 3 lecture hours. 3 credits. Prerequisites: CSC 401 and MAT 310. Presents mathematical techniques for picture development and transformation, curve and surface approximation and projections, graphical languages and data structures and their implementation, graphical systems (hardware and software).

CSC 519 Software Engineering. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 401. Systematic approach to the development and maintenance of software and the associated documentation. Includes software life cycle, scheduling and budgeting, configuration management, quality assurance, and software tools.

CSC 521 Introduction to the Theory of Computation. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 301. An introduction to automata theory, formal languages and computability. Topics include finite automata, pushdown automata, Turing machines, decidability and computational complexity.

CSC 525 Introduction to Software Analysis, Testing, and Verification. Semester course; 3 lecture hours. 3 credits. Prerequisites: CSC 401 and 403. An introduction to concepts and techniques used in the analysis of software for certain properties. Using analytic results to derive test data and verify the correct implementation of programs. Flow graphs, fault/failure model, theoretical and practical limitations. Control flow, data flow, and error flow analyses. Testing strategies including random, structural, mutation, and error flow. Software metrics.

CSC 526 Theory of Programming Languages. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 403. An introduction to the formal semantics of programming languages, logic programming and functional programming. Topics include denotational semantics, attribute grammars, Backus Formal Functional Programming, fixed point semantics, model-theoretic semantics and PROLOG.

CSC 535/PHY 535 Advanced Interfacing. Semester course; 3 lecture hours. 3 credits. Prerequisite: PHY 432 or equivalent. Self-paced course in interfacing microprocessors to a variety of devices. The Motorola 6800 MPU is studied in depth with an introduction to the 6809 and 68000 16-bit MPUs. Interfacing topics include: use of the peripheral interface adapter; D/A and A/D converters; standard serial and parallel interface buses; EPROM programming; asynchronous interface adapters; video monitors; printers; MODEMS; and connecting the MPU to magnetic recording devices such as floppy disks.

CSC 554/EDU 554 Applications of Computers in the Teaching of Mathematics I. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: 17 credits at the 200 level or above in mathematics or permission of the instructor. Introduction to computers and programming language, BASIC. Applications of the computer in algebra, geometry, trigonometry, statistics, and calculus. Not applicable toward certificate program, BS, or MS degree in mathematical sciences.

CSC 555 Applications of Computers in the Teaching of Mathematics II. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: CSC 554. Continuing study of computer applications in the BASIC language to typical mathematical problems arising in practical settings. The most commonly encountered difficulties in solving scientific problems are discussed. Not applicable toward MS degree in mathematical sciences or the MS degree in computer science.

CSC 591 Topics in Computer Science. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisites may vary. Permission of the instructor required. Course is open to qualified undergraduates. Selected topics in computer sciences such as: Theory of data bases, information retrieval and artificial intelligence.

CSC 602 Operating Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 502. A study of operating systems including those in multiprocessor and distributed environments. I/O programming, resource management (including processor and memory management), security and system performance evaluation.

CSC 605 Advanced Computer Architecture. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 505. Investigation of topics including memory design and management, pipelining and pipeline systems, multiprocessor and data flow architectures. Comparative analysis of various types of architectures.

CSC 608 Advanced Data Base. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 508. Studies the theory of the logical structure of the relations in a relational data base and the theory of concurrency in a distributed data base system. Functional dependencies, covers for functional dependencies, representation theory, query modification, null value, concurrency and distributed data base systems.

CSC 611 Advanced Computer Graphics. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 511. Modeling, representation of three-dimensional (3D) shapes, displaying depth relationships, algorithms for removing hidden edges and surfaces, color, shading models, and intensity.

CSC 621 Theory of Computation. Semester course; 3 lecture hours. 3 credits. Prerequisite: CSC 521. Discussion of the complexity and computability of problems and programs. Topics will include unsolvability, universal programs and abstract complexity.

CSC 691 Special Topics in Computer Science. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisites: At least one graduate-level computer science course pertaining to the topic area, and permission of instructor. Selected topics in computer science from such areas as data base management, communications, advanced computer architecture, analysis of algorithms, program correctness, computational complexity.

CSC 698 Thesis. Hours to be arranged. 1-3 credits. May be repeated for credit. A total of 3 or 6 credits may be applied to the MS degree in Applied Mathematics or to the MS degree in Mathematics (a total of 3 credits for an expository thesis or a total of 6 credits for a research thesis). Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis. Grade of "S" (satisfactory), "U" (unsatisfactory) or "F" (failure) may be assigned in this course.

Graduate Courses in Statistics (STA)

STA 503 Introduction to Stochastic Processes. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 307 and 309. A continuation of topics given in MAT 309. An elementary introduction to stochastic processes and their applications, including Markov chains and Poisson processes.

STA 508/SOC 508 Introduction to Social Statistics. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduction to statistical methods applicable in a variety of settings, with emphasis on nonexperimental data. Data description and analysis including chi-square and t-tests, using a statistical computing package. Not applicable toward MS degrees in mathematical sciences, sociology, or computer science.

STA 513-514/BIS 513-514 Mathematical Statistics I-II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisite: MAT 307. Probability, random variables and their properties, distributions, moment generating functions, limit theorems, estimators and their properties; Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

STA 523/BIS 523 Nonparametric Statistical Methods. II. Semester course; 3 lecture hours. 3 credits. Prerequisites: Any two courses of statistics or permission of instructor. Estimation and hypothesis testing when the form of the underlying distribution is unknown. One-, two-, and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables, and coefficients of association.

STA 533 Applied Linear Regression. Semester course; 3 lecture hours. 3 credits. Prerequisites: Any two semesters of statistics and one semester of calculus. An introduction to the concepts and methods of regression analysis, including simple linear regression and correlation, multiple regression and correlation. Application of the multiple regression model to the analysis of variance.

STA 541 Applied Statistics for Engineers and Scientists. Semester course; 3 lecture hours. 3 credits. Prerequisites: MAT 200-201 or equivalent and operational knowledge of MS-DOS. An introduction to applied statistics intended primarily for graduate students in Mathematical Sciences and the Commonwealth Graduate Engineering Program. The fundamental ideas of the collection and display of information, descriptive statistics and exploratory data analysis, elementary probability theory, frequency distributions, and sampling are covered. Other topics include tests of hypothesis and confidence intervals for one or two sample problems; ANOVA, principles of one-factor experimental designs including block designs and Latin squares, fixed and random effects, multiple comparisons; correlation and linear regression analysis; control charts; contingency tables and goodness of fit.

STA 543/BIS 543/PMH 543 Statistical Methods I. Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information, data analysis, and statistical measures; variation, sampling, and sampling distributions; point estimation, confidence intervals, and tests of hypotheses for one and two sample problems; principles of one-factor experimental design, one-way analysis of variance, and multiple comparisons; correlation and simple linear regression

analysis; contingency tables and tests for goodness of fit. Students may not receive degree credit for both STA 541 and STA 543. STA 543 is not applicable toward the MS degree in mathematical sciences or the MS degree in computer science.

STA 544/BIS 544 Statistical Methods II. Semester course; 3 lecture hours. 3 credits. Prerequisite: STA 541 or STA 543, or equivalent. Introductory treatment of the design of experiments and the statistical analysis of experimental data based on analysis of variance (ANOVA) and multiple-regression problems will be covered. Includes the use of a statistical software package for data analysis.

STA 549 Statistical Quality Control. Semester course; 3 lecture hours. 3 credits. Prerequisite: STA 212 and MAT 309 or their equivalents, or permission of instructor. Methods of statistical quality control, with an emphasis on the probabilistic and statistical foundations used in designing and evaluating the techniques. Includes variables and attributes control charts, CUSUM charts, process capability analysis, design of experiments, and acceptance sampling.

STA 591 Topics in Statistics. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Prerequisite: Permission of the instructor. Course open to qualified undergraduates. Selected topics in statistics.

STA 608/SOC 608 Statistics for Social Research. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: STA/SOC 508, SOC 214, or permission of instructor. Statistical methods applied in social research. Topics include analysis of variance, correlation and regression, including stepwise methods, and the analysis of discrete data. Study of a statistical package, emphasizing manipulation of survey data sets. Not applicable toward MS degree in mathematical sciences or the MS degree in computer science.

STA 613-614 Stochastic Processes. Continuous course; 3 lecture hours. 3-3 credits. Prerequisites: MAT 508 and STA 514. Introduction to the theory and applications of stochastic processes. Random walks, Markov processes, queuing theory, renewal theory, birth-death and diffusion processes. Time series, spectral analysis, filter, autocorrelation. Offered in conjunction with the biostatistics department.

STA 623 Discrete Multivariate Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisites: STA 543, or permission of instructor. Methods for the analysis of contingency tables. Emphasis on social and biomedical applications of the general log-linear model.

STA 626 Complex Sampling Designs and Variance Estimation. Semester course; 3 lecture hours. 3 credits. Prerequisites: STA 544 and 514. The analysis of data from surveys that use multistage samples, and connections to the analysis of observational studies and experiments with missing data. Computer intensive methodologies such as the jackknife and bootstrap will be introduced and applied to the problem of variance estimation in these diverse settings.

STA 628 Advanced Regression. Semester course; 3 lecture hours. 3 credits. Prerequisites: STA 513 and one of the following: STA 533, STA 544, or BIS 546. Theoretical development and advanced applications of the general linear regression model and generalizations of this model. Course material is selected from these general areas: Advanced treatment of analysis of variance (ANOVA) in balanced and unbalanced designs with regression models, including fixed, random, and mixed effects problems; nonlinear and weighted least squares, generalized linear models and maximum-likelihood estimation via iteratively reweighted least squares; and advanced treatment of selection of variables problems, and use of cross-validation and bootstrap methods in regression applications.

STA 645 Bayesian Decision Theory. Semester course; 3 lecture hours. 3 credits. Prerequisite: STA 514. Presents statistical decision theory and Bayesian analysis, with discussions of loss functions, risk, utility, prior information; conjugate families; posterior distributions, estimation, hypothesis testing; empirical and hierarchical Bayes analysis; and robustness.

STA 691 Special Topics in Statistics. Semester course; 1-3 lecture hours. 1-3 credits. May be repeated for credit. Prerequisite: Permission of instructor. A detailed study of selected topics in statistics.

STA 697 Directed Research. Semester course; variable; 1-3 credits per semester. May be repeated for credit. Prerequisite: Graduate standing. Supervised individual research and study in an area not covered in the present curriculum or in one that significantly extends present coverage. Research culminates with an oral presentation and submission of a written version of this presentation to the supervising faculty member.

STA 698 Thesis. Hours to be arranged. 1-3 credits. A total of 3 or 6 credits may be applied to the MS in Statistics/Mathematical Sciences. (A total of 3 credits for an expository thesis or a total of 6 credits for a research thesis. May be repeated for credit. Prerequisite: Graduate standing. Independent research culminating in the writing of the required thesis as described in this *Bulletin*. A grade of "S" (satisfactory), "U" (unsatisfactory) or "F" (failure) may be assigned in this course.

Department of Physics

Baski, Alison A. *Assistant Professor (Electrical Engineering)** PhD, Stanford University; silicon surface structure and growth, scanning tunneling microscopy.

Bishop, Marilyn F. *Associate Professor* PhD, University of California, Irvine; transport theory for simple metals, highly-correlated electron systems, charge and spin density waves, superconductivity, polymerization kinetics of biological polymers, light scattering from polymers, semiconducting devices.

Carlisle, John A. *Assistant Professor (Electrical Engineering)** PhD, University of Illinois at Urbana-Champaign; synchrotron-radiation-based materials characterization, diamond and diamond-like thin films, buried monolayers, magnetic multilayers, other thin-film systems.

Gibbs, Zane P. *Affiliate Assistant Professor and Associate Research Scientist, Philip Morris, USA* PhD, Virginia Commonwealth University; highly correlated electron systems and condensed matter theory.

Gowdy, Robert H. *Associate Professor* PhD, Yale University; theory of general relativity, cosmology, quantum gravity.

Jena, Purusottam *Professor* PhD, University of California, Riverside; electronic structure and properties of defects in metals and small atomic clusters, metal-matrix composites, surface and interfaces, hydrogen-metal systems, cluster solids.

Khanna, Shiv N. *Professor and Chair* PhD, University of Delhi, India; theory of small clusters, cluster assembled materials, novel cage clusters, quasicrystals, low dimensional systems, magnetism in small clusters and low dimensions.

Lilly, Arnys Clifton, Jr. *Affiliate Professor and Vice President, Technology Assessment and Research Fellow, Philip Morris, USA* PhD, Virginia Polytechnic Institute and State University; condensed matter theory.

Morkoc, Hadis *Professor (Electrical Engineering)** PhD, Cornell University; compound semiconducting materials and devices.

Niculescu, Vasile A. *Associate Professor* PhD, University of Cluj, Romania; experimental solid state, surface structure and properties of alloys, magnetic and structural properties of metals and alloys.

Rao, Bijan K. *Professor* PhD, University of California, Riverside; electronic structure and properties of atomic clusters, conducting polymers, many-body theory.

Tait, Gregory B. *Associate Professor (Electrical Engineering)** PhD, Johns Hopkins University; development of novel semiconductor devices for high-frequency and optical circuits, numerical modeling and computer simulation of electronic devices and circuits, biomedical applications of microwave and millimeterwave radiation.

* Department in parentheses indicates affiliate appointment.

+ Affiliate appointment in parentheses indicates home department.

The Department of Physics offers a program leading to a Master of Science degree with an emphasis on four tracks: instrumentation, the physics of materials, chemical physics, or physics research. In keeping with VCU's commitment as an urban institution, the program is available exclusively in the evening and is oriented toward part-time students.

Accelerated BS-MS Program

Students who are enrolled in the physics BS program may elect to take graduate courses which will count toward the physics MS degree. Up to six hours of graduate credit may be earned in this way without any special provision. In order to offer more than six hours of pre-admission graduate credit toward the graduate degree, a student must apply to the physics department Graduate Admission Committee for admission to the accelerated BS-MS program. Persons applying for admission to this program (1) should submit a curricular plan for completing the physics BS degree within two years or its part-time equivalent; (2) should indicate which graduate courses they intend to offer toward the physics MS degree; (3) should have a "B" average or better.

The MS Degree Completion Form should be accompanied by a memo from the physics department Graduate Admission Committee to indicate which graduate courses were taken under the accelerated BS-MS program.

Admission Requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies (Part I of this *Bulletin*) and the College of Humanities and Sciences, students are expected to satisfy the following minimum standards for admission:

- 30 semester credits in undergraduate physics or engineering of which at least 18 semester credits must be at the upper level. Each of the three available tracks requires the 18 credits to include particular upper-level courses:
 - Admission to the instrumentation track requires courses equivalent to PHY 376 Electromagnetic Theory and PHY 432 Digital Electronics.
 - Admission to the materials, chemical physics, and research tracks requires courses equivalent to PHY 340 Statistical Mechanics and Thermodynamics, PHY 376 Electromagnetism, and PHY 380 Quantum Physics I.
- Three letters of recommendation pertaining to the student's potential as a physics graduate student.
- Satisfactory GRE scores.

Applicants must state which of the four degree tracks they wish to pursue.

Provisional admissions may be granted where deficiencies exist. These deficiencies must be removed by the end of the first year of residence or its part-time equivalent, when the student's application will be reexamined. Courses which are designed to remove deficiencies will not be accepted for credit toward the Master of Science degree.

Students can select graduate courses in chemistry, mathematics, computer science, and appropriate courses in the School of Medicine. These electives must be approved by the graduate program committee of the department to count toward degree requirements.

Students who intend to continue their studies in the PhD in Chemistry Program/Chemical Physics Option should choose the Chemical Physics Track. The

Department of Chemistry can waive degree requirements that are duplicated in the Chemical Physics Track. Students enrolled in the PhD program for Chemical Physics may earn in addition an MS in physics by satisfying the above requirements.

Degree Requirements

Each track requires 30 semester credits of approved graduate courses with at least 15 semester credits at the 600 level.

All tracks require the following core courses:

PHY 550 Graduate Laboratory
PHY 571 Theoretical Mechanics
PHY 576 Electromagnetic Theory

Each student can elect either the thesis or non-thesis option. For the thesis option at least six semester credits of PHY 697 Directed Research are required with a satisfactory oral defense of a written thesis. However, no more than nine semester credits of Directed Research may be counted toward the 15 credit 600-level requirement, and no more than three credits for the nonthesis option.

A student who elects the nonthesis option must pass a written comprehensive examination.

Each of the tracks requires additional courses beyond the core.

Instrumentation Track

PHY 532 Introduction to Instrumentation
PHY 535/CSC 535 Advanced Interfacing

Control Physics of Material Track

PHY 507 Materials Characterization
PHY 580 Quantum Mechanics
PHY 641 Solid State Physics

Chemical Physics Track

PHY 580 Quantum Mechanics
Six credits of additional physics chemistry or mathematics courses with at least three at the 600 level.

Research Track

PHY 580 Quantum Mechanics
Six credits of additional physics and mathematics courses with at least three at the 600 level.

Graduate Courses in Physics (PHY)

PHY 507 Materials Characterization. Semester course;3 lecture hours. 3 credits. Prerequisites:PHY 440 or equivalent.An advanced survey of the structural and mechanical properties of materials and the methods for characterizing them.The connection between atomic and electronic structure and large-scale properties is emphasized. Topics include diffraction studies of crystals, crystal imperfections, annealing processes, magnetic interactions, optical properties, and a variety of measurement techniques.

PHY 532 Introduction to Instrumentation. Semester course;3 lecture hours. 3 credits. Prerequisites: PHY 432 or equivalent;MAT 301, 307,or equivalent.The application of advanced electronic techniques to data gathering. Includes analysis of noise, the electronic properties of input/output transducers, and signal recovery techniques.

PHY 535/CSC 535 Advanced Interfacing. Semester course;3 lecture hours. 3 credits. Prerequisite:PHY 432 or equivalent.Self-paced course in interfacing microprocessors to a variety of devices. The Motorola 6800 MPU is studied in depth with an introduction to the 6809 and

68000 16-bit MPUs. Interfacing topics include: use of the peripheral interface adapter;D/A and A/D converters;standard serial and parallel interface buses;EPROM programming;asynchronous interface adapters;video monitors; printers;MODEMS; and connecting the MPU to magnetic recording devices such as floppy disks.

PHY 550 Graduate Laboratory. Semester course;6 laboratory hours. 3 credits. Prerequisite: Four semesters of undergraduate physics laboratory equivalent to PHY 207,208,320,and PHY 350.Applications of modern measurement techniques including the use of pulse-height analyzers, X-ray diffractometers, magnetometers, and mass spectrometers as well as techniques for characterizing materials by their transport properties (including Hall effect and thermoelectric power) and by their mechanical properties.

PHY 571 Theoretical Mechanics. Semester course; 3 lecture hours. 3 credits. Prerequisites:PHY 301 and MAT 301 or permission of instructor. An introduction to advanced dynamics involving the Lagrangian and Hamiltonian formalisms.

PHY 576 Electromagnetic Theory. Semester course; 3 lecture hours. 3 credits. Prerequisites: PHY 376 and MAT 301 or permission of instructor. Maxwell's equations of electromagnetism,vector and scalar potentials, electromagnetic waves, and radiation theory.

PHY 580 Quantum Mechanics. Semester course; 3 lecture hours. 3 credits. Prerequisites:PHY 380, MAT 307, or permission of instructor. Theoretical quantum descriptions with emphasis upon mathematical techniques. Schrodinger equation, hydrogen atom,eigenfunctions and eigenvalues, angular momentum and spin,and perturbation theory.

PHY 591 Topics in Physics. Semester course;3 lecture hours. variable;1-3 credits. Open to graduate students and to undergraduate students with advanced standing. Applicable toward physics major requirements. An in-depth study of a selected topic in advanced physics. See the *Schedule of Classes* for specific topic(s) and additional prerequisites.

PHY 641 Solid State Physics. Semester course;3 lecture hours. 3 credits. Prerequisites:CHE 510,PHY 302 and MAT 317, or permission of instructor. Study of structure and electronic properties of materials in the solid phase.

PHY 650 Subatomic Physics I. Semester course offered in cooperation with Virginia State University;3 credits. Prerequisites:PHY 576, PHY 580 and CHE 510.Studies of nuclei and elementary particles, reaction dynamics, particle accelerators, detection devices, particle classification,symmetries and conservation laws, quantum electrodynamics, the weak interaction,quantum chromodynamics, unified theories, the nuclear shell model and collective model,and nuclear reactions.

PHY 651 Subatomic Physics II. Semester course offered in cooperation with Virginia State University;3 credits. Prerequisites:PHY 650. A continuation of PHY 650.

PHY 660 Studies in Electronic Instrumentation. Semester course; 3 credits. Credit for only two televised courses will count toward degree requirements. Courses televised by the Virginia Cooperative Graduate Engineering Program. See the *Schedule of Classes* for selected topics and prerequisites.

PHY 661 Studies in Material Science I. Semester course; 3 credits. Credit for only two televised courses will count toward degree requirements. Courses televised by the Virginia Cooperative Graduate Engineering Program.See the *Schedule of Classes* for selected topics and prerequisites.

PHY 662 Studies in Material Science II. Semester course;3 credits. Credits for only two televised courses will count toward degree requirements. Courses televised by the Virginia Cooperative Graduate Engineering Program. See the *Schedule of Classes* for selected topics and prerequisites.

PHY 663 Studies in Nuclear Physics. Semester course;3 credits. Credits for only two televised courses will count toward degree requirements. Courses televised by the Virginia Cooperative Graduate

Engineering Program. See the *Schedule of Classes* for selected topics and prerequisites.

PHY 690 Research Seminar. Semester course; 1 credit. May be repeated for credit. Examines current problems and developments in physics.

PHY 691 Special Topics. Semester course; 3 credits. Prerequisites: At least one graduate-level physics course and permission of instructor. Selected topics in physics from such areas as statistical physics, quantum field theory, semi-conductor device physics, general relativity, electronic structure of solids, thin-film fabrication techniques, superconductivity, nuclear magnetic resonance techniques, crystallography, and nuclear physics.

PHY 697 Directed Research. Semester course; 1-6 credits. Prerequisites: At least one graduate-level physics course and permission of instructor. Research leading to the MS degree. May be repeated for credit up to a limit of 9 credits.

Department of Political Science and Public Administration

- Alimard, Amin *Associate Professor* DPA, University of Southern California; bureaucracy and organizational behavior, comparative public administration, human resource management.
- Banks, Elliott *Associate Professor* PhD, University of Texas; urban politics, political behavior, leadership studies.
- Condit, Deirdre *Assistant Professor* PhD, Rutgers University; public law and courts, feminist theory, women and politics.
- Drake, W. Avon *Associate Professor* PhD, Cornell University; race and American politics, Africa, political philosophy/social theory.
- Farmer, David *Professor* PhD, University of Virginia PhD, University of London; bureaucracy, political philosophy and theory, public administrative.
- Grosenick, Leigh *Professor* PhD, University of Minnesota; public law, judicial behavior, public administration, public finance, and professional ethics.
- Hambrick, Ralph *Professor and Director, Public Administration Programs* PhD, Syracuse University; public management, public policy analysis, evaluation research, and strategic planning.
- Hirsch, Herbert *Professor* PhD, University of Kentucky; politics of war, violence and genocide, political psychology, American government and politics.
- Holsworth, Robert *Professor and Director, Center for Public Policy* PhD, University of North Carolina; US politics, political theory, public policy.
- Hutchinson, Janet *Assistant Professor* PhD, University of Pittsburgh; research methods, public policy, knowledge use, and social welfare.
- Jackson, M. Njeri *Associate Professor* PhD, Atlanta University; gender politics and policy, health care, ethnic and racial politics.
- Mustafa, Husain *Professor* PhD, American University; American government and politics, public administration, bureaucracy and organizational behavior.
- Newmann, William *Instructor* MA, Drew University; presidency, foreign policy, bureaucracy and organizational behavior.
- Twigg, Judyth *Assistant Professor* PhD, Massachusetts Institute of Technology; Russia, international security, health care.
- Wikstrom, Nelson *Professor and Chair* PhD, University of Connecticut; intergovernmental relations, state and local politics, public administration.
- Wooldridge, Blue *Associate Professor* DPA, University of Southern California; public finance and budgeting, productivity improvement, public policy.

Affiliate Faculty

- Gehring, Donald C. *Vice President for External Relations* JD, University of Notre Dame.
- Nelson, Lynn D. *Professor* PhD, Ohio State University; Russian Studies, comparative political systems, political economy.
- Wilder, L. Douglas *Distinguished Professor of Public Policy* JD, Howard University School of Law.

The Master of Public Administration (MPA) program is designed to meet the graduate educational needs of pre-service and in-service professionals for careers in public management and analysis in the public and non-profit sectors. The program is accredited by the National Association of Schools of Public Affairs and Administration.

Admissions

In addition to the general requirements, selection is made on the basis of prior academic performance, professional accomplishments, and other indicators of the ability to pursue successfully graduate studies and a professional career in public management. Specifically, the application for admission requires a transcript documenting the completion of a bachelor's degree, three letters of reference (including both academic and professional references if possible), a current résumé, and standardized examination scores (less than 5 years old). Acceptable examinations include: Graduate Record Examination (GRE), Graduate Management Admission Test (GMAT), Law School Admissions Test (LSAT), and Miller's Analogies Test (MAT).

Individuals with Advanced Degrees

Persons holding advanced degrees from fully accredited institutions of higher education may be accepted as degree students without submitting standardized examination scores.

Special Students

Without formal admission, but with departmental permission, a student may take up to nine credit hours of instruction. If appropriate, these credits may be applied to the MPA degree or Certificate program. Taking such courses in no way guarantees admission to either program.

Transfer Credit

A maximum of nine semester hours of graduate credit from an accredited institution may be applied toward the MPA degree. Such transfer credits will be evaluated at the completion of nine semester hours of work in VCU's graduate program in public administration. These hours will not have been credited toward another degree. For special programs, additional hours may be transferred and applied to the MPA degree with department approval.

Financial Information

Potential students are urged to apply by March 30 for fellowships and scholarships. Paid on-the-job internships are encouraged. The Senator Edward E. Willey Scholarship and the Virginia City Management Association/University Dr. T. Edward Temple Scholarship are available to outstanding students; preference for these two scholarships is given to those who plan public careers in Virginia. VCU graduates have a successful record in obtaining presidential management

internships in the federal government, state government professional positions and local government positions.

Continuous Enrollment Requirements and Expectations

To remain in good standing, students must maintain continuous registration for each fall and spring semester (except for approved leaves of absence) until they have completed all requirements. Students who fail to register for two consecutive semesters (summer sessions included) will be dropped automatically from the program and must reapply for admission in order to continue. Exceptions to this policy will be made on an individual basis by petition. Students who reapply after having been dropped for failure to register continuously will be evaluated under the *Bulletin* requirements in effect at the time of readmittance.

A minimum grade-point average of 3.0 on a 4-point scale must be maintained. Compliance with other university regulations is also required.

Requirements for the Degree of Master of Public Administration

- A student must complete a minimum of 42 semester hours, as approved, with an overall grade-point average of 3.0 or above. Students who do not have at least one year of professional-level experience in the public sector or in a nonprofit agency are required to earn three additional hours of credit in a public service practicum (for a total of 45 semester hours of credit for the degree).
- Students who are required to take the practicum will usually do so during the summer between the first and second years of or during the last semester of course work. The practicum shall last a minimum of 10 weeks as required by the National Association of Schools of Public Affairs and Administration. The scheduling of the practicum will be flexible enough to accommodate the needs of those students who pursue the degree on a part-time basis.

All practicums will be negotiated between VCU and the host agency in terms of the scope of work to be performed by the students, the type and extent of supervision both within the agency and from the University, and the stipend. A learning contract will be executed among the department, the agency, and the student. A student “academic/experiential paper” is required to complete the internship.

- All students are required to complete the courses in the core curriculum unless competence in the subject matter can be demonstrated on the basis of previous experience or course work. The core courses described on the following pages are: 601, 602, 603, 607, 609, 623, 624, 625, 689 or 690.

Advising

After admission in either the MPA or Certificate Program, a student will be assigned an adviser who will

assist in planning the specific sequence of courses and program of study.

Core Curriculum

Required Courses

PAD 601 Principles of Public Administration	3
PAD 602 Public Administration Theory	3
PAD 603 Politics and Economics	3
PAD 607 Public Human Resource Management	3
PAD 609 Financial Management in Government	3
PAD 623 Research Methods for Public Administration	3
PAD 624 Quantitative Methods for Public Administration	3
PAD 625 Public Policy Analysis	3
PAD 689 Seminar in Public Administration or PAD 690 Reading Seminar	3
	27
Electives	15
	42
Practicum (if required)	3
	45

Concentration Possibilities

Students may develop a concentration in one of several areas from among the elective courses offered by the department or in combination with courses elsewhere in the University. Possibilities include:

- Human Resource Management
- Public Financial Management
- Executive Management
- Public Policy Analysis and Evaluation
- Local Government Management
- Nonprofit Management

Other concentrations may be developed including concentrations in other fields. These concentrations may require agreement between the Political Science and Public Administration Department and other departments or schools at VCU such as Criminal Justice, Economics, Gerontology, Social Work, Urban Studies and Planning, Business, and Health Administration.

Certificate in Public Management (CPM)

The Certificate in Public Management (CPM) is a post-baccalaureate program designed to enable practitioners in government and nonprofit organizations to acquire knowledge and skills in public administration without pursuing a full master’s degree. The CPM requires a total of 18 hours of graduate credits involving a mix of required and elective courses. The courses are the same as those offered to MPA students. Admission to the Certificate Program requires the same application materials as the MPA except a standardized examination is not required. Further details are available from the program office.

The Certificate in Public management is offered at several locations off-campus, including Chesterfield County, Henrico County, and the Virginia Department of MHMRSAS. Additionally, the CPM is offered jointly with Longwood College in Farmville.

Admission to the Master's Program from CPM

The CPM is designed for persons in management positions who need a limited number of selected courses in contemporary methods, skills and models of management. On occasion, however, a person may pursue the CPM and then decide that it would be desirable to pursue the MPA degree. CPM course credits may be applied to the MPA.

Admission to and successful completion of the CPM in no way guarantees admission to the MPA program. Students who are enrolled in the CPM or who have completed the CPM must apply separately for admission to the MPA and must provide standardized test scores as required by that program.

Computer Competency

Familiarity with basic microcomputer applications, including word processing and spreadsheets, is essential to successful completion of both the MPA and CPM programs. Students lacking these skills are strongly urged to develop them prior to enrollment or early in their program of study. While access to the Internet is available on campus, it is generally advantageous for students to have access through a connection at home or work.

Graduate Courses in Public Administration (PAD)

PAD 583 Effective Managerial Communications. Semester course; 1 lecture hour. 1 credit. Describes and explains the communications process as it applies in public organizations. Acquaints students with the theoretical basis of interpersonal communications and with applied methodologies from a managerial perspective.

PAD 584 Planned Organizational Change. Semester course; 1 lecture hour. 1 credit. Describes and explains strategies and tactics of planned organizational change. Emphasis is placed on the change process in organized situations and on various strategies and tactics the manager may employ to achieve desired change in his/her organization.

PAD 585 Power, Influence, and Organizational Competence. Semester course; 1 lecture hour. 1 credit. This course will explore the strategies and tactics of power and influence use in large-scale public organizations. A framework for use of influence strategies will be presented and tactical methodologies will be examined through case study and simulation.

PAD 591 Topic Seminar. Semester course; 3 lecture hours. 3 credits. Seminar in contemporary public administration issues.

PAD 601 Principles of Public Administration. Semester course; 3 lecture hours. 3 credits. Dynamics of governmental administration including administrative principles, decision making, communication, leadership, organizational models, and the social, economic, legal, and political milieu of administration.

PAD 602 Public Administration Theory. Semester course; 3 lecture hours. 3 credits. Examines historical and contemporary public administration theories and paradigms. Emphasizes the practical significance of such theories for both macro and micro issues in public administration.

PAD 603 Politics and Economics. Semester course; 3 lecture hours. 3 credits. Examines political and economic institutions and concepts as they affect and are affected by the practice of public administration. Topics include microeconomics and the public sector; the interrelationship between the private and public sectors; macroeconomics concepts and related institutions.

PAD 604 Comparative Public Institutions. Semester course; 3 lecture hours. 3 credits. Applies a comparative methodology to explore theories and models of public institutions in the United States and in selected developed and developing countries. Focuses on administrative structures and practices, with emphasis on the relationship between administrative practice and cultural, and political context. Institutions examined will be changed periodically to focus on interjurisdictional comparisons within the United States – at the local, state, and federal levels – as well as among other countries and the United States.

PAD 605/SOC 605 Survey Research Methods. Semester course; 3 lecture hours. 3 credits. Prerequisites: SOC 601, 602, and 608 or permission of instructor. Examines all major areas of survey research methodology including sampling, design, data collection methods, questionnaire design, data analysis, and data processing. Addresses problems specific to survey research, such as telephone interviewing, constructing large representative samples, and nonresponse rates.

PAD 606 Government Management Models. Semester course; 3 lecture hours. 3 credits. An examination of current thought and research on management theory and organizational design in government. Theory and research from diverse sources, i.e., political science, sociology, industrial psychology, and administrative science will be explored to provide each student with the macro conceptual framework necessary for development or refinement of effective public management skills.

PAD 607 Public Human Resource Management. Semester course; 3 lecture hours. 3 credits. The general concepts, principles, and techniques of personnel administration and employee relations as applied in governmental units and agencies.

PAD 609 Financial Management in Government. Semester course; 3 lecture hours. 3 credits. The general concepts, principles, and techniques of financial management as they are applied in governmental units and agencies.

PAD 621 Organizational Behavior and Management in Government. Semester course; 3 lecture hours. 3 credits. The general concepts, principles, and theories of management and organizational behavior as they relate to the administration of governmental units and agencies are dealt with in lecture, discussion, and workshop formats.

PAD 622 Public Sector Budgeting. Semester course; 3 lecture hours. 3 credits. Prerequisite: PAD 609. Advanced theory and practice of public agency budgeting in the decision-making process and its impact on policy-making. Topics include alternative budgeting systems, capital planning and budgeting, budget execution, budgeting analysis techniques, and revenue and expenditure forecasting.

PAD 623 Research Methods for Public Administration. Semester course; 3 lecture hours. 3 credits. Prerequisite for PAD 624. Introduction to the scope and methods of applied research for the public sector. Focuses on problem structuring through logical methods, exploring problems through observation and other methods of data collection, analyzing and summarizing findings using both qualitative and quantitative methods.

PAD 624 Quantitative Methods for Public Administration. Semester course; 3 lecture hours. 3 credits. Prerequisite: PAD 623 or permission of the instructor. Introduction to statistical methods for use in managerial decision making, policy analysis, and social science research. Descriptive and inferential statistics are explored through computations and using SPSS/PC computer software.

PAD 625 Public Policy Analysis. Semester course; 3 lecture hours. 3 credits. The examination of various methods for identifying and structuring public policy problems and issues, formulating and analyzing alternative responses, recommending policy actions for decision making, and designing and evaluating implementation plans and the means to monitor and evaluate the resulting policy outcomes.

PAD 626 Intergovernmental Relations. 3 lecture hours. 3 credits. Focuses on various models of federalism and examines the pragmatic evolution of federal, state, and local intergovernmental relations in the United States. Topics include policy implementation and implications,

fiscal transfers, and local government cooperation and conflict in the metropolis.

PAD 627 Workshop in Policy Analysis and Evaluation. Semester course; 3 lecture hours. 3 credits. Prerequisites: PAD 624 and 625 or permission of the instructor. This course is project-oriented, emphasizing practical experience in the design and conduct of policy analysis or program evaluation studies. Emphasizes political environment and client relationships.

PAD 630/USP 630 Strategic Planning and Management in the Public Sector. 3 lecture hours. 3 credits. Explores the benefits and limitations of strategic planning and management in the public sector; examines approaches to strategic management, especially in terms of the role and behavior of top management, and provides an introduction to the analytic and process methods used in strategic planning and management.

PAD 637 Organic Human Resources Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: PAD 607 or equivalent. An examination of current thought, research, and personnel management theory and practice in government that is person-oriented is presented in this course. Topics include rank-in-the-person personnel systems; career development, executive personnel systems; forecasting human resource needs; individual-based performance evaluation; employee assistance programs; and special emphasis program.

PAD 642 Grants Management. Semester course; 3 lecture hours. 3 credits. Principles and practices of managing federal and state funds and implementing a grant-funded program. Topics include federal grant-making process, applying for a grant, developing grant accounting systems, joint funding, disputes, appeals and remedies, and close-out procedures.

PAD 650 Principles of Nonprofit Management. Semester course; 3 lecture hours. 3 credits. Explores the history, theories and dynamics of not-for-profit organizations in the United States, with focus on organizations with local or regional services areas. Emphasizes political, legal, cultural, and constituent environments; revenue generation; decision making, communications leadership; and organizational models. Compares the mission and operations of nonprofit organizations, government organizations, and for-profit enterprises in the delivery of services.

PAD 652 Administrative Law. Semester course; 3 lecture hours. 3 credits. The course considers the administrative process from the perspective of rule making and decision making within the framework of public agencies. It will examine the development of the law, the use and control over administrative discretion, legislative and judicial controls over the administrative process, and remedies for improper administrative acts.

PAD 660 Community Power Dynamics. Semester course; 3 lecture hours. 3 credits. Examination of the location of power in the American community, operational concepts and general methodological approaches defined, empirical findings based on various methodological approaches, conclusions on community political systems and power.

PAD 662 Advanced Topics in Revenue and Taxation. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 616 or permission of instructor. An advanced examination of governmental revenue and taxation policies, tax incidence, and alternative funding techniques.

PAD 664 Local Government Administration. Semester course; 3 lecture hours. 3 credits. An intensive examination of the major functional responsibilities with a special emphasis on the organization, standards, operational imperatives, interrelationship with other functions, and special management problems at the local level, including small and rural jurisdictions.

PAD 670 Advanced Public Financial Management. Semester course; 3 lecture hours. 3 credits. Prerequisites: PAD 609, ECO 616, or permission of the department. Brings together specialty aspects of public financial management such as economic and political implications, practical skill-building, operational financial administration issues and tactics, and accounting principles and approaches, and integrates these

disparate segments of public finance. The emphasis is on policy-level implications and strategies of public financial management strategies of executive planning, analysis, and management of the financial sector of public organizations.

PAD 675 Comparative Public Administration. Semester course; 3 lecture hours. 3 credits. Explores methodology, theories, and models used in comparative approach to public administration, functional processes of administration in selected developing and developed countries, and role of bureaucracy in development and nation building.

PAD 680 Executive Leadership Seminar. Semester course; 3 lecture hours. 3 credits. Explores aspects of current interest in leadership style, skills, and roles. This course allows participants to explore areas of personal interest in contemporary public management leadership theory and practice and to share findings in seminar format.

PAD 681 Governmental Administrative Decision Making Processes. Semester course; 3 lecture hours. 3 credits. Identification of alternative decision making processes in public sector management environments. Choosing the proper method of the appropriate management-level theory and method of controlling administrative decisions within governmental organizations. Dealing with political, budgetary, and personal constraints in achieving organizational goals.

PAD 682 Advanced Public Human Resources Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: PAD 607 or equivalent. Public personnel management is analyzed in process and systems perspectives, with specific emphasis on the interrelatedness of discrete system components with other systems. Attention is given to the integration of personnel elements through the development of feedback systems, positive and negative impacts' analyses, and personnel policy development and implementation.

PAD 683/PHI 683 Administrative Ethics. Semester course; 2 or 3 lecture hours. 2 or 3 credits. A philosophical investigation into the problems of making ethical decisions, focusing on issues likely to confront the public administrator. Examples of such issues are equity in social services delivery, affirmative action, loyalty to the bureaucracy vs. "whistle blowing," and conflicts of interest between personal and public interest.

PAD 689 Seminar in Public Administration: Integration of Theory and Practice. Semester course; 3 lecture hours. 3 credits. Integration of public management and administration theory and practice; goal setting for professional growth and approaches to life long continuing self-development; integration of theory, models, knowledge, skills, behaviors, values, ethics, and philosophy of public management and administration. This is a capstone, required course for MPA students.

PAD 690 Reading Seminar. 3 credits. A comprehensive reading list will be provided to students. Upon completion of the reading approved by the seminar director, a comprehensive examination will be given. Graded Pass/Fail.

PAD 691 Topics in Public Administration. Semester course; 1, 2, or 3 lecture hours. variable credit. Prerequisite: Permission of instructor. Course may be repeated with different topics as approved. An in-depth study of a selected topic in public administration. See the *Schedule of Classes* for specific topic to be offered each semester.

PAD 693 Public Administration Practicum. 3 credits. A professional internship in public service for those students without significant professional-level experience in a public agency.

PAD 697 Directed Research in Public Administration. Semester course; 1-6 credits. Prerequisite: Permission of instructor. Independent research into public administration problems, issues, applications, and theories related to student's field of concentration.

Department of Psychology

Allison, Kevin *Associate Professor* PhD, DePaul University; adolescent development, African-American youth and families.

- Auerbach, Stephen M. *Professor* PhD, Florida State University; stress and coping theory and research; stress management in behavioral medicine and law enforcement settings and with the elderly.
- Bailey, Kent G. *Professor* PhD, West Virginia University; individual tests of intelligence, psychotherapy, human ethology.
- Belgrave, Faye Z. *Professor* PhD, University of Maryland; minority populations, disabilities, HIV prevention and education, substance abuse.
- Corazzini, John G. *Professor and Director, University Counseling* PhD, University of Notre Dame; college counseling.
- Danish, Steven J. *Professor and Director, Life Skills Center* PhD, Michigan State University; health and sports psychology, promotion and enhancement of competence, prevention of substance abuse.
- Dougherty, Linda M. *Associate Professor (Gerontology)** PhD, University of Southern California; human emotions, effects of status on well-being in the elderly.
- Eissenberg, Thomas *Assistant Professor* PhD, McMaster University; behavioral pharmacology of nicotine and the development of effective drug abuse treatments.
- Erickson, Marilyn T. *Professor* PhD, University of Washington; etiology of psychopathology; child and adolescent assessment/diagnostic issues; psychological intervention with children, adolescents, and families.
- Farrell, Albert D. *Professor* PhD, Purdue University; behavioral assessment, behavior therapy, social skills training, computer applications in mental health.
- Forsyth, Donelson R. *Professor and Director of the Social Psychology Division of the Doctoral Program in General Psychology* PhD, University of Florida; social psychology, attitudes and social cognition, group processes.
- Fries, Elizabeth A. *Assistant Professor (Massey Cancer Center)** PhD, University of Washington; health psychology, Community intervention, smoking, diet.
- Gramling, Sandra E. *Associate Professor and Interim Director of the Doctoral Program in Clinical Psychology* PhD, University of Mississippi; behavioral medicine, psychophysiology, behavior therapy, psychopharmacology.
- Hamm, Robert J. *Professor and Director of the Biopsychology Division of the Doctoral Program in General Psychology* PhD, Southern Illinois University; neuronal trauma, stress reactions, animal behavior.
- Hanna, Aura *Assistant Professor* PhD, University of Washington; visual memory, verbal memory.
- Harkins, Stephen *Professor (Gerontology)** PhD, University of North Carolina; pain and age, memory changes with age, evoked potentials.
- Hartnett, John J. *Associate Professor* PhD, Wayne State University; social-industrial psychology, person perception, job satisfaction, selection, classification.
- Howard, Catherine W. *Associate Professor* PhD, Pennsylvania State University; lifespan development with emphasis on adolescence, family relations, prevention programs for at-risk youth.
- Ingram, Kathleen M. *Assistant Professor* PhD, Ohio State University; stress, coping and well-being, e.g., HIV patients, homeless women, psychology of women.
- Kiesler, Donald J. *Professor* PhD, University of Illinois; interpersonal communication approaches to psychotherapy, psychotherapy change-process research and personal relationships.
- Kliwer, Wendy *Assistant Professor* PhD, University of California, Irvine; parental influence on children's use of coping strategies for coping with normative and stressful situations in elementary school years.
- Leahey, Thomas H. *Professor* PhD, University of Illinois; history and philosophy of psychology; cognitive science, sociobiology.
- Mahoney, John M. *Associate Professor* PhD, State University of New York Buffalo; social psychology, values, individual differences.
- McCreary, Micah *Assistant Professor* PhD, Virginia Commonwealth University; family issues with African-Americans, African-American males, adolescent and spiritual stress and coping.
- McCullough, James P. *Professor and Director, Mood Disorders Institute* PhD, University of Georgia; cognitive-behavior psychotherapy with adults, research with early and late onset characterological dysthymia, N=1 methodology.
- Meyer, Aleta *Assistant Professor* PhD, The Pennsylvania State University; community psychology, at-risk youth.
- Myers, Barbara J. *Associate Professor, Director of Graduate Studies in Psychology and Director of the Developmental Psychology Division of the Doctoral Program in General Psychology* PhD, Temple University; infancy and early childhood, social development, medical problems in infants.
- Parham, Iris A. *Associate Professor (Gerontology)** PhD, University of Southern California; psychology of aging, developmental psychology.
- Porter, Joseph H. *Professor* PhD, University of Georgia; biopsychology, animal learning and behavior, behavioral pharmacology.
- Robbins, Steven B. *Professor and Chair* PhD, University of Utah; psychodynamic theory research and practice, consultation, career indecision.
- Shivy, Victoria A. *Assistant Professor* PhD, State University of New York, Albany; psychological assessment, vocations, research design and methodology.
- Stasson, Mark F. *Associate Professor* PhD, University of Illinois; group decision making, social psychological applications in organizational settings.
- Stolberg, Arnold L. *Professor* PhD, University of South Florida; clinical child and community psychology; prevention of child psychopathology, divorce, and child adjustment.
- Strong, Stanley R. *Professor* PhD, University of Minnesota; interpersonal influence theory, change processes in counseling and psychotherapy.
- Wilkes, Susan *Assistant Professor* PhD, Virginia Commonwealth University, Center for Psychological Services and Development.
- Williams, Julie *Assistant Professor and Director of the Center for Psychological Services and Development* PhD, University of Tennessee; short term therapy.
- Worthington, Everett L. *Professor and Director of the Doctoral Program in Counseling Psychology* PhD, University of Missouri; marriage and family, religious counseling, theories and methods of counseling.

Emeritus Professors

William D. Groman Robert M. Tipton

Collateral Faculty

- Allison, Scott T. *Associate Research Professor, Department of Psychology, University of Richmond* PhD, University of Richmond.
- Ax, Robert K. *Assistant Clinical Professor, Federal Correctional Institution, U.S. Department of Justice* PhD.
- Balster, Robert L. *Research Professor, Department of Pharmacology and Toxicology* PhD.
- Beardsley, Patrick M. *Associate Research Professor, Department of Pharmacology and Toxicology* PhD.
- Blackmer, Dana R. *Assistant Clinical Professor, Henrico County Mental Health Services* PhD.
- Boynton, Gerald *Assistant Clinical Professor, Department of Psychology, Eastern State Hospital* EdD.
- Buczek, Teresa A. *Assistant Clinical Professor, Private Practice* PhD.
- Bullock, James H. *Assistant Clinical Professor, Private Practice* PsyD.
- Casson, Mort A. *Assistant Clinical Professor, Private Practice* PhD.
- Castaldi, Josie *Assistant Clinical Professor, Children's Hospital* PhD.
- Cobb, Eloise *Assistant Clinical Professor, Child Development Services* PhD.
- Cohen, Robert *Clinical Professor, Virginia Treatment Center* PhD.
- Colbs, Sandy L. *Assistant Clinical Professor, University Counseling Center* PhD.
- Coogle, Constance L. *Assistant Research Professor, Virginia Center on Aging* PhD.
- Crow, Frank *Assistant Clinical Professor, Psychology Service, McGuire Veterans Administration Medical Center* PhD.
- Doyle, Daniel *Assistant Clinical Professor, Private Practice* PhD.
- Eberly, Bruce *Assistant Clinical Professor, Psychology Service, McGuire Veterans Administration Medical Center* PhD.
- Eberly, Carole *Assistant Clinical Professor, Psychology Service, McGuire Veterans Administration Medical Center* PhD.
- Ehrmantraut, John E. *Assistant Clinical Professor, Private Practice* EdD.
- Falk, Robert S. *Assistant Clinical Professor, Private Practice* PhD.
- Farrington, Frank H. *Associate Research Professor, Department of Pediatric Dentistry* DDS.
- Fisher, Robert E. *Assistant Clinical Professor, Community Preparation Program, Eastern State Hospital* PhD.
- Forssmann-Falck, Renate *Clinical Professor, Center for Psychological Services and Development, Department of Psychology* MD.
- Forti, Donna *Research Professor, Adjunct Professor* PhD.
- Green, Robert *Research Professor, School of Social* PhD.
- Gruszko, John R. *Assistant Clinical Professor, Private Practice* PhD.
- Gullotta, Frank *Assistant Clinical Professor, Philip Morris, USA* PhD.
- Hagan, Leigh D. *Assistant Clinical Professor, Private Practice* PhD.
- Haller, Deborah L. *Associate Research Professor, Division of Substance Abuse Medicine* PhD.

Hopkins, Warren *Assistant Clinical Professor, Counseling and Psychological Services, University of Richmond* PhD.

Horvatic, Paula K. *Associate Research Professor, Department of Internal Medicine-Substance Abuse* PhD.

Ito, Michael S. *Assistant Clinical Professor, Psychology Department, Eastern State Hospital* PsyD.

Kelly, Timothy A. *Assistant Clinical Professor, Department of Mental Health, Mental Retardation & Substance Abuse* PhD.

Kendrick, Michelle M. *Assistant Clinical Professor* PhD.

Knisely, Janet *Assistant Research Professor, Department of Psychiatry* PhD.

Koch, J. Randy *Assistant Human Resources Professor, Department of Mental Health, Mental Retardation and Substance Abuse Services, Richmond, VA* PhD.

Kornstein, Susan B. *Assistant Clinical Professor, Department of Psychiatry* MD.

Kreutzer, Jeffrey S. *Clinical Professor, Department of Rehabilitation Medicine* PhD.

Kruczek, Theresa A. *Assistant Clinical Professor, Department of Psychiatry* PhD.

Laird, Steven P. *Assistant Clinical Professor, Department of Psychology, McGuire Veterans Administration Medical Center* PhD.

Laskin, Daniel *Clinical Professor, Department of Oral and Maxillofacial Surgery* PhD.

Levy, Leon *Research Professor, Department of Psychology* PhD.

Lichtman, Aron *Research Assistant Professor, Department of Pharmacology and Toxicology*.

Lyeth, Bruce G. *Assistant Clinical Professor, Department of Surgery* PhD.

Martelli, Michael F. *Assistant Clinical Professor, Medical Psychology, Sheltering Arms Hospital* PhD.

Matthies, Brigitte *Assistant Clinical Professor, Department of Physical Medicine and Rehabilitation* PhD.

May, James *Associate Clinical Professor, Department of Mental Health, Mental Retardation and Substance Abuse* PhD.

McMahon, Brian T. *Professor and Chair, Department of Rehabilitative Counseling* PhD.

Moss, Jon *Assistant Clinical Professor, Richmond Mental Health Center* PhD.

Neale, Michael C. *Associate Research Professor, Department of Psychiatry* PhD.

Nicholson, Jane A. *Assistant Clinical Professor, Eastern State Hospital* PhD.

Oswald, Donald P. *Assistant Clinical Professor, Department of Psychiatry* PhD.

Peck, III, Edward A. *Associate Research Professor, Neuropsychological Services of Virginia, Inc.* PhD.

Peoples, Napoleon L. *Assistant Clinical Professor, University Counseling Center* PhD.

Raines, Shanana R. *Assistant Clinical Professor, Department of Child and Adolescent Psychology, Children's Hospital* PhD.

Reif, Thomas F. *Assistant Clinical Professor, Private Practice* PhD.

Resnick, Robert J. *Clinical Professor, Department of Pediatrics* PhD.

Rice, Lori *Assistant Research Professor, Private Practice* PhD.

Riley, William T. *Associate Research Professor, Department of Psychiatry* PhD.

Schnoll, Sidney N. *Research Professor, Department of Internal Medicine and Substance Abuse* MD.

Schulman, Martha S. *Assistant Clinical Professor, McGuire Veterans Administration Medical Center* PhD.

Scott Kathleen J. *Assistant Clinical Professor, University Counseling Services* PhD.

Shaw, Monica *Assistant Clinical Professor* PhD.

Silberg, Judy L. *Assistant Research Professor, Department of Human Genetics* PhD.

Silverman, Joel J. *Clinical Professor, Department of Psychiatry* MD.

Simpson, Adelaide W. *Assistant Clinical Professor, Private Practice* PhD.

Singh, Nirbhay N. *Clinical Professor, Department of Psychiatry* PhD.

Taylor, R. Dean *Associate Clinical Professor, Psychology Service, McGuire Veterans Administration Medical Center* PhD.

Twente, Steven *Assistant Clinical Professor* PhD.

Waaland, Pamela T. *Assistant Clinical Professor, Private Practice* PhD.

Waite, Dennis E. *Assistant Clinical Professor, Bon Air Juvenile Correctional Center* PhD.

Weaver, Debra A. *Assistant Clinical Professor* PhD.

Weinberger, Gerald *Assistant Clinical Professor, Private Practice* PhD.

Wiley, Jenny L. *Assistant Clinical Professor, Department of Pharmacology* PhD.

Wilson, Dawn *Assistant Research Professor, Department of Nephrology* PhD.

Wood, Joan B. *Associate Research Professor, Department of Gerontology* PhD.

Wright, Sandra *Assistant Research Professor* PhD.

* Department in parentheses indicates joint appointment.

The Department of Psychology offers instruction in clinical, counseling, and general psychology leading to the Doctor of Philosophy degree. Students in all three programs are educated first as psychologists and then helped to develop competence in a more specialized area relevant to their scholarly and professional objectives. In addition, special training and experience in college teaching is available.

The doctoral programs in clinical and counseling psychology are accredited by the American Psychological Association. The programs emphasize the scientist-practitioner model and prepare students for research and service in professional psychology, including positions in university academic departments, medical school departments, and counseling centers, mental health agencies and hospitals, physical health facilities, and other organizational settings.

The clinical psychology program offers general tracks in adult, child, and behavioral health clinical psychology as well as specialized institutes in unipolar mood disorders, behavioral health, and family and the law.

The counseling psychology program emphasizes the enhancement of life skills and personal competence. Typical subspecializations include disease prevention and health promotion, career and life planning, work with college students, community outreach, interpersonal processes, group counseling, marriage and family counseling, multiculturalism, and sport psychology.

The program in general psychology prepares students for basic or applied research and includes three divisions: biopsychology, developmental, and social psychology.

The Center for Psychological Services and Development, a campus-based community service agency operated by the department, provides training opportunities for graduate students in all departmental programs, including practicum and research training for graduate students in the clinical and counseling psychology programs. A wide variety of other on- and off-campus practicum placements are also available.

The department maintains laboratory facilities for research in the areas of behavioral assessment, behavioral medicine, developmental, learning, behavioral pharmacology, psychophysiology, psychotherapy process, social perception, social influence, and group dynamics. Opportunities for field research also are available in a variety of settings.

A collection of current journals and books in psychology is housed in the James Branch Cabell Library on the Academic Campus and in the Tompkins-McCaw Library on the MCV Campus.

Teaching assistantships, research assistantships, and paid practicum placements are available. The amount of stipend is dependent upon the amount of service required.

Admission Requirements

In addition to the general requirements for admission to the graduate programs in the School of Graduate Studies (Part I of this *Bulletin*), the following requirements represent the minimum acceptable standards for admission:

- graduation with a bachelor's degree from an accredited college or university, but not necessarily with a major in psychology;
- 18 semester hours of undergraduate course work in psychology is the minimal, but not the optimal number of hours for an applicant to be considered for admission. Included must be each of the following courses: general psychology, statistics, and experimental psychology. Exceptionally well-qualified applicants with less than a major in psychology, or applicants whose undergraduate work is considered outdated by the admissions committee, may be advised to complete some additional undergraduate courses at the beginning of their graduate study program;
- an undergraduate record indicating superior academic potential;
- satisfactory performance on the GRE, including the advanced psychology examination;
- three letters of recommendation from previous instructors; and
- a personal interview may be required at the discretion of the department.

The number of students who can be admitted is limited by the facilities and staff available. All applicants will be notified of the decision made. The screening process may begin as early as January 1. First offers of admission are made by April 1. By June 1, after other offers to alternates have been made and final acceptances by students have been received, admissions may be closed. For full consideration, applications should be completed by February 15. Applicants to the General Psychology Program should specify to which of the three divisions they are applying (i.e., biopsychology, developmental or social.)

Transfer credits for graduate work at other institutions will be evaluated after the completion of nine semester hours in the department.

Degree Requirements

The following requirements are in addition to those described for the graduate programs in the School of Graduate Studies (Part I of this *Bulletin*) and College of Humanities and Sciences (beginning of Part IV of this *Bulletin*).

All students are required to complete a core curriculum of 15 credits, (or to have completed its equivalent for students entering with a master's degree).

Students who receive grades of "B" or better in each of the department core courses are considered to have fulfilled the University requirements of a master's level Comprehensive Examination and will then officially be considered candidates for the MS degree. Students who receive grades of "C" or lower in two or more department core courses will have failed the Comprehensive

Examination and will be dismissed automatically from the program. Students who receive a grade of "C" or lower in one of the department core courses must either (a) satisfactorily complete a reexamination of the material covered in the course within one semester following the receipt of the grade (this re-examination is to be arranged and evaluated by the course instructor); or (b) repeat the course for credit the next time it is offered and receive a grade of "B" or better. Regardless of which of these approaches is chosen, the students will be given only one opportunity to demonstrate that they have mastered the course material. Students who either fail the reexamination or repeat the course and receive a grade of "C" or lower will have failed the Comprehensive Examination and will be dismissed from the program.

Additional courses and training experiences will be determined in consultation with and subject to the approval of the student's faculty adviser and graduate program committee.

Receipt of a grade of "C" or lower in two courses, or grades of "C" or lower in more than six credits of psychology courses, constitutes automatic dismissal of a student from the program.

All students are required to complete a master's thesis and to defend it successfully in an oral examination.

Ideally, the thesis should be publishable as a piece of research and make a contribution to the field of psychology. Students who have previously completed a master's thesis in psychology at another university may have the thesis requirement waived if the thesis is accepted by their graduate program committee.

The residence requirement for the master's degree is 18 hours, nine in each of two consecutive semesters. Completion of the degree usually requires four semesters. At least six semester credits in Master's Thesis (PSY 798) must be completed, and no more than six can be counted toward the MS degree.

Students are obligated to request, in writing from their program committees, continuation of study beyond the master's degree and approval of their doctoral plan of study. Application from a student for continuation beyond the master's level will be evaluated by the appropriate program committee after completion of all requirements for the master's degree. The program committee reviews the student's request and approves or disapproves the request.

The student must pass a written preliminary examination to become a doctoral candidate. Students are required to complete this requirement prior to defense of their dissertations and prior to leaving on internship for students in the clinical and counseling psychology programs.

The residence requirement for the doctoral degree is an additional 18 hours, nine in each of two consecutive semesters.

With the consent of the program committee, doctoral students may design a minor consisting of courses in departments other than psychology or courses in an area of psychology other than major.

Both the clinical and counseling psychology programs require completion of applied practica and a one-year predoctoral internship approved by the program committee. Research practica are required by all programs.

Practicum credit will vary depending on the program. Internship will be without credit.

A dissertation requiring the planning, completion, and oral defense of an original research project is an integral part of the doctoral program. At least 12 semester credits in PSY 898 Doctoral Dissertation must be completed, and no more than 12 can be counted toward the PhD degree.

Completion of the entire program usually requires four to six years (including the internship year for students in the clinical and counseling programs). Candidates must complete all requirements for the PhD degree within a seven-year period from the date of admission to the graduate program. In some cases, specific programs and divisions may have requirements in addition to those stated here.

A more detailed description of the requirements for each of the graduate programs is included in the Department of Psychology's *Graduate Student Handbook* which is provided to each incoming graduate student.

Curriculum

Department Core

PSY 619 Learning and Cognition

PSY 620 Design and Analysis of Psychological Research

PSY 621 Statistics in Psychological Research

PSY 617 Sensation and Perception

OR PSY 629 Biological Basis of Behavior

PSY 675 Ethical Principles of Psychology

OR MIC 510 Scientific Integrity (Biopsych students only)

Clinical Psychology Program Curriculum Requirements

- Clinical Program core courses successfully completed (PSY 609, 616, 618, 643, 644, 645, 651, and 667).
- Successful completion of 16 credit hours of clinical practicum (PSY 694) and one credit hour of research practicum (PSY 690).
- Successful completion of one three-credit assessment elective (e.g., PSY 626, 641, 646, 647, 648, or 649).
- Successful completion of two three-credit therapy/intervention electives (e.g., 623, 624, 652, 653, 654, 656, 660, 666, 668, 669, 670).
- Successful completion of PSY 638, and 630 or 633.
- Successful completion of PSY 677 during the first three years in the program.
- A minimum of 92 semester hours of approved courses beyond the baccalaureate degree.

Counseling Psychology Program Curriculum Requirements

- Counseling Program core curriculum successfully completed (PSY 611, 616, 618, 623, 625, 643, 644, 645, 651, and 691 Community Psychology).
- Successful completion of 12 credit hours of counseling practicum (PSY 693) and three credit hours of research practicum (PSY 690).

- Successful completion of other required courses, including PSY 638, 603 and 630 or 633 or other approved developmental course.
- Successful completion of an approved predoctoral internship.
- A minimum of 88 semester hours of approved courses beyond the baccalaureate degree.

General Psychology Program Curriculum Requirements

- General Program doctoral courses completed (PSY 630 or 638; three hours of 671 and/or 690; and 602 or 603 or 605).
- Successful completion of one of the following specialized division curricula.
 - **Biopsychology Division Curriculum.** PSY 629, PSY 617, PSY 639, and three courses from the following list: PSY 612, PSY 622, PMC 632, PIO 501, PMC 633, and approved special topics courses (PSY 691).
 - **Developmental Division Curriculum.** PSY 603, PSY 636, PSY 605 and three courses from the following list: PSY 602, PSY 613, PSY 614, PSY 615, PSY 628, approved special topics courses (PSY 691), and one graduate course in social psychology.
 - **Social Division Curriculum.** PSY 632, and three courses from the following list: PSY 604, PSY 610, PSY 633, and PSY 634.
- A minimum of 72 semester hours of approved courses beyond the baccalaureate degree.

Graduate Courses in Psychology (PSY)

PSY 602/GTY 602 Psychology of Aging. Semester course; 3 seminar hours. 3 credits. Prerequisite: permission of instructor. Psychological adjustment in old age; special emphasis on personality, cognitive, and emotional development; life crises associated with the aging process. Students must complete Social Sciences Research Methods before taking this course.

PSY 603 Developmental Processes. Semester course; 3 lecture hours. 3 credits. Cognitive, social, personality, and behavioral development across the life span is considered, with special attention to theories of development.

PSY 604 Social Psychology of Business and Industry. Semester course; 3 lecture hours. 3 credits. The theme is the influence of organizational structure on behavior. Topics will include motivation, attitudes, job satisfaction, morale, leadership, and supervision.

PSY 605 Social Development. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: PSY 603 or permission of instructor. The development of social relations, focusing primarily on infancy and childhood, but also considering adulthood and aging. Attachment, parent-child interaction, peers, siblings, aggression, sex-roles, cultural determinants, deprivation and remediation, social cognition, adulthood changes, parenthood. Critical evaluation of theory and current research.

PSY 607/EDU 607 Advanced Educational Psychology. Semester course; 3 lecture hours. 3 credits. Application of the principles of psychology to the teaching-learning process. Discussion will focus on the comprehensive development of individual learning experiences and educational programs from the point of view of the educator and the administrator.

PSY 609 Contemporary Issues in Clinical Psychology. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisites: First-year graduate standing in clinical psychology or permission of the instructor. Informs first-year doctoral students of the philosophy behind the training model and the requirements of the doctoral program in clinical psychology in the context of the current status of contemporary issues in the field. Includes coverage of traditional and innovative training models, research issues, the role of assessment and psychotherapy in clinical psychology, the medical vs. the behavioral model of psychopathology, relations with other mental health professions, professional issues such as licensure and credentialing, and malpractice.

PSY 610 Attitude Theory and Research. Semester course; 3 lecture hours. 3 credits. Theory and research in attitudes. Attitude formation and change, including cognitive consistency, learning and reinforcement, social judgment, and functional theories.

PSY 611 Contemporary Developments in Counseling Psychology. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Contemporary issues, problems, and research related to the practice of counseling psychology; their importance in developing a professional identity and sensitivity to major developments in the field; history, present status, and future directions in the field of counseling psychology.

PSY 612 Seminar in Motivation. Semester course; 3 lecture hours. 3 credits. A survey of some theoretical views of motivation. Biological, cultural personality, and learning theories of motivation will be covered. Theoretical positions will be related to current empirical findings.

PSY 613 Cognitive Development. Semester course; 3 lecture-discussion hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. The development of the intellectual processes, including reasoning, memory, imagery, and knowledge. Special attention will be given to theories of cognitive growth. Although the focus will be on child cognitive developments, consideration of life-span issues will be included.

PSY 614 Infant Growth and Development. Semester course; 3 seminar hours. 3 credits. Prerequisite: PSY 603 or permission of instructor. Sensory and behavioral capacities of the infant; cognitive, social, and emotional development in the first two years of life, with emphasis on the effects of early experience on function later in life. Consideration of the special problems associated with infant research and intervention programs.

PSY 615/GTY 615 Aging and Mental Disorders. Semester course; 3 lecture hours. 3 credits. The course deals with common psychological disorders and problems of late life, their etiology, methods of evaluating psychological status, and intervention strategies that have been used successfully with older persons. Topics include epidemiology of psychological disorders and mental health service utilization; late-life stressors and crises; psychology of health, illness, and disability; techniques and procedures in the evaluation of the older adult; functional and organic disorders; institutionalization; individual, group, and family therapy, behavioral techniques; peer counseling and crisis intervention; and drugs and the elderly.

PSY 616 Psychopathology. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Clinical and experimental contributions to the field of psychopathology, with particular attention to the roles of learning and motivation in the development of behavior disorders.

PSY 617 Sensation and Perception. Semester course; 3 lecture hours. 3 credits. The major phenomena of vision, audition, olfaction, gustation, and the skin senses. Psychophysics and the effects of sensory deficits. The relationship of variations in environmental energy to the psychological reactions of sensing and perceiving.

PSY 618 Seminar in Personality. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A detailed exploration of various approaches in personality. Contemporary issues in personality theory.

PSY 619 Learning and Cognition. Semester course; 3 lecture hours. 3 credits. Graduate standing in psychology or permission of instructor.

Covers principles and theories of learning and cognitive psychology from simple associative learning through memory, comprehension, thinking, and social behavior.

PSY 620 Design and Analysis of Psychological Research. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Undergraduate course in basic statistics or permission of instructor. An introduction to research design in psychology (e.g., logic behind various research designs, typical research problems). Review of principles of hypothesis testing, general linear model, analysis of variance including factorial designs with special emphasis on prior and post hoc comparisons, repeated-measures designs and mixed designs.

PSY 621 Statistics in Psychological Research. Semester course; 3 lecture and 2 laboratory hours. 4 credits. Prerequisite: PSY 620. Extensive coverage of multiple regression/correlation analysis with applications in psychology. Survey of applications of multivariate statistical analyses in psychology.

PSY 622 Physiological Correlates of Emotion. Semester course; 3 lecture-seminar hours. 3 credits. Research and theories of emotion emphasizing physiological bases, with special attention to neurological and endocrine systems. Applications to psychological functioning.

PSY 623 Brief Counseling and Psychotherapy. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Overview of major trends in theory, techniques and current research in brief psychotherapies. Includes descriptions of some brief psychoeducational and preventive interventions and stresses accountability in outcome of all interventions.

PSY 624 Group Counseling and Psychotherapy. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Historical perspective. Basic dynamics and processes of therapeutic groups. Role and technique of the group facilitator. Examination of different theoretical approaches.

PSY 625 Career Counseling: Theory and Practice. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Review of major theories and current research in career development. Techniques of career counseling for individuals and groups. Emphasis on late adolescent, adult, and Preretirement populations.

PSY 626 Single-Case Experimental Design for the Clinical Research-Practitioner. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Review of single-case design models that have utility for clinicians in evaluating their practice. Emphasis will be placed on the historical development of the field and on the main experimental design issues that are relevant to the conduct of single-case research.

PSY 627 Research Methods in Clinical Psychology. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisites: PSY 621 and graduate standing in clinical or counseling psychology, or permission of instructor. Examines the role of research in clinical psychology and experimental design issues in psychotherapy research.

PSY 628 Psychology of Adolescence. Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in Psychology or permission of instructor. Theories and research on the social, personality, and cognitive development of adolescents. Emphasis is placed on the development of identity and relationships with family and peers, within the contexts of home, school, work, and community. Variations in development related to cultural differences will also be the focus, but atypical behavior will be explored. Normal adolescent behavior will also be addressed. Current research ideas will be examined.

PSY 629 Biological Basis of Behavior. Semester course; 3 lecture hours. 3 credits. Prerequisite: An undergraduate course in physiological psychology or permission of instructor. Theory and current experimental research on the physiological and neurological concomitants of behavioral variables.

PSY 630 Social Psychology. Semester course; 3 lecture-seminar hours. 3 credits. Topics include attitudes, social influence processes,

person perception, affiliation and attraction, group processes, cultural influences on behavior, and conformity.

PSY 632 Research Methods in Social Psychology. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisites: PSY 621 and 630. Epistemological, methodological, technical, and ethical problems encountered during the scientific study of social psychological phenomena. Emphasizes practical experience in theory development, hypothesis derivation, research planning, data collection, reduction and analysis, and dissemination strategies.

PSY 633 Group Dynamics. Semester course; 3 lecture-seminar hours. 3 credits. Theoretical explanations and empirical research related to group formation, development, performance, and dissolution. Topics include obedience, conformity, group productivity, and leadership.

PSY 634 Attribution and Social Cognition. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: PSY 630. Analysis of the perceptual and inferential processes that influence the perceiver's understanding of others' traits and characteristics. Examines theoretical perspectives and current empirical studies of the intuitive use of behavioral data in making inferences concerning the causes of actions and events and the cognitive mechanisms that structure inferences about others' qualities.

PSY 635 Psychology of Health and Health Care in the Elderly. Semester course; 3 lecture hours. 3 credits. Presents health psychology models, theories, and issues relating to the etiology, course, and treatment of illness in the elderly. Covers older patient-practitioner interaction, compliance, late-life stress and illness, psychosocial issues in terminal care.

PSY 636 Research Methods in Developmental Psychology. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: PSY 621. Research designs, methods, ethical issues, and problems specific to developmental psychology. Cross-sectional, longitudinal, and sequential strategies. Statistical issues, multivariate statistics, and choice of statistical designs appropriate for developmental research questions. Computer skills in organizing and analyzing data. Grant writing and scientific reporting.

PSY 637 Operant Behavior. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Presents an overview of the methodology, terminology, and phenomena unique to the experimental analysis of behavior. Topics include operant methodology, schedules of reinforcement, stimulus control, acquisition of behavior, conditioned reinforcement, punishment, scheduled-induced behaviors, and use of operant techniques in drug research.

PSY 638 The Evolution of Psychological Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: Core course in student's area of specialization or permission of instructor. A survey of the development and present state of various psychological systems. Current meta-theoretical and systematic issues in psychology.

PSY 639 Research Methods in Biopsychology. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: Permission of instructor. Methodological, technical, and ethical problems in biopsychology. Examples are design and use of circuits in behavioral sciences, stereotaxic surgery, histology, drug procedures, research design, data collection procedures, and data analysis.

PSY 641/GTY 641 Survey of Psychological Assessment and Treatment of the Older Adult. 3 credits. A combination didactic and skills training course; review of major treatment strategies and techniques for utilization with the older adult client with emphasis on group, individual, and paraprofessional delivery systems; evaluation of crisis intervention and consultation team approaches; lectures, demonstration, and classroom practice of actual treatment techniques.

PSY 642/GTY 642 Practicum in Clinical Geropsychology. 3 credits. An initial practicum geared as an entry to the team practicum experience; focus on familiarizing the student with mental health service delivery systems for the elderly in the Richmond community; rotation through a limited number of facilities such as nursing homes, retirement centers,

nutrition sites, emergency hotline services for the elderly, and various agencies involved in deinstitutionalization; possible extended placement in a particular facility.

PSY 643 Principles of Psychological Measurement. Semester course; 2 lecture hours. 2 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Basic psychometric concepts to prepare the student for subsequent evaluation instruments. Origins and logic of testing, criteria for judging tests, standardization and reliability, and validity and principles of test development and construction.

PSY 644 Individual Tests of Intelligence. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology or permission of counseling or clinical psychology program. Examines the administration, scoring, interpretation, and research foundations of the major individual tests of intelligence. Emphasizes the Wechsler scales and the Measurement of Adult Intelligence. Develops psychological report writing skills.

PSY 645 Assessment of Personality. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology, or permission of clinical or counseling psychology program and instructor. Examines use of objective and projective tests in assessment of personality. Emphasizes clinical interpretation of the Minnesota Multiphasic Personality Inventory (MMPI), and the administration and clinical interpretation of the Rorschach and Thematic Apperception Test (TAT). Stresses integrative report writing.

PSY 646 Projective Techniques. Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology or permission of counseling and clinical program committee. Projective devices for the assessment of personality. Supervised administration, scoring, interpretation, and written reports of individually administered projective personality tests.

PSY 647 Neuropsychological Assessment. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of instructor. Psychological assessment of brain-behavior relationships in the context of neurological or neurosurgical problems. Emphasis is on current modifications of Halstead's tests and on the Reitan-Indiana Neuropsychological Battery for younger children. Laboratory requires supervised administration, scoring, and interpretations of neuropsychological test batteries.

PSY 648 Behavioral Assessment of Clinical Problems. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of instructor. Development, evaluation, use, and interpretation of behavioral approaches to the assessment of clinical problems, including self-monitoring, behavioral ratings, and direct observational assessment procedures. Both existing instruments and procedures for designing new instruments will be discussed.

PSY 649 Clinical Assessment of Child Disorders. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: PSY 643 and graduate standing in clinical psychology or permission of clinical program committee and instructor. Administration and interpretation of intellectual and personality assessment instruments for children. Laboratory requires supervised administration, scoring, interpretation, and written reports of these assessment instruments.

PSY 650 Advanced Child Psychopathology. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Principal childhood behavioral abnormalities: mental retardation, psychosis, learning disabilities, speech and language problems, school-related behavioral problems, neurosis, psychosomatic disorders, and juvenile delinquency. Genetic, prenatal, perinatal, postnatal, and social-psychological factors related to etiology. Integration of assessment and treatment methods.

PSY 651 Introduction to Psychological Interviewing. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Graduate standing in counseling or clinical psychology and permission of instructor. Introduces basic principles of interviewing as they apply to psychotherapy/counseling. Laboratory requires video-taping of simulated counseling/psychotherapy session, modeled and role-played interviewing situation, skill development and demonstration, and evaluative interpersonal feedback.

PSY 652 Child and Adolescent Psychotherapy. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology and permission of the instructor. Presents the major approaches to psychological interventions for children's and adolescents' behavioral and emotional disorders. Includes a review of empirical research evaluating the effectiveness of contemporary psychological interventions for specific disorders.

PSY 653 Family Counseling and Therapy. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisites: PSY 616, 693 or 694, 645; or permission of instructor. Emphasizes an applied approach to family assessment and therapy. Presents theories and concepts of major approaches to family therapy and general systems issues. Emphasizes techniques of family therapy. Involves participants in role playing, demonstration, films, and case discussion.

PSY 654 Marriage Counseling and Therapy: Theory, Practice, and Research. Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in clinical or counseling psychology, or permission of instructor. Surveys major theories of marital interaction and counseling (as distinct from family counseling). Students perform assessment batteries and interviews and practice selected techniques of marital counseling. Participation in a research project, either library, field, or experimental research, is required.

PSY 655 Community Interventions: Development, Implementation, and Evaluation. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Provides an understanding of the concepts community, prevention, and promotion and how interventions that adopt such a perspective differ from traditional psychotherapeutic interventions in their goals and targets. Explores how to critically evaluate research related to community and preventive interventions. Emphasizes consideration of issues in designing, implementing, and evaluating community intervention projects. Provides opportunities to conduct part of the intervention in a community setting.

PSY 656 Structured Training Groups. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Permission of instructor. This course presents an introduction to the historical roots and basic assumptions of group training methods. The specific focus is on those structured, behavioral interventions that are designed to be time limited and emphasize staff development or training needs of clients. Needs assessment, screening, program development and evaluation, consultation methods, and ethics are included as topics. Leadership styles and the composition of training grant proposals are developed and critiqued in the laboratory/experiential component of this course.

PSY 659 Seminar in Consultation Psychology. Semester course; 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Explores theory and practice of psychological consultation using case materials, readings, and individualized projects. Covers conceptual models and role choices available to the consulting psychologist, common phases, principles, and practices found in the consultation process and program evaluation and consultation research methods and issues.

PSY 660 Health Psychology. Semester course; 3 lecture hours. 3 credits. Prerequisites: PSY 629 and graduate standing in psychology, or permission of instructor. Provides an overview of research in and applications of the principles of behavioral psychology with respect to the fields of medicine, health maintenance, and illness. Emphasizes the integration of theoretical research and applied issues in these areas. Surveys major topics in behavioral medicine, including psychophysiological disorders, compliance and adherence with health care regimens, psychological adjustment to illness and pain, behavioral dentistry, pediatric psychology, cardiovascular risk reduction, eating and sleeping disorders, behavioral pharmacology, biofeedback. Explores roles of psychologists.

PSY 665 Psychodynamic Approaches to Psychological Treatment. Semester course; 3 credits. Prerequisite: Permission of instructor. Examines basic principles in conceptualizing and treating clients from a psychodynamic perspective. Theoretical and clinical readings and case materials are used as a basis for an in-depth analysis of psychodynamic theories and practices within a seminar format.

PSY 666 Crisis Intervention: Theory, Research, and Practice. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Review of the development of the concept of psychological crisis and of intervention programs in a range of areas such as sexual assault, natural disasters, telephone hotlines, and medical emergencies. Relevant theory and data from community psychology, laboratory and applied research, sociology, and psychiatry will be considered.

PSY 667 Behavior Therapy. Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing in psychology and permission of instructor. Emphasizes group and individual approaches to the following general areas: observational techniques; counterconditioning and extinction procedures; techniques of positive and negative control; self-control procedures; use of modeling and role playing as change techniques; behavioral feedback and cuing procedures.

PSY 668 Interpersonal Psychotherapy: Social Psychological Analysis. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Analysis of counseling and psychotherapy as interpersonal influence processes. Applications of social psychological theories and research to the process of therapeutic change; identification of key aspects of the change process and of how these aspects are embodied in current approaches and techniques of counseling and psychotherapy. Emphasis on experimental methods of studying change processes.

PSY 669 Interpersonal Psychotherapy: Communication Analysis. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Permission of instructor. Theory and research in nonverbal communication. Communication theories of psychotherapy and a communication analysis of key concepts in psychotherapy.

PSY 670 Seminar in Gestalt Therapy. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Philosophical basis, historical background, theoretical formulation, techniques, and application of Gestalt therapy. Students will have the opportunity to practice and observe the techniques.

PSY 671 Readings and Research. Semester course; 1-3 credits. May be repeated for a maximum of nine credits. Prerequisite: Written permission of instructor. Individual study leading to the investigation of a particular problem in a systematic fashion under the supervision of a member of the faculty.

PSY 675 Ethical Principles of Psychology. Semester course; 2 lecture hours. 2 credits. A discussion of some of the current problems of interest to psychologists. Particular emphasis on the Ethical Principles of Psychology, and the dilemmas encountered in the teaching, research, and applied practice of psychology.

PSY 677 Minority Issues in Mental Health. Semester course; 3 lecture-seminar hours. 3 credits. Prerequisite: Graduate standing in psychology or permission of instructor. Presents an overview of issues pertaining to the mental health of racial/ethnic groups (VREG) in the United States (i.e., African-Americans, Hispanics, Asian-Americans and Native Americans). Topic areas include research and psychological theories, assessment, diagnosis, ethnic identity acculturation, service utilization, the family, psychotherapy and training issues.

PSY 690 Research Practicum. Semester course; 4 hours per credit. 1-3 credits. Available to graduate students in the psychology department with approval by their program committee. Provides the graduate student in psychology the opportunity to design and apply research skills under close faculty supervision. Involves research projects that progressively become more sophisticated as students increase their research skills.

PSY 691 Special Topics. Semester course; 3 lecture-seminar hours. 3 credits. May be repeated for credit. Prerequisite: Permission of instructor. Theory, research, and techniques in specialized topics of current interest are presented.

PSY 693 Counseling Practicum. Semester course; one-half day per credit. 1-3 credits. May be repeated for a maximum of twelve credits. Available only to graduate students in counseling psychology approved

by the counseling program committee. A series of training experiences designed to facilitate progressively greater degrees of skill development in counseling psychology.

PSY 694 Clinical Practicum. Semester course; one-half day per credit. 1-3 credits. May be repeated for a maximum of twelve credits. Available only to graduate students in clinical psychology approved by the clinical program committee. The graduate student in clinical psychology is given an opportunity to apply and practice interviews and diagnostic and therapeutic skills with clients requiring psychological services. Careful supervision and evaluation of the student is provided. The practicum may be located at a clinic on campus or in a hospital or other agency off campus.

PSY 695 Practicum in Clinical or Counseling Supervision. Semester course; 4 supervisory hours. 2 credits. May be repeated for a maximum of six credits. Credits earned do not count as course credits toward the degree. Prerequisites: Permission of instructor, enrollment in graduate program in clinical or counseling psychology, completion of 12 hours of Clinical (PSY 694) or Counseling (PSY 693) Practicum. This course is an opportunity to develop, apply, and practice psychotherapy supervision skills under the direct supervision of clinical or counseling faculty members.

PSY 696 Internship. No credit. Prerequisite: Approval of the director of the program involved. The internship is one-year, full-time assignment, under supervision, to an agency approved by the student's program committee.

PSY 795 Practicum in the Teaching of College Psychology. Semester course; 3 credits. May be repeated. Prerequisites: Appointment as a graduate teaching assistant in psychology or permission of instructor. Students develop skills in the design and conduct of undergraduate courses in psychology through observation and supervised experiences; acquaints students with university, college, and department policies and resources in support of instruction; familiarizes students with disciplinary resources; assists students in evaluating personal strengths and weaknesses.

PSY 798 MS Thesis. 1-6 credits. May be repeated.

PSY 898 Doctoral Dissertation. 1-12 credits. May be repeated.

Public Policy and Administration

See Part III of this *Bulletin* for information on the PhD in Public Policy and Administration.

Department of Sociology and Anthropology

Bromley, David *Professor* PhD, Duke University; deviance, social movements, sociology of religion.
 Creighton-Zollar, Ann *Associate Professor* PhD, University of Illinois, Chicago; minorities and ethnic relations.
 Croteau, David *Assistant Professor* PhD, Boston College; class and inequality, political sociology, social movements.
 Franks, David D. *Professor* PhD, University of Minnesota; social psychology, sociology of mental health.
 Henry, Neil W. *Associate Professor* PhD, Columbia University; social statistics, mathematical models.
 Honnold, Julie A. *Associate Professor* PhD, University of Denver; environmental sociology, sociology of the family.
 Knipe, Edward *Associate Professor* PhD, University of Kentucky; urban anthropology, anthropological film, technology and social organization.
 Lyng, Stephen *Associate Professor* PhD, University of Texas; medical sociology, work and occupations, theory.
 Marolla, Joseph A. *Associate Professor and Chair* PhD, University of Denver; social psychology, sociology of education.
 McGrath, John H. *Professor* PhD, Rutgers University; juvenile delinquency, deviance, medical sociology.
 Mouer, L. Daniel *Associate Professor* PhD, University of Pittsburgh; culture history, historical archeology, ethnohistory.

Nelson, Lynn D. *Professor* PhD, Ohio State University; environmental sociology, Russian society, comparative politics.
 Palen, J. John *Professor* PhD, University of Wisconsin-Madison; urban sociology and demography.
 Scully, Diana H. *Professor* PhD, University of Illinois, Chicago; sociology of medicine, sex roles, sexual violence.
 Turner, Christina *Assistant Professor* PhD, Tulane University; economic anthropology, Latin America, world development and social relations.
 Williams, J. Sherwood *Professor* PhD, Washington State University; research methods and behavioral sociology.

The Department of Sociology and Anthropology offers programs leading to the degree of Master of Science and the Certificate of Applied Social Research. The goal of the graduate program in sociology is to facilitate the development of theoretical, methodological, and substantive competence appropriate for students' interests and career goals. In keeping with VCU's role as an urban institution, the program focuses on the study of urban social problems, policy alternatives, and strategies for change.

Admission Requirements

In addition to the general requirements for admission to graduate programs in the School of Graduate Studies (Part I of this *Bulletin*) and in the College of Humanities and Sciences, the following requirements represent the minimum acceptable standards for admission:

- Applicants must submit a transcript of their undergraduate course work and the results of their GRE in general aptitude (quantitative, analytical, and verbal).
- Admission priority is given to students with an undergraduate grade-point average of 3.0 or higher on a 4-point scale. Students with grade-point averages below 3.0 will be evaluated by the graduate coordinator and members of the graduate faculty on the basis of the GRE scores, recommendations from references, and other data submitted by applicants.
- To be admitted as a regular graduate student, applicants should have completed 24 semester hours in the social sciences (including history), with at least 12 credits in sociology.

Undergraduate work in sociology should include a survey of sociological theory, research methods, and statistics. Students who otherwise are qualified for admission but lack this background may be admitted provisionally, with the stipulation that they may be requested to make up any deficiencies specified by the graduate coordinator. Nondegree or "special" students must apply for regular student status after completing six sociology graduate credits.

Because of the diversity in different institutions of higher education, students trained abroad may be judged on an individual basis. Criteria on which this judgment is based include the reputation of the foreign university, the student's academic record, proficiency in English, and recommendations from professors. VCU requires that foreign students demonstrate guarantees of financial support.

A limited number of assistantships are available for qualified applicants. Applicants for assistantships

should have their files complete by February 15. Individuals not applying for assistantships should file their applications for graduate study as early as possible to permit adequate review and to ensure consideration. Applications that reach VCU after July 1 for the fall semester and after November 15 for the spring semester may not be processed in time for registration.

Degree Requirements

Two options are available for students pursuing a master's degree in sociology. Students must receive approval from the graduate student coordinator before choosing either option.

Thesis option. 36 hours of graduate course work must be completed including the following core courses: SOC 502 Contemporary Sociological Theory, SOC 601 Advanced Methods of Social Research, SOC 602 Applications of Advanced Research Methods, and SOC 608/STA 608 Statistics for Social Research. A master's thesis will be developed under the guidance of the thesis committee (three faculty members including a thesis adviser) and must be defended publicly. The student may present up to six thesis credits for graduation. Up to six credits of independent study may be presented, as well as six credits outside the department.

Concentration option. Requirements are identical to the thesis option except for the following: (a) Students must complete 36 semester hours of course work; (b) Students must declare a concentration option prior to completing their 28th hour of course work; (c) Students, in consultation with their advisers, will select an advisory committee (three faculty members including the adviser) which will develop an area of concentration consisting of 15 credits. Six of these credits may be taken prior to committee approval of the concentration area. Of the 15 hours, students may take up to nine credits outside the department, or six credits of independent study, provided the advisory committee approves. At no time should the combination of independent study hours and courses taken outside the department exceed nine hours. Students will receive certification of the concentration area by having it listed on their transcripts; (d) Students will submit to their advisory committee a "concentration area paper" which must demonstrate competence in the subject matter by reviewing literature and discussing prominent issues. Students must enroll for one credit of independent study while working on the concentration area paper. (A maximum of one credit of independent study for the purpose of writing the paper may be applied to the degree.)

For all candidates, an overall grade-point average of at least 3.0 ("B") must be maintained in order to receive a degree. A student who does not maintain a 3.0 average may be dropped from the master's program at any time by the graduate program director. A review of all first year graduate students will be conducted at the end of their second semester by the graduate program director and three appointed faculty. The purpose of this review will be to assess all first year students on their satisfactory/unsatisfactory progress toward the master's degree.

Graduate Certificate Program in Applied Social Research

The Certificate Program is designed (1) to enable practitioners to acquire additional knowledge and skills in applied social research without necessarily pursuing a graduate degree and (2) provide marketable job/career skills for graduate degree-seeking students in sociology as well as other graduate programs. Because the proposed certificate program involves a limited number of credit hours and coordinates with the type of statistics and methods courses offered in a number of graduate degree programs, it may be pursued simultaneously with such programs as sociology, social work, public administration, social policy, and urban services. At the same time, individuals seeking more limited, specialized training may pursue the certificate independently.

Program Admission and Matriculation Requirements

Students possessing a BA or BS degree and beginning level skills in statistics/research methods are eligible for admission into the certificate program. Relevant course or research experience will be considered in evaluating admission and substitution of courses. Equivalency tests are available for required courses in statistics and methods. No more than six hours of substitution or equivalency credit will be granted. An overall grade-point average of 3.0 is required for award of the certificate, and no more than one grade of "C" may be earned in the certificate program curriculum.

Applied Social Research Certificate Curriculum

A total of 19 hours are required to earn the Applied Social Research Certificate. Four courses (12 credits) in statistics and research methods are required. In addition, two internship courses (4 credits), which offer the opportunity for involvement in all phases of ongoing research projects, are required. One course (3 credits) may be elected to develop more specialized types of research skills.

Required Courses (16 credits)

SOC 601 Advanced Methods of Social Research
(Prerequisites: SOC 320 and SOC/STA 508 or equivalent)
SOC 602 Applications of Advanced Research Methods
(Prerequisites: SOC 601 and SOC/STA 608)
SOC 605/PAD 605 Survey Research Methods
(Prerequisites: SOC 601, SOC602, and SOC/STA 608, or permission of instructor)
SOC 608/STA 608 Advanced Statistical Methods
(Prerequisite: SOC/STA 508 or permission of instructor)
SOC 693 Applied Research Internship I
SOC 693 Applied Research Internship II

Elective Courses (3 credits)

SOC 603 Seminar in Population Studies
SOC 623 Causal Analysis
SPW 729 Program Evaluation for Social Welfare Practice
SLW 606 Social Welfare Policy, Community Planning and Organizational Practice II
SLW 656 Social Planning II
BUS 673 Marketing Research

Graduate Courses in Sociology (SOC)

SOC 500 Advanced Principles of Sociology. Semester course; 3 lecture hours. 3 credits. A comprehensive analysis of the concepts and techniques useful for understanding society and culture as well as the social processes and structures operant within these spheres.

SOC 501 The Foundations of Sociological Theory. Semester course; 3 lecture hours. 3 credits. The foundations of theoretical explanation of the social world is addressed from an historical and philosophical perspective. The emergence of contemporary sociological theory in the nineteenth and twentieth centuries is reviewed.

SOC 502 Contemporary Sociological Theory. Semester course; 3 lecture hours. 3 credits. A critical assessment is given of such contemporary theoretical orientations as functionalism, conflict theory, exchange theory, symbolic interactionism, and phenomenology.

SOC 508/STA 508 Introduction to Social Statistics. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduction to statistical methods applicable in a variety of settings, with emphasis on nonexperimental data. Data description and analysis including chi-square and t-tests, using a statistical computing package. Not applicable toward MS degrees in mathematical sciences, sociology, or computer science.

SOC 524 Aging and the Minority Community. Semester course; 3 lecture hours. 3 credits. An analysis of the relationship between the aging process and American minority communities. In addition to the sociological factors, the course will examine demographic, physiological, and psychological aspects of minority aging. Attention will also focus on dominant social problems and federal policies toward the aged.

SOC 601 Advanced Methods of Social Research. Semester course; 3 lecture hours. 3 credits. Prerequisites: SOC 320 and SOC/STA 508 or equivalent. Research as a systematic process involving formulation of the problem, design of the research, field operation, the processing and analysis of data, and preparation of the research report. Also considered are critical analyses of current methods, administration of research projects, and the significance of research to social action.

SOC 602 Applications of Advanced Research Methods. Semester course; 3 lecture and conference hours. 3 credits. Prerequisites: SOC 601, and 608. The methods of developing a research project will be analyzed from the initial problem identification, literature review, theoretical framework, through research design, and procedures.

SOC 603 Seminar in Population Studies. Semester course; 3 lecture hours. 3 credits. Analysis of fertility, mortality, and migration from a sociodemographic perspective. Special attention will be paid to sociological determinants of demographic processes and their interrelationships.

SOC 604 Sociology of Work in Industry. Semester course; 3 lecture hours. 3 credits. Analyses of work relations and the social structures and mechanisms that govern and arise out of them and examination of the social problems that are inherent in the characteristics that make a society an industrial society.

SOC 605/PAD 605 Survey Research Methods. Semester course; 3 lecture hours. 3 credits. Prerequisites: SOC 601, SOC 602, and SOC/STA 608 or permission of instructor. Examines all major areas of survey research methodology including sampling, design, data collection methods, questionnaire design, data analysis, and data processing. Addresses problems specific to survey research, such as telephone interviewing, constructing large representative samples, and nonresponse rates.

SOC 607 Seminar in Racial and Ethnic Relations in America. Semester course; 3 lecture hours. 3 credits. A study of intergroup relations in such areas as busing and school desegregation, racism, minority and athletics, the emergence of white ethnic groups in the political systems, and the position of minorities in legal, economic, and medical institutions.

SOC 608/STA 608 Statistics for Social Research. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: SOC/STA 508

or permission of instructor. Statistical methods applied in social research. Topics include analysis of variance, correlation and regression, including stepwise methods, and the analysis of discrete data. Study of a statistical package, emphasizing manipulation of survey data sets. Not applicable toward MS degree in mathematical sciences or computer science.

SOC 609 Seminar in the Family. Semester course; 3 lecture hours. 3 credits. Analysis of contemporary family life with an emphasis on the influence of social change. Consideration of current family crises and problems.

SOC 610 Complex Organizations. Semester course; 3 lecture hours. 3 credits. A study of complex organizations in society with emphasis on the determinants and effects of organizational structure and process.

SOC 611 Studies in the Community. Semester course; 3 lecture hours. 3 credits. The organization of the community with emphasis on major trends in urban development and growth. The interdependence of political, social, and economic geographic units. The need for cooperative planning and control.

SOC 612 Seminar in the Sociology of Deviant Behavior. Semester course; 3 lecture hours. 3 credits. The nature and functions of deviance. Theories and problems of social control.

SOC 613 Social Stratification. Semester course; 3 lecture hours. 3 credits. An in-depth analysis of status differentials in society (e.g., social class, prestige, and power).

SOC 614 Seminar in the Sociology of Education. Semester course; 3 lecture hours. A sociological analysis of education as a social institution with an emphasis on methodological issues and policy implications.

SOC 615 Seminar in Mass Communications. Semester course; 3 lecture hours. 3 credits. Some theoretical background in sociology is recommended. A sociological analysis of contemporary media and their interrelationships with social systems, media, and national development. Special emphasis on media as instruments of social and cultural change.

SOC 620/CRJ 620 Seminar in Criminology. Semester course; 3 lecture hours. 3 credits. Examination and analysis of social, psychological, and economic theories and correlates of criminal behavior. Typologies of offenders.

SOC 622 Theory Construction. Semester course; 3 lecture hours. 3 credits. A consideration of recent social theorists in which emphasis is placed on the logic of theory construction.

SOC 623 Causal Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisites: SOC 602 and SOC/STA 608 or equivalent. An examination of the utility of causal reasoning in the social sciences and an introduction to causal modeling. Topics studied will include the development of theoretical linkages, recursive and nonrecursive path estimation, causal thinking and theoretical refinement, and policy analysis and system dynamics.

SOC 624/GTY 624 Community and Community Services for the Elderly. 3 credits. A conceptual/theoretical overview of community focusing on the ecological, psychological, and social dimensions of community and on communities of the aged.

SOC 625 Urban Sociology. Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing. A detailed analysis and examination of the social and ecological structures and processes of the modern city with primary emphasis on the macro-level organization of urban life.

SOC 630 Social Psychology. Semester course; 3 lecture hours. 3 credits. Discussion and investigation of selected social psychological issues in sociology, as well as traditional and innovative methodology applied to these issues.

SOC 640 Seminar in Political Sociology. Semester course; 3 lecture hours. 3 credits. Analysis of structures and processes of political organization. Examination of the creation and management of power, diffusion

and regulation of conflict, and the politics of modernization and bureaucratization.

SOC 645 The Sociology of Health and Illness. Semester course; 3 lecture hours. 3 credits. An examination of sociocultural factors in health and illness and the influence of social factors on recovery and rehabilitation. Special attention will be paid to the methodology found in current studies.

SOC 646 Seminar in the Sociology of Mental Health and Disorder. Semester course; 3 lecture hours. 3 credits. Seminar in social organizational causes of clinical depression, schizophrenia, neurosis, and personality disorders. Focus is on prevention through social engineering and social policy. Impact of social change, sex roles, and socialization processes on rates of mental disorder emphasized.

SOC 650 Theories of Social and Institutional Change. Semester course; 3 lecture hours. 3 credits. A study of social change with emphasis on institutional settings. Topics examined include alternative theoretical perspectives on change, structural sources of change, approaches to planned change, and the role and function of change agents.

SOC 660 Seminar in the Sociology of Women. Semester course; 3 lecture hours. 3 credits. An analysis of the sociological basis for the roles and status of women across cultures and the social forces that create and maintain gender hierarchy.

SOC 690 Practicum in the Teaching of College Sociology. Semester course; 1 credit. Enables students to develop skills in the design and conduct of undergraduate courses in sociology through observation and supervised experiences. Credits not applicable toward degree in Sociology.

SOC 691 Special Topics. Semester course; 3 lecture hours. 3 credits. Seminars on current specialized areas of sociological and anthropological interest.

SOC 692 Independent Study. Semester course; 1-3 credits. Prerequisites: Permission of an instructor and the Graduate Program Committee. A maximum of six credits may be submitted toward the master's degree.

SOC 693 Applied Research Internship. Semester course; 1 lecture and 1 laboratory hour. 2 credits. May be repeated for credit one time. Provides graduate students with direct experiences in applied social research. Requires students to attend seminars to provide an academic framework for students' participation in the research process. Utilizes laboratory work to provide a variety of experiences in the various aspects of research. Graded Pass/Fail.

SOC 698 MS Thesis. 1-6 credits. May be repeated.

Department of Urban Studies and Planning

- Accordino, John *Associate Professor* PhD, Massachusetts Institute of Technology; economic development and finance, commercial revitalization; strategic planning.
- Brooks, Michael *Professor* PhD, University of North Carolina; planning theory, political aspects of planning, planning practice.
- Garcia, Margot W. *Associate Professor* PhD, University of Arizona; environmental planning, water policy, citizen participation, planning theory.
- Gulak, Morton B. *Associate Professor* PhD, University of Pennsylvania; architecture and urban design, urban revitalization and physical planning.
- Johnson, Gary *Associate Professor and Chair* DED, Texas A and M University; transportation, housing, social policy.
- Moeser, John V. *Professor* PhD, George Washington University; urban politics and public policy.
- Rugg, Robert D. *Professor* PhD, University of Ottawa; geographic information systems, planning methods.
- Schulz, Peter *Associate Professor* PhD, University of Illinois; land use, remote sensing, environmental management.
- Wu, Weiping *Assistant Professor* PhD, Rutgers University; urban land and comprehensive planning, comparative urban development and policy, migration and urbanization.

The graduate program in urban and regional planning is accredited by the Planning Accreditation Board and provides professional grounding in the theory and methodologies of planning through a curriculum that balances classroom and field experience.

The Master of Urban and Regional Planning (MURP) is a two-year degree program requiring 48 semester hours of class work. Each student must complete an Internship with a planning agency or organization. A core of required courses, totaling 30 semester hours, includes:

- Introduction to Planning
- Planning Information Systems
- Foundations for Development Planning
- Demographic Analysis in Planning
- Theories and Problems in Planning
- Legal and Legislative Foundations of Planning
 - Planning Studio I
- Planning Studio II or Thesis
 - Planning Practicum Seminar

In selecting their elective courses, students may (1) opt for exposure to a wide array of planning-related subject matter (the generalist or comprehensive approach); (2) select one of the areas of specialization defined by the Department's faculty (see the list that follows); or (3) develop an individualized program, focusing on one or more self-defined topics. Regardless of the approach selected, students are expected to meet regularly with their faculty advisers for discussion of their courses of study in relation to their career plans.

Faculty-defined areas of specialization offered by the Department include:

- Urban Revitalization and Historic Preservation;
- Housing and Neighborhood Planning;
- Economic Development;
- Physical Planning; and
- Environmental Planning.

Dual Degree Program in Law and Urban and Regional Planning

A cooperative arrangement with the T. C. Williams Law School makes it possible for students to receive a law degree (JD) and an urban and regional planning degree (MURP) in four years rather than the five years ordinarily required.

The purpose of the program is to integrate the two professional curricula and to provide the expertise necessary to apply legal analytical skills and planning methods and analysis to urban and regional policy issues and problems. The dual degree program is designed to equip graduates for a variety of professional positions, including staff for legislative committees and government agencies and commissions, government legal staff, private consulting, neighborhood advocacy, directorships of planning and related agencies, and executive aides to elected officials.

Interested students must apply separately for and be admitted to the T. C. Williams School of Law, University of Richmond, and the Department of Urban Studies and Planning, VCU. Students will spend their entire first

year in either the School of Law or the Department of Urban Studies and Planning, and their second year in the program not selected in the first year. Twelve credit hours of the planning program will be applied toward meeting the graduation requirements of the School of Law, and 12 credit hours in the School of Law will be applied toward meeting requirements of the Department of Urban Studies and Planning.

Upon admission to the dual degree program, every student will be assigned an adviser in each program who will assist in planning the course of studies that will include all of the required courses in each program plus such elective courses as will best serve the interests of the individual student.

Students deciding not to complete the dual degree program must meet all of the regular requirements of either the JD or MURP to receive the degree of their choice.

Certificate Program in Planning Information Systems (CPI)

The Certificate in Planning Information Systems (CPI) is a program to provide specialized cross-disciplinary training for professionals with either (a) information systems or (b) planning backgrounds, who wish to increase their knowledge and skills in the application of computer methods to urban and regional planning problems. The CPI program consists of nine hours of courses in Information Systems and nine hours in Urban Studies and Planning.

Admission requirements are the same as for the Master of Urban and Regional Planning (see "Admission").

Certificate Program in Urban Revitalization

The Urban Revitalization Certificate Program requires 18 semester hours of course work and can be completed in one academic year. A sequence of introductory courses exposes students to the planning process, theories of urban land use, adaptive use of buildings and urban design. Course work in the area of urban revitalization is a blend of instruction in planning, urban design, business, and economics.

Admission requirements include an official application; a letter of intent describing objectives in applying for the certificate; three letters of recommendation; two copies of an official transcript from an accredited institution showing undergraduate work and successful completion of an appropriate degree program with a minimum grade-point average of 2.7 (out of 4.0) in the last 60 semester hours of undergraduate study; demonstration of professional experience in planning or work related to the certificate program. The experience requirement may be waived for candidates who demonstrate professional promise. All credits earned are transferable to the Master of Urban and Regional Planning degree program.

Admission

Beyond the general graduate school admissions standards the following apply:

- Students must have a minimum of a 2.7 grade-point average (on a 4.0 scale) in their last 60 semester hours of undergraduate work. In addition, a grade-point average of not less than 3.0 must have been maintained in their undergraduate majors. Finally, applicants are expected to receive satisfactory scores on each of the categories in the GRE or on the LSAT examination.
- Students not meeting these requirements may be admitted to the program on a provisional basis. The provisional period shall consist of the first nine to 12 hours of designated graduate work in which all grades must be no less than B. Provisional admission does not constitute a waiver of the requirement related to a standardized test.
- Generally, at least two of the three letters of reference should come from former faculty.
- The latest dates for submitting application materials are April 15 to be considered for the following September and November 15 for the following January. However, all candidates, especially those applying for financial aid, are urged to apply before March 1 in order to have the best chance of being accepted or receiving an award of financial assistance for the following academic year. Applicants who submit materials by March 1 will be notified of the decision of the Admissions Committee by mid-April.

Part-Time Students

Since the Department schedules several of its courses in the late afternoon or evening, the program accommodates both full- and part-time students. Students may also take advantage of courses offered in the summer. Thus it is possible for a part-time student taking six credits hours per semester to finish the master's degree in four years or less; some of these credit hours, however, will necessitate taking day courses.

Nondegree-Seeking Students

Nondegree-seeking students must have an undergraduate degree from an accredited institution and the written approval of the instructor prior to registering for any graduate-level course. No more than six credit hours can be taken by nondegree-seeking students without authorization from the department.

Transfer Credit

Upon acceptance to the program, up to six hours of graduate credits with grades of "B" or above may be applied to the degree if such work is considered relevant by the Admissions Committee.

Financial Aid

VCU maintains a Financial Aid Office which is discussed in Part I of this *Bulletin*.

There is also a limited amount of financial aid provided by the Department of Urban Studies and Planning.

Application forms are available from the department for the following forms of aid:

Graduate Assistant Positions. Duties involve helping with the instruction of courses. The level of support varies according to the work level, financial need, and scholarship.

Tuition Scholarships. There are a limited number of tuition scholarships for full-time students.

Research Assistant Positions. The stipend and number of positions depend upon the level of sponsored research carried out by the department in each year.

T. Edward Temple Memorial Scholarship Award. This award of approximately \$500 a year is given to an outstanding graduate student.

Requirements for the Degree of Master of Urban and Regional Planning

1. Students must complete a minimum of 48 graduate credits, plus an internship.
A core of required courses accounts for 30 of these credits; the remaining 18 are electives. An overall grade-point average of at least 3.0 (on a 4.0 scale) is required for receipt of the MURP degree.
2. Students must obtain a grade of "B" or better in USP 762 Planning Studio II, or in USP 764 Thesis or Projects, in order to be eligible for receipt of the MURP degree.

Internship and Placement

The internship is designed to give students practical experience in planning related activities in an institutional context. Normally, the internship is taken during the summer between the first and second year. Many opportunities for internship positions, as well as part- and full-time jobs in planning at all levels of government, exist within the Richmond area. Upon request, the internship requirement may be waived for students with substantial professional experience.

Additional Information

Further information may be obtained by writing to the chair of the Department of Urban Studies and Planning, Virginia Commonwealth University, Richmond, VA 23284-2008, (804) 828-2489.

Curriculum

First Year, First Semester	Credits
USP 610 Introduction to Planning	3
USP 623 Planning Information Systems	3
USP 662 Foundations for Development Planning	3
Elective	3

First Year, Second Semester	Credits
USP 624 Demographic Analysis in Planning	3
USP 632 Theories and Problems in Planning	3
USP 635 Legal and Legislative Foundations of Planning	3
Elective	3

Internship

Normally taken between the first and second year of course work, but other options are available. Internship must be taken prior to, or concurrent with, USP 794 Planning Practicum Seminar.

Second Year, First Semester	Credits
USP 761 Planning Studio I	3
Electives	9
Second Year, Second Semester	Credits
USP 762 Planning Studio II	6
USP 794 Planning Practicum Seminar	3
Electives	3
	48

Graduate Courses in Urban and Regional Planning (USP)

USP 517 Historic Preservation in Planning. Semester course; 3 lecture hours. 3 credits. The course surveys the process of historic preservation that includes the evaluation of sites, identification of architectural styles, the adaptive use of sites and structures, and the various sources available for implementing preservation proposals in government or the private sector. Preservation is considered as a tool in the planning process; and its application to neighborhoods, downtowns, and other city districts is considered.

USP 521/GEO 521 Cartography and Air Photo Interpretation. Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to the preparation and interpretation of data in cartographic form. Included is the methodology of map making, introductory photogrammetry, object recognition, stereograms, area measurement, and mapping from aerial photos.

USP 525 Site Planning and Graphics. Semester course; 3 lecture hours. 3 credits. Addresses the environmental impacts and capacity of environmental systems in relation to the site requirements of various urban and rural situations. Introduces the use of graphics as an aid in presenting and analyzing planning and design ideas, maps and plans.

USP 541 Urban Public Policy-Making Processes. Semester course; 3 lecture hours. 3 credits. Discusses the politics of urban life. Examines the physical, demographic and economic environments in which conflict resolution occurs, as well as the actors on the local, state, and federal levels that participate in the political process.

USP 552 Urban Transportation Systems. Semester course; 3 lecture hours. 3 credits. An examination of urban requirements for mobility, transportation systems, problems of traffic, mass transit, and new concepts for moving people and goods.

USP 605 Urban Planning History. Semester course; 3 lecture hours. 3 credits. Discusses the historical context of planning solutions to contemporary urban problems by examining the rich planning tradition since the mid-nineteenth century in the U.S. Significant plans, people and movements in the history of planning are discussed in relation to the evolving traditions of the profession.

USP 610 Introduction to Planning. Semester course; 3 lecture hours. 3 credits. Introduces students to the planning profession. Provides an overview of the urban system and the history of planning, and covers the basics of comprehensive planning, including the context, process, agents, methods, components, and implementation. Prepares students for taking more specialized planning courses by introducing the sub-areas of planning, such as transportation planning, land use planning, environmental planning, housing, and urban design.

USP 611 Principles of Urban Design. Semester course; 3 lecture hours. 3 credits. Principles of urban design at the micro- and macro-scale. Expression of planning objectives in physical design, with emphasis on the relationship between urban design at various scales and the needs of individuals and groups.

USP 621/GEO 621 Introduction to Geographic Information Systems (GIS). Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental planning. Includes GIS data base structures, spatial analysis, GIS data standards, public domain software and data resources, and principles of cartographic design. Lab

exercises in the use of GIS software tools. Restriction: Non-MURP students only.

USP 623 Planning Information Systems. Semester course; 2 lectures and 2 laboratory hours. 3 credits. Introduction to data sources and database management for planning, including use of geographic information systems (GIS) in planning. An overview of database structures, public domain software and data resources, descriptive statistical analysis, graphic presentation of data, and principles of cartographic design. Laboratory exercises using GIS software and public domain data to describe communities and identify planning issues.

USP 624 Demographic Analysis in Planning. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: USP 623. Applies parametric and nonparametric analysis to Census and other public domain data. Employs population projection techniques and survey research methods to analyze community planning needs.

USP 626/GEO 626 GIS Applications for Planners. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: USP 621 or USP 623. Examines in detail Geographic Information Systems.

USP 628 Land Use Planning. Semester course; 3 lecture hours. 3 credits. Introduces students to the context, substance, practical skills, and implementation of land use planning. Covers such topics as land capacity, land use system and design, land use controls, state and regional growth management, resource land preservation, rural growth management, urban containment, and facility planning.

USP 630/PAD 630 Strategic Planning and Management in the Public Sector. 3 lecture hours. 3 credits. Explores the benefits and limitations of strategic planning and management in the public sector, examines approaches to strategic management, especially in terms of the role and behavior of top management, and provides an introduction to the analytic and process methods used in strategic planning and management.

USP 632 Theories and Problems in Planning. Semester course; 3 lecture hours. 3 credits. Examines major traditions in the theory of planning in the context of actual planning processes and outcomes. Explores in depth the political, economic, and institutional constraints to effective planning and plan implementation. Discusses the planners' ethical dilemmas.

USP 635 Legal and Legislative Foundations of Planning. Semester course; 3 lecture hours. 3 credits. Delineates the legal and legislative basis for planning at local, state, and federal levels. Judicial precedents in land use controls and environmental protection are investigated, including private controls, traditional zoning, administration of zoning ordinances, new flexible zoning concepts, development timing and growth controls, exclusionary land use practices, subdivision controls, and eminent domain regulations for environmentally sensitive areas, and environmental review.

USP 641 Citizen Participation and Negotiation. Semester course; 3 lecture hours. 3 credits. Studying the theory and practice of citizen participation and negotiation, planners learn to work with citizens in a democratic process while practicing respect for differing views.

USP 643 Housing Policy. Semester course; 3 lecture hours. 3 credits. Examines federal, state, and local housing policy. Discusses the issues of affordable housing, homelessness, and the private sector's contribution to housing.

USP 647 Adaptive Reuse of Buildings. Semester course; 3 lecture hours. 3 credits. Describes from a public sector perspective identification for new uses, evaluation of benefits and preparation of implementation proposals for recycling older buildings. Discusses methods used to develop the necessary design guidelines as well as analyze these opportunities that can be a catalyst for urban revitalization.

USP 650 Environmental Planning. Semester course; 3 lecture hours. 3 credits. Examines the impact of urban activities on the natural environment. Discusses federal, state, and local laws and policy governing air, water, waste, noise, and the natural processes of earthquakes, landslides and floods.

USP 652 Environmental Analysis. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisite: USP 650. Familiarizes students with methods to carry out an environmental analysis. Provides a deeper understanding of major environmental issues.

USP 662 Foundations for Development Planning. Semester course; 3 lecture hours. 3 credits. Introduces public planners to the nature and development of the urban economy. Uses case study analysis of an economy's industrial structure, labor market, and other features. Considers the roles of public planners in maintaining a healthy economy.

USP 664 Economic Development Planning and Revitalization. Semester course; 3 lecture hours. 3 credits. Prerequisite: USP 662. Examines the economic development planning and implementation processes through theory and case studies in urban and rural settings. Special topics include economic development institutions and practices, small business development programs, labor force development, community-based development, and sustainable development strategies.

USP 666 Urban Commercial Revitalization. Semester course; 3 lecture hours. 3 credits. Examines renewal of declining commercial areas in cities and towns as tools in the planning process. Discusses and applies through fieldwork, market studies and other analysis methods, strategies for revitalization, public and private project financing and development.

USP 681 International Urban Policy and Planning. Semester course; 3 lecture hours. 3 credits. Offers a comparative analysis of planning practices and policies in both developing and developed countries. Covers such topics as local implications of globalization, regional development strategies, urban governance and management, urban economic policies, sustainable development and urban infrastructure and shelter delivery.

USP 691 Topics in Urban and Regional Planning. Semester course; 1, 2, or 3 credits. Because of the changing subject matter to be treated in this course, permission of the instructor is required. Students will have an opportunity to examine in detail some questions of significance in the field of urban and/or regional planning. See the *Schedule of Classes* for the specific topics to be offered each semester.

USP 761 Planning Studio I. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: All core courses except USP 762 and 794. Involves students as a group in a community-based planning project.

USP 762 Planning Studio II. Semester course; 1 lecture and 10 laboratory hours. 6 credits. Prerequisite: USP 761. Requires individual students to apply theory and methodology gained from the core courses to solve selected planning problems. With the consent of instructor and department chair, USP 764 Thesis or Projects is acceptable substitute.

USP 764 Thesis or Projects. 2-6 credits. Prerequisites: Permission of instructor and appropriate research methods course. Planning, preparation, completion, and presentation of a thesis or project. USP 764 is an acceptable substitute for USP 762 Planning Studio II. Consent of instructor and chair required for this substitution.

USP 794 Planning Practicum Seminar. Semester course; 3 credits. Provides an opportunity for a structured analysis of the student's internship experience. Professional skills are enhanced through lectures, assignments and discussions.

USP 797 Directed Research. 1-3 credits. May be repeated for a maximum of six credits. Prerequisites: Permission of instructor and graduate standing. Independent research into planning problems, issues, and theories.

Additional Graduate Courses in the College of Humanities and Sciences

ANT 551 Anthropology for the Museologist. Semester course; 3 lecture hours. 3 credits. A discussion and investigation of contemporary anthropological themes and questions and identification of how they

can be depicted with museum materials. Students are expected to develop a research design for an exhibit.

FLA 591 Topics in Foreign Languages. Semester course; 1-4 lecture hours. Variable; 1-4 credits. A detailed study of selected topics in one or more of the foreign language or comparative courses offered by the department.

FRE 500 French for Graduate Students. Semester course; 3 lecture hours. 3 credits. This course is designed to prepare graduate students for the reading knowledge examination for higher degrees. (Each graduate department will determine the nature and form of certifying examination.)

FRE 501 French Communication. Semester course; 1-4 lecture hours. 1-4 credits. An intensive study of communication in French. Variable credits; primarily oral, written, and listening skills.

FRE 511 French Civilization. Semester course; 1-4 lecture hours. Variable; 1-4 credits. Prerequisite: Functional fluency in French since the class will be taught in French. A comprehensive study of the civilization and culture of France and its global expressions.

GEO 521/USP 521 Cartography and Air Photo Interpretation. Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to the preparation and interpretation of data in cartographic form. Included is the methodology of map making, introductory photogrammetry, object recognition, stereograms, area measurement, and mapping from aerial photos.

GEO 550 Physical Geography of Virginia. Semester course; 6 field hours. 3 credits. Field course, traversing the varied physical regions of Virginia with emphasis on the climate, terrain, soils, and vegetation of each region and on the transitional zones in between. Human modification of the physical environment and its consequences are also stressed.

GEO 551 Cultural Geography of Virginia. Semester course; 6 field hours. 3 credits. Field course, traversing the various cultural regions of Virginia with emphasis on basic economic activities of each area, the cumulative effect of occupation of the regions, and past and present changes in the cultural landscape.

GEO 621/USP 621 Introduction to Geographic Information Systems (GIS). Semester course; 2 lecture and 2 laboratory hours. 3 credits. An introduction to creating and using geographically referenced databases for urban and environmental planning. Includes GIS data base structures, spatial analysis, GIS data standards, public domain software and data resources, and principles of cartographic design. Lab exercises in the use of GIS software tools. Restriction: Non-MURP students only.

GEO 626/USP 626 GIS Applications for Planners. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: USP 621 or USP 623. Examines in detail Geographic Information Systems.

GEO 680 Geography Workshop. Semester course; 1 lecture hour or 2 field hours per credit. 1-6 credits. Lecture, laboratory, and/or field course; may be repeated with different topics to maximum of nine credits. An intensive study of a particular area or topic in geography. See the *Schedule of Classes* for specific workshops to be offered each semester.

GER 500 German for Graduate Students. Semester course; 3 lecture hours. 3 credits. This course is designed to prepare graduate students for the reading knowledge examination for higher degrees. Each graduate department will determine the nature and form of the certifying examination.

GER 502 German Communication. Semester course; 1-4 lecture hours. Variable; 1-4 credits. An intensive study of communication in German. The content of this course will emphasize primarily oral, written, and listening skills.

GER 512 German Civilization. Semester course; 1-4 lecture hours. Variable; 1-4 credits. Prerequisite: Functional fluency in German since the class will be taught in German. A comprehensive study of the civilization and culture of Germany and its global expressions.

HUS 591 Special Topics. Semester course; Variable; 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.

PHI 521, 522 Aesthetics. Semester courses; 3 lecture hours. 3, 3 credits. A critical survey of aesthetics from antiquity to the twentieth century. First semester: antiquity to the Renaissance; Second semester: the Renaissance to the present. Topics to be considered include the nature of art, aesthetic experience, the aesthetic analysis in the arts of painting, music, architecture, and the motion picture.

PHI 591 Topics in Philosophy. Semester course; variable; 1-4 credits. Prerequisite: Written permission of instructor or graduate standing. A graduate level, in-department study of an individual philosopher; a particular philosophical problem or a narrowly defined period or school. See the *Schedule of Classes* for specific topic to be offered each semester.

PHI 592 Independent Study. Semester course; 1-4 credits. An independent study course to allow graduate students to do research, under the direction of a professor qualified in that field, in an area of major interest.

PHI 601 Principles of Ethics. Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing. An examination of major ethical theories and their application to contemporary issues in medicine, science, and public policy.

PHI 602 Biomedical Ethics. Semester course; 3 lecture hours. 3 credits. An examination of ethical theory and its application to moral problems in medicine and biotechnology.

PHI 635 Philosophy of the Social Sciences. Semester course; 3 lecture hours. 3 credits. A philosophical study of the nature of science and scientific explanation, with emphasis upon the social sciences. Topics include the philosophical analysis of objectivity in the social sciences, theories of human action, and the relation of social sciences to the physical sciences.

PHI 683/PAD 683 Administrative Ethics. Semester course; 2 or 3 hours. 2 or 3 credits. A philosophical investigation into the problems of making ethical decisions, focusing on issues likely to confront the public administrator. Examples of such issues are equity in social services delivery, affirmative action, loyalty to the bureaucracy vs. "whistle blowing," and conflicts of interest between personal and public interest.

PHI 691 Topics in Philosophy. Semester course; variable; 1-4 credits. Prerequisite: Written permission of instructor or graduate standing. A graduate level, in-depth study of an individual philosopher; a particular philosophical problem, or a narrowly defined period or school. See the *Schedule of Classes* for specific topic to be taught each semester.

PHI 692 Independent Study. Semester course; variable; 1-4 credits. Open to graduate students only. An independent study course to allow graduate students to do research, under the direction of a professor qualified in that field, in an area of major interest.

PHI 713/PPA 713 Ethics and Public Policy. Semester course; 3 lecture hours. 3 credits. Doctoral students only. An examination of the main theories of morality and justice. These theories' implications for public policy will be discussed.

POS 553 The Military in Politics. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. The course will examine the pervasive character and growing importance of the military in the governmental and policy-making processes. It will include a study of the history of civil-military relations, and the changing dynamics of the relationship that occurs in response to changes in social and political contexts and as a result of technological changes in the military and warfare.

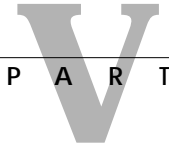
POS 591 Topics in Political Science. Semester course; 3 credits. An in-depth study of a selected topic in political science in a seminar environment. Intended for small groups of students interested in examining issues and problems related to aspects of the political processes.

RST 592 Independent Study. Semester course; 1-4 credits. Open only to graduate students. Determination of the amount of credit and permission of the instructor and department chairman must be procured prior to registration for the course. An independent study course to allow qualified graduate students to do research in an area of major interest.

SPA 503 Spanish Communication. Semester course; 1-4 lecture hours. Variable; 1-4 credits. An intensive study of communication in

Spanish. The content of this course will emphasize primarily oral, written, and listening skills.

SPA 513 Spanish Civilization. Semester course; 1-4 lecture hours. Variable; 1-4 credits. Prerequisite: Functional fluency in Spanish since the class will be taught in Spanish. A comprehensive study of the civilization and culture of Spain and its global expressions.



School of Allied Health Professions

Cecil B. Drain, BSN, MS, NS, PhD
Dean

Dolores G. Clement, BA, MA, MS, DrPH
Associate Dean

Debra A. Ropelewski, BS, MBA
Assistant Dean for Fiscal Affairs

Stephen C. Harvey, BS, MEd
*Assistant Dean for Advancement and
Development*

James L. Hevener, CNE
Director of Information Systems

The School of Allied Health Professions was established on January 1, 1969. A fundamental reason for the establishment of the School of Allied Health Professions was to provide an administrative structure for existing educational programs in allied health disciplines and to direct the development of new programs in response to the growing need for allied health manpower. At the outset, the school incorporated existing educational programs for hospital administration, medical technology, physical therapy, and radiologic technology. A program for nurse anesthesia was inaugurated as a separate department in 1969; an existing educational program in occupational therapy located on the Academic Campus was transferred administratively to the School of Allied Health Professions in 1970; also in 1970, a teaching program in patient counseling formerly based within MCV Hospitals was integrated with the school. A doctoral program in health services, organization, and research, the first for the School of Allied Health Professions, was introduced in 1982. In 1985, the existing Department of Gerontology was transferred administratively to the School of Allied Health Professions. In June 1988, an executive master's program in health administration was introduced. An entry-level master's degree professional program in physical therapy was initiated for students matriculating in August 1989. On July 1, 1994 the Department of Rehabilitation Counseling was transferred from the School of Community and Public Affairs to the School of Allied Health Professions.

A new distance-learning, interdisciplinary doctoral program – the PhD in Health Related Sciences – will begin accepting students for the Fall, 1998 semester. This program was developed in response to the national demand for doctorally prepared faculty and practitioners in the allied health professions.

Programs

Graduate programs in this school and the degrees conferred on their graduates are:

School of Allied Health Professions
PhD in Health Related Sciences

Department of Gerontology
Master of Science

Department of Health Administration
Master of Health Administration
Master in Health Administration and Juris Doctor
degrees cosponsored by the T. C. Williams School of
Law at the University of Richmond
Master of Science in Health Administration (Health
Administration Executive Program)
PhD in health services organization and research

Department of Clinical Laboratory Sciences
(formerly Medical Technology)
Master of Science

Department of Nurse Anesthesia
Master of Science in Nurse Anesthesia

Department of Occupational Therapy
Master of Science in Occupational Therapy
Master of Science

Department of Physical Therapy
Master of Science
PhD in conjunction with the Departments of Anatomy or
Physiology

Department of Rehabilitation Counseling
Master of Science

Professional certificate programs currently are offered by the following departments.

Department of Gerontology

Certificate in Aging Studies

Certificate in Aging Studies and Master's of Social Work (jointly with the School of Social Work)

Program in Patient Counseling

Postgraduate Certificate in Patient Counseling

Department of Rehabilitation Counseling

Postgraduate Certificate in Professional Counseling

Philosophy

The faculty of the school is committed to offer, through the establishment and maintenance of rigorous standards of excellence, educational programs that will prepare students for professional careers in the allied health disciplines. Development of professional attitudes, emotional maturity, and ethical behavior of students is a vital component of the educational process. It is essential that students gain a deep respect for the dignity of man and the inherent rights of patients and others who receive services. The programs are designed to include not only the development of skills to assure excellence in quality of health care, but also factual knowledge and experiences that will provide the basis for continuing intellectual and professional growth.

Community services of the school and faculty include continuing education, consultative resources, and participation in all pertinent areas of health care. An integral part of these efforts is to stimulate and sponsor research activities in the allied health disciplines represented within the school and to encourage interdisciplinary research.

Facilities

Departments and programs in the School of Allied Health Professions presently are housed in the Randolph-Minor Annex, McGuire Hall, Newton House, Lyons building, VMI building, MCV West Hospital, and the William Grant House. Plans are under way to further renovate West Hospital to consolidate various components of the School of Allied Health Professions into that facility, which would permit expanded enrollments in selected departments and programs and will provide improved and enlarged educational and research areas.

Licensure/Certification

Graduates of most of the programs offered in the School of Allied Health Professions are required or eligible to take national/state certification or licensure examinations. Requirements of licensing and certifying agencies vary. Some licensure and certification agencies consider individuals convicted of a felony ineligible for licensure or certification. For information, prospective students should contact the licensure or certification agency for the specific allied health discipline.

Accreditation

The School of Allied Health Professions is an institutional member of the American Society of Allied Health Professions and the Virginia Association of Allied Health Professions. All of its programs are approved or accredited by the appropriate national professional or educational organizations.

Attendance Regulations

The faculty considers attendance at lectures, laboratories, and other functions a requisite to the successful acquisition of the knowledge and skills required of the professional. Hence, the faculty cannot condone absence without good reason from any regularly scheduled educational experience. At the beginning of each course, instructors relate to their classes the policy of the department concerning the attendance regulations for that semester. The nature of make-up work in the event of absence will be the prerogative of the instructor.

Graduate Programs

Graduate degree and certificate program offerings in the School of Allied Health Professions are designed as basic professional or advanced-level programs. Accreditation requirements for the individual programs preclude the establishment of general admission prerequisites, registration dates, and course and degree requirements beyond those of the School of Graduate Studies.

It is the intent that these regulations and procedures for each program ensure the selection of applicants whose motivation, ability, character, and health status qualify them to pursue graduate study successfully. Specific information may be found in the departmental presentations in this section or are available from departmental graduate coordinators.

Student Performance and Behavior

The goals and objectives of the School of Allied Health Professions and its component departments and programs relate to the education of persons preparing for professional careers in the allied health disciplines. An integral requisite of students and practitioners is an undeviating acceptance of a professional attitude and pride that will motivate them to adhere to a code of professional ethics and to develop fully their competencies for practice.

The suitability of student performance and behavior relating to these professions and to the consumers of health care is a paramount concern of the administration and faculty of this school. To assure a quality of educational and clinical preparation for its graduates, the following statement is promulgated:

If, in the judgment of the Faculty/Administration of the School of Allied Health Professions, a student is not considered suitable for emotional, professional, or related reasons, the student's academic status may be appropriately altered.

If any questions arise regarding the standards of performance or behavior, it is the responsibility of students to apprise themselves of acceptable character and conduct requirements prior to matriculation in the designated department or program.

Graduate Courses in Allied Health Professions (AHP)

Most course offerings in the School of Allied Health Professions are provided by each department for their programs; however, selected graduate courses considered applicable to many students in these or other University programs have been assigned to the School of Allied Health Professions, rather than to a specific department.

AHP 573 Teaching in Health Professional Schools. Semester course; 3 lecture hours. 3 credits. Section 01. Study of the relationships between health education and higher education in general, current essentials, standards in education for the health professions, and theoretical approaches to the implementation of these standards in both academic and clinical learning. Emphasis will be placed on modes of adapting to future needs of the professions.

AHP 582 Supervision in the Allied Health Professions. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Study of the supervisory process and staff development, training in communication and interpersonal skills, and public relations within the health facility.

AHP 591 Special Topics. Semester course; 1-4 credits. Prerequisite: Permission of instructor. Interdisciplinary study through lectures, tutorial study, or independent research of selected topics not provided in other courses.

AHP 594 Health Education Practicum. Semester course; 1 lecture and 4 laboratory hours. 1-6 credits. Prerequisite: AHP 573. Preparation, presentation, and evaluation of selected educational experiences in the appropriate graduate program. Section 01, General; Section 02, Nurse Anesthesia; Section 03, Medical Technology.

AHP 596 Supervisory and Administrative Practicum in Allied Health Clinics. Semester course; 60 clinical hours per credit. 1-9 credits. Prerequisite: Permission of instructor. The course is designed for the student who will be assuming supervisory and administrative roles. Areas to be covered include clinical personnel management, budgeting and ordering of materials and equipment, consultation with physicians, developing and troubleshooting clinical methods, designing job descriptions, and implementation of quality control programs. Section 01, MT; Section 02, PT.

Doctoral Program in Health Related Sciences

Clement, Dolores G. *Associate Professor and Associate Dean, School of Allied Health Professions* DrPH, University of California; health policy and administration.

Faculty are drawn from the graduate faculty of all of the other departments in the school. Refer to the subsequent departmental listings of faculty.

Overview

The Doctoral (PhD) Program in Health Related Sciences, School of Allied Health Professions, was designed as a distance learning program with the cooperation and commitment of the nine departments of the

school: Clinical Laboratory Sciences, Gerontology, Health Administration, Nurse Anesthesia, Occupational Therapy, Patient Counseling, Physical Therapy, Radiation Sciences, and Rehabilitation Counseling.

The mission of the School of Allied Health Professions (SAHP) is to serve as an international leader in the education of excellent, innovative and responsible allied health professionals. Educational formats that are technologically advanced and accessible to students through on-campus and distance learning are emphasized throughout all programs in the school. In addition, the school promotes excellence in health care service, and encourages collaborative research that generates state-of-the-art and specialized knowledge.

This PhD program involves a four-year course of study. It is designed to meet the critical need for doctorally prepared allied health professionals across the nation, specifically in the areas of teaching, research and administration. The departments of the SAHP offer a doctoral curriculum with a common interdisciplinary core of courses and eight specialty tracks germane to the disciplines of the participating departments. The ninth department of the school is Patient Counseling. This department has a program that offers a graduate certificate only, and is participating by teaching the course in ethics as part of the doctoral program.

Program Instructional Goals

The goal of the doctoral program in Health Related Sciences is to provide experienced health professionals with advanced knowledge and skills so that they may assume positions in teaching, research and administration upon graduation. This PhD program emphasizes both an interdisciplinary and multimedia focus, drawing from resources across the University.

The overall objectives of this PhD program are to produce scholars who have:

- the ability to understand, analyze, design, execute, and evaluate research and practice in the allied health sciences, with particular in-depth understanding in the chosen area of specialization.
- the ability to translate research knowledge and principles into applied practice perspectives and skills.
- the ability to teach the current principles and content of the allied health sciences.
- the ability to do research, practice and teach in the area of interdisciplinary health care practice.
- the ability to continually examine current and future changes in the allied health disciplines from an interdisciplinary perspective.
- a demonstrated knowledge and understanding of professional and ethical responsibility and conduct in the allied health professions.
- a demonstrated knowledge and understanding of ethnic issues and cultural diversity in health care delivery and health policy.

Facilities

The administrative offices for the Program are located on the Medical College of Virginia Campus of Virginia

Commonwealth University, at 1200 East Broad Street (West Hospital, First Floor, East Wing). The Program's state-of-the-art computer laboratory is located in Tompkins-McCaw Library, at 509 North 12th Street.

Program Admission

Admission Criteria. Admission to the program, which is open to students with clear career goals in the health related sciences, is limited and competitive. Therefore, work experience in a health related field is encouraged. Applicants to the program must meet the following admission criteria:

- have an earned master's degree in an academic or allied health related field from an accredited college or university;
- have a minimum cumulative grade-point average of 3.3 on their master's level work;
- have earned a minimum combined score of 1100 on the verbal and quantitative sections of the Graduate Record Exam (GRE); or a minimum score of 55 on the Miller's Analogies Test (MAT). The MAT is offered by the Department of Psychology twice each month (804) 828-6277. Tests must have been taken within the past five years;
- when applicable, have a minimum Test of English as a Foreign Language (TOEFL) score of 600.
- demonstrate a record of professional competency/success; and
- articulate clear professional/educational goals and written communication skills through the submission of a written essay.

Enrollment in the program is open to qualified persons without regard to age, race, sex, religion, disability, or national origin. Admission requirements are in compliance with all applicable federal and state statutes, orders and regulations, and University guidelines.

Admission Procedures. Prior to reviewing an application for admission, the program must receive:

- a completed application form from the applicant, including
 - three letters of recommendation, two of which are preferably from sources qualified to assess the candidate's academic potential.
 - a written essay that discusses career goals and the manner in which this doctoral program will enhance those goals, and what the applicant expects to contribute to this program.
 - a curriculum vitae.
- official transcripts indicating completion of baccalaureate and master's degrees (or equivalent) from an accredited college or university.
- GRE or MAT scores.

Incomplete packages will not be reviewed. Materials are sent to the School of Graduate Studies for processing, and are then forwarded to the School of Allied Health Professions. Once received in the school, the application is reviewed by the student services coordinator for completeness. Applicants with incomplete files will be contacted regarding the missing materials.

Incomplete files will be held in the director's office until all materials are received.

Completed folders will be sent to the respective departmental representative of the SAHP Doctoral Core Advisory Committee (D-CAC). Departments will then rank qualified applicants and, based on a review of the file, a personal interview will be scheduled at the department's discretion for their top candidates. Following the departmental ranking, all files will be returned to the director's office.

The Doctoral Program Admissions Committee (D-PAC) will meet to select and recommend the incoming class, and to develop an alternate list (total applicant pool ranked by qualifications). The director and the dean of the School of Allied Health Professions are responsible for the final decision.

Applicants will be notified by the dean of graduate studies regarding the admission decision and of the deadline for their acceptance of the offer and holding fee.

Part-Time Status. The program will be open to part-time students.

Advising

Upon admission to the program, students will be assigned an interim adviser to guide them through the core courses and assist them as they consider their area of research. All program advisers will have an earned doctorate, and be a member of the University's graduate faculty.

Students may change their interim adviser as their program of study and interest evolves, if approved by the program director. However, students desiring to switch their area of specialization (i.e., changing from the department through which they were initially admitted into the program) must reapply to the doctoral program by the Spring admission deadline. There is no guarantee that the applicant will be accepted into the new specialization area.

After successful completion of the comprehensive examinations, students will choose a dissertation chair who will serve as adviser and guide them through their research/dissertation process.

Program Continuation and Completion Requirement

Continuation Requirements. After admission to the PhD program, the student must maintain a minimum cumulative grade-point average of 3.0 in all course work completed at Virginia Commonwealth University. A student who falls below that minimum will have one semester to remedy the deficiency. Even with an overall grade-point average of 3.0 or better, a student may earn no more than two (6 credit hours) grades of "C." A student who receives a grade of "D" or "F" will be reviewed for continuation in the program by the department of their specialization.

Students must register for at least one credit hour each fall and spring semester for continuation in the program. A student who fails to register must have advance approval to do so or will be dropped automatically from the program and must reapply for

reinstatement. The maximum time to complete all of the requirements for the degree is seven calendar years from the date of entry into the program.

Course Transfer or Waiver. A maximum of 25 percent of the course work other than research may be transferred from another VCU program or outside institution and applied toward the PhD course requirements. Transfer and waiver credit is given at the discretion of the program director after consultation with appropriate faculty members, subject to University approval. Courses taken as requirements for other degrees are not transferable. A waiver may be warranted if an equivalent course was taken. However, another course must be substituted for the waived course in order to fulfill the requisite credit hours needed for degree completion.

Comprehensive Examination. The purpose of the comprehensive examination is to provide a vehicle through which students can demonstrate the ability to integrate their educational experience by adequately addressing complex questions pertinent to the current and developing knowledge of the allied health fields. Students are eligible to take each of the two comprehensive examinations upon successful completion of the appropriate core course work. Exams must be taken within six months of completing each core.

Two written examinations will be administered, one for the common interdisciplinary core and one for the research methods core. A three-member graduate faculty committee will develop and administer each exam. This committee will be made up of two members of the Core Advisory Committee and one member appointed by the program director. Each exam will be offered once in the fall semester, and once in the spring semester. Prior to completion of the semester in which the student becomes eligible to take each exam, he/she must submit a formal statement of intent to the program director.

Students who receive a failing grade on their initial attempt will have one opportunity to repeat each comprehensive examination. Failure to pass an exam on the second attempt will result in termination from the program.

Program Completion Requirements. The Doctor of Philosophy degree is awarded after (1) the minimum 57 credit hours of course work are completed; (2) comprehensive exams are passed; and (3) either a dissertation is written and defended orally, or three first-author articles on research undertaken by the doctoral candidate once enrolled in the program are accepted for publication in peer-reviewed journals. The journal articles will be scrutinized for quality of scholarship by an internal research committee, headed by the student's research adviser. All three articles must be approved by the internal research committee prior to submission.

Curriculum Structure

The proposed curriculum is designed to take four years to complete. Students spend the first three years (each comprised of two six-month long semesters) completing course work. The final year is spent developing the doctoral dissertation. Research components are

present in each year of the program and a research emphasis is present throughout the entire curriculum. The student is required to designate the area of intended research in her/his specialization area in the first year.

Each of the six course work semesters is composed of both on- and off-campus components. On-campus sessions, scheduled during the first two weeks of July and the end of December/beginning of January, will employ a rather traditional mix of educational technologies (e.g., lectures, seminars and assigned reading). During the off-campus component of each semester, students pursue their studies employing a wide variety of innovative educational technologies (e.g., computer conferencing, computer-aided instruction, videotape packages and programmed instructional material), in addition to assigned readings and the completion of various assignments and projects.

The program curriculum consists of a total of 57 credit hours (24 credits of common interdisciplinary core courses, 12 credits of research methods core courses, 9 hours of specialty track courses, and 12 hours of dissertation research). The courses, arranged by focal area are:

Common Interdisciplinary Core	<i>Credits</i>
AHP 701 Health Services Delivery Systems	3
AHP 702 Finance and Economic Theory for Health Care	3
AHP 704 Health Care Policy and Political Theory	3
AHP 708 Ethics and Health Care	3
AHP 710 Curriculum Design for Health Care Professionals	3
AHP 711 Multimedia Technology in Health Sciences Curriculum Design and Communications	3
AHP 716 Grant Writing and Project Management in Health Related Sciences	3
AHP 718 Health Informatics	3
	24

Research Methods Core	<i>Credits</i>
AHP 760 Biostatistical Methods for Health Related Sciences	3
AHP 761 Health Related Sciences Research Design	3
AHP 762 Multivariate Statistical Methods for Health Related Sciences Research	3
AHP 763 Clinical Outcomes Evaluation for Health Related Sciences	3
AHP 764 Advanced Methods for Health Sciences Research (elective, 3 credits)	3
	12

Specialty Track	<i>Credits</i>
AHP 781 Doctoral Seminar in Health Related Sciences	3
AHP 792 Independent Study	3
AHP 793 Research Practicum	3
	9

Dissertation Research	<i>Credits</i>
AHP 890 Dissertation Seminar	3
AHP 899 Dissertation Research	9
	12

NOTE: All three of the specialty track courses and both dissertation research courses are taken in one of the following areas, and each of the departments have curricular section numbers for each of the respective courses (AHP 781, AHP 792, AHP 793, AHP 890 and AHP 899):

- Section 001 Clinical Laboratory Sciences
- Section 002 Gerontology
- Section 003 Health Administration
- Section 004 Nurse Anesthesia

Section 005 Occupational Therapy
 Section 006 Physical Therapy
 Section 007 Radiation Sciences
 Section 008 Rehabilitation Counseling

Dissertation and Published Research Requirements

Admission to Candidacy. Students are eligible to begin their dissertation upon certification by the program director, in writing, that all pre-dissertation/research requirements, including the comprehensive examinations, have been satisfied and that the student is prepared to proceed with the dissertation/research project. Copies of the certification will be forwarded to the student, the student's formal program adviser, and the dean of the School of Allied Health Professions. After admission to candidacy, students will proceed to propose, complete, and defend their dissertation or fulfill the three journal articles research requirement.

Enrollment Requirement. Students are required to maintain continuous enrollment in AHP 899 Dissertation Research until completion of the requirements, including the defense process. A minimum of three credit hours per semester are required until 9 credits are accumulated after which only one credit per semester is required unless otherwise specified by the student's dissertation chair.

Dissertation/Research Committee. After successful completion of the comprehensive exam, the student nominates a Dissertation/Research Committee and the dissertation/research director submits the nominations in writing to the program director. Such committees will consist of a minimum of four graduate faculty members of the School of Allied Health Professions, one of whom will be outside the student's specialty track. The program director will provide written approval of the Dissertation/Research Committee and clear such appointments with the appropriate administrative officials.

Dissertation/Research Standards. The dissertation/published research articles must represent independent research and should be based on an original research question or hypothesis. Generally, dissertations/published research articles will demonstrate the student's ability with empirical research, adhering to canons of (1) logic in conceptualization and design, (2) valid and reliable measurement, (3) appropriate analytic technique, and (4) appropriate interpretation of results. Studies should be based on a formal theoretical or conceptually explicit framework for investigating a question or testing a hypothesis relevant to the allied health field.

Tuition and Fees

Graduate tuition and fees will be assessed in accordance with rates approved annually by the University's Board of Visitors. In addition to tuition, a program-specific fee is assessed for this distance learning program. Tuition and fees include all direct program costs, learning materials distributed during a course, and the use of the University's computing systems.

Financial Aid

Students must apply directly to the financial aid office for consideration. In addition, when other support is available to students, all will be notified of the eligibility criteria and application procedures.

Due Process

All appeals to decisions based on this document are made to the program director. In the event that satisfactory resolution is not attained, the next level of appeal is the dean of the School of Allied Health Professions. Students in the program are governed by the *SAHP Student Academic Appeal Policy and Procedures* document, which was developed in compliance with University guidelines. Exception to any of the policies and procedures identified in this document require the written consent of the program director and, when necessary, the dean of the school.

Graduate Courses for the Doctoral Program in Health Related Sciences (AHP)

AHP 701 Health Services Delivery Systems. Semester course; 3 credits. Examines the structure and function of the U.S. health care delivery system, the concepts and processes of health and illness, the institutional and individual providers of health services and related theory. Focuses on interdisciplinary care. Emphasizes meeting the unique needs of ethnically and culturally diverse populations.

AHP 702 Finance and Economic Theory for Health Care. Semester course; 3 credits. Focuses on foundational concepts of micro-economic theory and their application in analyzing health care; understanding the structure and dynamics of health care markets; and on monitoring and controlling the allocation of resources within health organizations. Emphasizes each of the health care disciplines and how finance and economics affect practice delivery and evaluation.

AHP 704 Health Care Policy and Political Theory. Semester course; 3 credits. Presents a framework grounded in political theory to understand the emerging health care system and the politics of multiple health caregivers. Presents a framework for understanding health policy in terms of the regulatory environment, developing initiatives, and emerging trends of allied health delivery. Assists students in building a program of research in health policy.

AHP 708 Ethics and Health Care. Semester course; 3 credits. Applies the principles of biomedical and health care ethics to develop a more informed understanding of ethical decision-making in the formulation of health care policy, as well as within the clinical environment. Focuses on utilizing and searching biomedical ethics literature; current issues in biomedical ethics; the discipline and process of ethical reflection; and case consultation.

AHP 710 Curriculum Design for Health Care Professionals. Semester course; 3 credits. Analyzes the various curriculum delivery systems and teaching strategies. Emphasizes the appropriate use of instructional design delivery strategies and evaluation of curricular outcomes with application to allied health professionals and health related sciences courses.

AHP 711 Multimedia Technology in Health Sciences Curriculum Design and Communications. Semester course; 3 credits. Examines the design and use of current multimedia technology in the teaching of health sciences curriculum. Emphasizes WEB course development, the development of modular videoconferencing programs, current and emerging electronic technologies. Integrates teaching theory and adult learning perspectives throughout.

AHP 716 Grant Writing and Project Management in Health Related Sciences. Semester course;3 credits. Examines fundamentals of allied health grant writing and proposal preparation in the health related sciences, including funding source determination,responding to an RFP, basic elements of a proposal,proposal review procedures, and allocation processes. Requires development of a complete proposal and critique of existing proposals.

AHP 718 Health Informatics. Semester course; 3 credits. Analyzes current information and management systems from an allied health sciences perspective. Emphasizes knowledge representation in health care, information needs, storage and retrieval, clinical information systems, standards of health information management,and the evaluation of information management systems. Stresses the efficient and innovative use of technology.

AHP 760 Biostatistical Methods for Health Related Sciences. Semester course;3 credits. Examines basic concepts and techniques of statistical methods, including the collection and display of information, data analysis, and statistical measures;variation,sampling, and sampling distributions;point estimation,confidence intervals, tests of hypotheses for one and two sample problems;principles of one-factor experimental design,one-way analysis of variance, and multiple comparisons;and correlation and regression analysis.

AHP 761 Health Related Sciences Research Design. Semester course;3 credits. Covers the design of experimental and quasi-experimental studies in the health care field.Emphasizes issues related to measurement,validity of designs, sampling and data collection. Focuses on the logic of causal inference, including formulation of testable hypotheses, and the design,methods and measures that facilitate research.

AHP 762 Multivariate Statistical Methods for Health Related Sciences Research. Semester course;3 credits. Examines multivariate statistical analysis and evaluation research methods with application to health related science research. Emphasizes data reduction techniques, factor analysis, principle components, discriminant analysis, and logistic regression to analyze data in the health field.

AHP 763 Clinical Outcomes Evaluation for Health Related Sciences. Semester course;3 credits. Prerequisites:AHP 760, 761,and 762.Prepare students to design,implement and interpret studies that evaluate the outcome and effectiveness of health services delivery. Emphasizes identification of emerging trends in health related sciences research, identification of meaningful research questions based on existing information,and the use of primary and secondary data to assess outcomes.

AHP 764 Advanced Methods for Health Sciences Research. Semester course;3 credits. Elective course. Examines the application of multivariate statistical analysis and evaluation methods to health related sciences research.Emphasizes advanced statistical methods (e.g.,LISREL, Event History Analysis) and design to analyze panel data in the health field.

AHP 781 Doctoral Seminar in Health Related Sciences. Semester course;3 credits. Prerequisite: Permission of instructor. Studies specific topics in the area of the student's specialty track.Student's desired topic of study must be identified and approved prior to enrollment.

AHP 792 Independent Study. Semester course;3 credits. Prerequisite: Permission of instructor. Offers special individual study or research leading toward investigation in specialty track.Conducted under the guidance of a faculty sponsor.

AHP 793 Research Practicum. Semester course;3 credits. Offers supervised investigation of selected problems in the area of the student's specialty track. Includes conducting and analyzing field research.

AHP 890 Dissertation Seminar. Semester course; 3 credits. Deals with general purpose, content, and functions of the dissertation process related to the student's specialty track.Leads to the preparation of dissertation proposal.

AHP 899 Dissertation Research. Semester course; variable credit. Prerequisites:Completion of required course work and comprehensive examination.Covers dissertation research under the direction of a faculty adviser. Minimum of nine semester hours required for PhD degree.

Department of Clinical Laboratory Sciences

(Formerly Medical Technology)

Lindsey, Barbara J. *Associate Professor and Chair* MS, Medical College of Virginia Campus, Virginia Commonwealth University; chemistry.
Nadder, Teresa S. *Assistant Professor* MS, Medical College of Virginia Campus of Virginia Commonwealth University;immunology, immunohematology.
Prentice, Katherine A. *Assistant Professor* MA,Central Michigan University;management, clinical coordinator.
Sauer, Ronald L. *Associate Professor* MA,University of California; microbiology.
Sommer, Sandra R. *Associate Professor* PhD, Medical College of Virginia Campus of Virginia Commonwealth University;hematology, microscopy.

History

The graduate program leading to a Masters of Science degree in clinical laboratory sciences was started in 1967 to provide advanced education for certified medical technologists/clinical laboratory scientists.

In 1981, the program was modified to accept part-time students and, in 1985, to allow candidates holding a degree in another area of science to obtain graduate education in clinical laboratory sciences.

Philosophy

The Department of Clinical Laboratory Sciences supports the philosophy and mission of the University and the School of Allied Health Professions. The departmental graduate program is dedicated to enhancing and promoting clinical laboratory science. By providing advanced theoretical and technical education, the program serves to maintain and update the competency of laboratory professionals and to prepare students to assume roles as laboratory supervisors, university educators, researchers, and industrial sales representatives. A mature, responsible approach to the acquisition of knowledge is cultivated in order to establish continuing intellectual growth and an enthusiasm for the profession.

Objectives

The objectives of the Department of Clinical Laboratory Sciences master's program are to:

- Provide the student with a superior, yet flexible, course of advanced study in clinical laboratory sciences;
- Prepare the student to evaluate critically and to produce future advances within laboratory sciences;
- Foster the continued development of interpersonal communication skills and ethical principles;
- Develop and promote strategies for life-long learning and encourage continued professional growth through research, education and active participation in professional societies; and

- Provide society and the Commonwealth of Virginia with a source of highly competent professional laboratorians capable of functioning effectively in leadership roles within the field of clinical laboratory sciences.

Facilities

The Department of Clinical Laboratory Sciences is located in the Randolph-Minor Annex Building on the MCV Campus. All faculty and clerical offices are located in this facility, as well as student classrooms, general teaching laboratory, computer facilities, and a student lounge/reading room. An auxiliary instrumentation laboratory is located in McGuire Hall, approximately four blocks from the primary facility.

Financial Aid

Students must apply through the financial aid office for assistance. Refer to the general section on financial aid in this *Bulletin* for details of the programs available. In addition, there are limited funds from departmental and professional sources. When this support is available, all students will be notified of the eligibility criteria and application procedures.

Admission Requirements

In order to meet the needs of all individuals interested in continuing their education in the field, the Department of Clinical Laboratory Sciences has modified its graduate curriculum to accommodate a diversified group of candidates, including full- and part-time students. The program is highly flexible, allowing students to select course work that meets their specific needs once the basic program requirements have been met.

The general entrance requirements for the Master of Science in Clinical Laboratory Sciences are:

- baccalaureate degree from an accredited college or university with a major in clinical laboratory sciences (medical technology), biology or chemistry;
- minimum undergraduate GPA of 2.7 on a 4.0 scale for at least the last two years of undergraduate work;
- minimum TOEFL of 550 for international students whose native language is not exclusively English;
- satisfactory scores on the GRE; and
- recommended, but not required, are two letters from employers or recent instructors addressing academic potential.

Guaranteed Admission

Virginia Commonwealth University students participating in the University Honors Program may apply for guaranteed admission to the Master of Science program in clinical laboratory sciences. Refer to the general section on admissions through honors in this *Bulletin* for details of the program.

The Department of Clinical Laboratory Sciences also has agreements for guaranteed admission into the master of science program with the following institutions:

George Mason University, Radford University, Averett College, Ferrum College, Hollins College, Mary Baldwin College and Roanoke College. The requirements for guaranteed admission are:

- Baccalaureate degree from an accredited college or university with a major in clinical laboratory sciences (medical technology), biology or chemistry.
- Minimum overall undergraduate GPA of 3.25 and a minimum undergraduate science GPA of 3.0 on a 4.0 scale.
- Minimum TOEFL of 570 for international students whose native language is not exclusively English.
- Recommended, but not required, are 2 letters from employers or recent instructors addressing academic potential.
- GRE is waived for admission decisions. The GRE must be taken within the first enrolled year, but the results are to be used for record keeping purposes only.

Transfer Credit

Students who have earned graduate credit before entering the Department of Clinical Laboratory Sciences' master's program may be permitted, at the discretion of the faculty, to transfer a maximum of six semester hours of credit to count toward the MS degree. Transfer credit may be allowed when, in the judgment of the faculty, the applicants have satisfactorily completed course work equivalent to requirements of the graduate curriculum in this department.

Program Options

The department offers two tracks in the master's degree program in clinical laboratory sciences.

Advanced Master's Track in Clinical Laboratory Sciences. Students holding a baccalaureate degree in clinical laboratory sciences/medical technology and generalist certification by the National Credentialing Agency for Laboratory Personnel or the Board of Registry of the American Society for Clinical Pathologists are eligible for the Advanced Master's Track. Candidates may specialize and complete a project or thesis in clinical chemistry, hematology, microbiology, immunohematology, immunology or instrumentation/computer applications. In addition to the basic science requirement, each student will choose an area of secondary emphasis in biomedical research, education, management, or business.

Categorical Master's Track in Clinical Laboratory Sciences. The Categorical Master's option is designed for students with a baccalaureate degree in biology or chemistry. This track provides specialized study, including a clinical practicum, in one of the following areas: clinical chemistry, hematology, microbiology, or immunohematology. A project or thesis is required. Upon completion of the curriculum, students are eligible to take a national certification examination in the area in which they performed their concentrated study.

Application materials may be obtained from the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051 Richmond, VA 23284-3051; or via the Internet at <http://views.vcu.edu/views/sahp/cls/>.

Curriculum

Students are required to complete a minimum of 34 semester hours to include:

Discipline-Specific Science	15-19
Seminar	4
Education or Management	3
Computer Applications or Statistics	3
Scientific Inquiry	2
Research	4-6

Specific courses will depend on the individual candidate's choice of specialty. The basic science requirement may be distributed among approved courses listed in this *Bulletin*.

In lieu of the discipline-specific science requirement, students with a secondary emphasis in education, management, or business may elect to focus on education/administrative/business courses. No more than 14 credit hours in the area of secondary emphasis may be applied toward the total minimum requirement.

Categorical Master's candidates are required to complete a seven-week clinical practicum in their specialty area.

A research study in the form of a thesis or project is required. Students selecting the thesis option complete a minimum of 15 semester hours of discipline-specific sciences and 6 hours of research; students selecting the project option complete 19 semester hours of discipline-specific sciences and 4 hours of research.

Full-time candidates require a minimum of two academic years to complete the program. There are no full-time residence requirements. Part-time students must complete all work requirements within five years. An interruption in registration in excess of one semester requires prior approval of the department.

Graduate Courses in Clinical Laboratory Sciences (CLS)

CLS 495 Categorical Clinical Practicum. Semester course; 40-280 clock hours. 1-7 credits. Prerequisites: One or more of the following: CLS 301-302, CLS 306, CLS 307-308, CLS 310, CLS 311-312. Restricted to candidates in the Categorical Master's Program. Individual participation in a hospital laboratory in a selected specialty area - clinical chemistry, hematology, microbiology, or immunohematology. Students gain practical experience in the performance of procedures and use of instruments by working with the clinical staff. After gaining competence, the students are expected to properly perform and sign out routine laboratory work under supervision.

CLS 500 Concepts and Techniques in Clinical Laboratory Science. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: Permission of instructor. Presents the basic theoretical concepts, laboratory techniques and skills employed in the areas of clinical chemistry, hematology, immunohematology and microbiology. (Restricted to candidates in the Categorical Master's Program).

CLS 501 Instrumental Methods of Analysis I. Semester course; 2 lecture and 4 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory, and comparison of laboratory

instruments are discussed along with the factors affecting their operation. Laboratory exercises are designed to demonstrate the practical applications of the instruments in the research and clinical laboratory. Areas covered include basic electronics, principles of photometry, spectrophotometry, fluorometry, flame emission photometry, atomic absorption spectrophotometry, and computerized instrumentation.

CLS 502 Instrumental Methods of Analysis II. Semester course; 2 lecture and 4 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. A study of modern research and clinical laboratory instrumentation and procedures. Principles, theory, and comparison of laboratory instruments are discussed along with the factors affecting their operation. Laboratory exercises are designed to demonstrate the practical applications of the instruments in research and clinical laboratory. Areas covered include electrophoresis, chromatography, particle counters, radioisotope counters, and clinical laboratory automation.

CLS 508 Laboratory Diagnosis of Infectious Diseases. Semester course; 3 lecture hours. 3 credits. Applies an organ system approach to the laboratory diagnosis of infectious diseases. Emphasizes diagnostic methods to verify infections due to pathogenic microorganisms and includes related diagnostic microbiology laboratory issues. Utilizes a distance learning format.

CLS 580 Principles of Education/Management. Semester course; 2 lecture and 2 practicum hours. 1-3 credits. Introduces fundamental educational theories and practice, principles of management and employee relations, and health care issues from a global perspective with an emphasis on multicultural diversity. Stresses the application of these in the clinical laboratory. Requires a practicum in education and in management following the completion of the didactic portion.

CLS 601 Theoretical Blood Banking. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A comprehensive study of the blood groups in man, including biochemistry, genetics, and clinical significance. Topics relating to problems with antibodies to the blood group antigens are discussed.

CLS 605 Advanced Hematology. Semester course; 2 lecture and 2 laboratory hours. 2-4 credits. Prerequisite: Permission of instructor. Discusses advanced laboratory techniques used to analyze blood dyscrasias and hemostatic disorders. Students may also perform related laboratory tests.

CLS 610 Interpretative Clinical Hematology. Semester course; 2 lecture hours. 2 credits. Prerequisite: Permission of instructor. Principles of hematopoiesis and related pathological and pathophysiological correlation of hematological disorders are discussed.

CLS 690 Clinical Laboratory Sciences Seminar. Semester course; 1 lecture hour. 1 credit. Presentation and discussion of current research and topics of interest by the departmental faculty, graduate students, and visiting lecturers.

CLS 691 Special Topics in Clinical Laboratory Sciences. Semester course; 1-4 credits. This course provides for lectures, tutorial studies, and/or library assignments in specialized areas not available in formal courses or research training.

CLS 696 Advanced Blood Bank Practicum. 6 laboratory hours. 2 credits. Prerequisite: CLS 601. A laboratory course with practical experiences in resolving complex blood group serological problems and discussion of these problems. Donor phlebotomy, processing of donor units, component preparation, and instruction of undergraduate clinical laboratory sciences students are also performed.

CLS 790 Research in Clinical Laboratory Sciences. Semester course; 1-15 credits. Research leading to the MS degree.

Department of Gerontology

Ansello, Edward F. *Professor* PhD, University of Missouri; gerontology career preparation, aging and disabilities, geropharmacy, humanities and aging, media and aging, criminal victimization.

- Coogle, Constance L. *Assistant Research Professor* PhD, Virginia Commonwealth University; Alzheimer's Disease, developmental disabilities and aging, elder care.
- Dougherty, Linda *Associate Professor* PhD, University of Southern California; clinical psychology, health and illness, life-span development, emotions.
- Egelhoff, William F. *Associate Professor Emeritus* MBA, Harvard Business School; business administration, theology of aging, political issues in aging.
- Harkins, Stephen *Professor* PhD, University of North Carolina; pain and age, memory changes with age, evoked potentials.
- Mulligan, Thomas *Associate Professor* MD, New York University; male sexual dysfunction and aging.
- Osgood, Nancy J. *Professor* PhD, Syracuse University; leisure and aging, retirement, alcoholism, suicide.
- Parham, Iris A. *Professor and Chair* PhD, University of Southern California; cognitive changes with age; depression; curriculum development.
- Pyles, Michael A. *Assistant Professor* PhD, Virginia Commonwealth University; health services research, health policy, aging.
- Retchin, Sheldon M. *Associate Professor (Chair, Division of Geriatric Medicine)** MD, University of North Carolina; elderly drivers; health policy issues for elderly 85+.
- Wood, Joan B. *Associate Professor* MS, PhD Virginia Commonwealth University; gerontology/geriatrics, curriculum development; Alzheimer's caregivers.

* Department in parenthesis indicates primary appointment.

History

The Department of Gerontology was founded in 1976. The MS in gerontology, as well as a postgraduate Certificate in Aging Studies, is offered. The Department of Gerontology became a part of the School of Allied Health Professions in January 1985. As part of the department, the Geriatric Education Center was established October 1, 1985. This center is a multidisciplinary effort involving cooperation of all the health-related professional schools and the College of Humanities and Sciences; the major focus is to promote education in geriatrics/gerontological health care.

Philosophy

The basic philosophy of the department is to improve the overall well being of elderly persons through the development of educational programs that are responsive to the changing psychological, physical, social, and political needs of our elderly population. Research, community service, and continuing education in gerontology and geriatrics are integral parts of this educational effort.

Objectives

The purpose of this program is threefold: (1) to train qualified professionals to work in administrative, planning, service delivery, and instructional/staff development positions in programs and services for the elderly at the national, state, and local levels; (2) to provide an opportunity for those studying in other disciplines, and whose work will encompass service to the aged, to integrate their own training with a comprehensive knowledge/understanding of the aging process; and (3) to stimulate the design and execution of gerontological research across the multiple disciplines.

Facilities

Offices of the Department of Gerontology are located in the Randolph Minor Annex, 301 College Street. Laboratory facilities for psychophysiological and pain research are housed in the Stephen Putney House, and facilities for health/clinical psychology-related research are located in room 401, East Hospital.

Honors and Awards

A. D. Williams Award. An annual award is made to a student who demonstrates by virtue of high scholastic attainment and professional competence unusual promise and ability in the field of gerontology.

Gerontology Student of the Year. Each year the faculty chooses a graduating student who has exhibited outstanding scholastic achievement and demonstrated service in gerontology.

Distinguished Alumni Award. Each year the Gerontology Student Association, in consultation with the departmental faculty, chooses an alumna/alumnus who best exemplifies the standards of the profession.

Programs

Four courses of study are offered:

- A Master of Science degree with a concentration in one of the following six areas: education track, health care organization and planning track, psychogeriatrics track, public administration track, social services track, or a research track.
- A Master of Science degree in physical therapy with a specialty in geriatric physical therapy offered jointly with the Department of Physical Therapy.
- A combination of the Certificate Program in Aging and a Master of Social Work degree offered jointly by the School of Social Work and the Department of Gerontology.
- A Certificate Program in Aging Studies to meet the needs of persons working with the elderly, but who have no academic training in gerontology.

Master of Science Program in Gerontology

The gerontology curriculum is a multidisciplinary program established in 1976 which offers the Master of Science degree. The program utilizes professional assistance from departments on both campuses.

There are six concentration areas in gerontology:

Education Track. This area of concentration is designed for students interested in teaching/training careers in gerontology. Students electing this track will be prepared to provide instruction to university or community college students, the lay public, professional service providers, and older people.

Health Care Organization and Planning Track. (In conjunction with the Department of Health Administration.) Upon completing this track, students will have a foundation of knowledge in health care organization, health planning, health policy, and a macro perspective of the financing of health care. In addition, students will have developed skills in policy

analysis and the use of economic tools. Finally, students will broaden their understanding of the political, legal, and ethical issues involved in health care organization and planning.

Psychogeriatrics Track. This area of concentration, developed jointly with the Department of Psychology, is designed for students interested in working with those older adults and their families who are experiencing psychological difficulty. Students electing this track will be prepared to provide assistance directly to the elderly and their families as well as to consult and train professionals and paraprofessionals to provide more effective mental health services. Training is provided through a combination of specialized didactic instruction and structured field experience in providing direct services, consultation, and education.

Public Administration Track. Students who elect to pursue courses in the public administration track, developed jointly with the Department of Public Administration, will, after completion of course work, be able to plan, organize, report, control, and budget for public programs in aging. Grant writing and program evaluation skills will be developed as well.

Social Services Track. This track concentrates on developing specialized knowledge and skills in the provision of services to the elderly, basic understanding and skills in at least one method of social work practice, commitment and ability to participate in the development of strategies and policies relevant to amelioration of social problems of the elderly, ability to integrate and use in practice knowledge of individual behavior and social structure with particular reference to the needs of the elderly.

Research Track. This track is designed for students who would ultimately like to pursue a PhD in the social/behavioral sciences. (All students who elect the research track must complete a thesis.) Students will obtain a strong background in experimental psychology research design and methodology and a broad background in life-span developmental theory.

The 42-hour degree program includes 18-21 hours of courses in gerontology, 18 hours in the chosen concentration area, and six credits for thesis (or a thesis option).

Admission Policy

The program is open to qualified students who have earned a baccalaureate degree from an accredited college or university or the equivalent, maintained a minimum grade-point average of 3.0 and have satisfactory scores on the GRE or MAT. A successful work experience may strengthen the admission credentials of applicants with marginal records.

Because of the diversity of undergraduate majors, candidates for the gerontology program must present evidence of successful completion of undergraduate courses in the following areas:

- Biological science – minimum of six semester hours
- Psychology – minimum of three semester hours
- Sociology/Anthropology, social work – minimum of three semester hours

- Statistics, research methods, or equivalent – minimum of three semester hours
(Topics covered in this undergraduate course should be equivalent to those outlined for STA 214 in the *Undergraduate and Professional Programs Bulletin*.)

Candidates for admission who do not meet these requirements will be expected to complete the required undergraduate course work or to pass challenging examinations by the end of the first year. See Part I of this *Bulletin* for admission requirements and procedures.

Transfer and Waiver of Course Credits

Students who have completed graduate work in other graduate departments, whether at Virginia Commonwealth University or another university, may transfer no more than 12 credit hours work at “B” level if such work is considered relevant by the departmental Admissions Committee. Also, a maximum of six hours of graduate credits accrued at a “B” level as a “special student” at Virginia Commonwealth University may be applied to the MS degree or three hours to the Certificate program, with approval of the departmental Admissions Committee.

Transfer credits for graduate work at other institutions will be evaluated at the time of full admission to the program. To have credits transferred, students are required to prepare a synopsis of each graduate course that is to be transferred for review by the faculty. Each synopsis will include the name of texts used in the course and a specific listing of topics and material covered. Students may apply also for waivers of specific requirements in a similar manner.

Master's Thesis

- The master's thesis is an option for students entering with a bachelor's degree. Students may elect either a six-credit thesis or six hours of graduate course work to meet the 42-hour requirement.
- Each student shall arrange for a member of the gerontology program to serve as the chair of the thesis committee. With the chair's approval, at least two additional committee members will be selected. At least two of the members must be from the Department of Gerontology.

The thesis chair will monitor and advise during thesis development. The student will take the major role in actual data collection. The thesis should be a publishable piece of research that makes some contribution to the field of gerontology.

Written Comprehensive Examination

A written comprehensive examination is required after completion of all required course work and before the student begins a practicum (field experience).

The comprehensive examination will be scheduled three times a year (early in the fall and spring semesters and once in the summer).

Practicum (Field Experiences)

Field experiences, with the supervision arranged by the director and program faculty, constitute an additional requirement. These experiences are intended to develop practical understanding, skills, attitudes, and values essential for working with the aged in a variety of settings.

The practicum will involve a 600-hour placement (one semester full-time or two semesters half-time). Each student must submit a practicum proposal (prepared with the assistance of the adviser) that must be approved prior to beginning the practicum.

For those already employed in the field of gerontology, an approved special project may be substituted for the field experience placement. Those students who are working full time in a job outside the field of aging also may submit a proposal for review that may allow for their continued employment, yet fulfilling this important requirement. All students must register for GTY 607 Field Study in Gerontology.

Certificate Program in Aging Studies

The Certificate in Aging Studies program is designed to meet the needs of those individuals who desire graduate training in gerontology but who do not desire the full completion of the master's program. There is also a Certificate Program in Aging Studies (emphasis in Long-term Care Administration). It requires an additional 4 credit hours in long-term care administration and field study. It enables graduates to take the licensure exam for nursing home administration. These programs are complementary to the MS program.

Requirements for Admission

Candidates for admission into the certificate in aging studies program would offer the following credentials:

- A baccalaureate degree from an accredited college or university or its equivalent.
- An acceptable grade-point average.

Program of Studies

The certificate program of studies would require successful completion of 17 credit hours of work comprised of the following courses now offered in the gerontology graduate curriculum:

- The biology of aging, psychology of aging, and social gerontology will form the basic core of the certificate program.
- Following the completion of these three elective gerontology courses, students may choose two elective gerontology courses after consultation with their faculty advisers. Advisers counsel students as to the courses that would best suit their educational training needs. Students may choose from aging and human values; topical seminar; independent studies; problems, issues, and trends in gerontology; recreation, leisure, and aging; and other elective courses (in consultation with adviser).
- In addition to the completion of these prescribed courses, each candidate for a Certificate in Aging Studies would be required to complete satisfactorily

a project in gerontology on a subject approved by the faculty. This project may be a comprehensive literature review, a research project, and a training or demonstration project. Students would register for a two-credit course in independent studies (GTY 692).

Awarding of the Certificate

Upon successful completion of the total program described here, as well as maintaining a 3.0 average, students are awarded a Certificate in Aging Studies.

Relationship to the MS Program in Gerontology

The Certificate in Aging Studies program is designed to meet the needs of those individuals who desire graduate training in gerontology, but who do not desire the full completion of the master's program. This program is complementary to the MS program. Certificate students who wish to enter the MS program must make formal application and abide by the admission requirements outlined in this *Bulletin*.

MSW and Certificate in Aging Studies

The School of Social Work in cooperation with VCU's Department of Gerontology provides students with a unique opportunity in social work and gerontology. School of Social Work MSW students interested in work with the elderly or in gerontological programs may earn a Certificate in Aging Studies while completing Master of Social Work degree requirements.

Interested students must meet the admission requirements of the MSW program of the School of Social Work and of the Certificate in Aging Studies of the Department of Gerontology. Admission into one program does not guarantee admission into the other. In order to meet the requirements of the MSW degree and the Certificate in Aging Studies, students complete a total of 65 graduate credits. All foundation and specialization courses of the MSW program are completed, and core courses (nine credits) of the Certificate of Aging Studies are completed. Other requirements are met by (1) completion of MSW research credits in which students undertake a project focused on aging, (2) completion of second-year field instruction practicum requirements (six credits) in a social work setting related to aging, (3) completion of an independent study course in gerontology which integrates research and practicum courses.

Additional information may be obtained from the Department of Gerontology, Richmond, VA 23298-0228 (Attention: MSW-Gerontology Certificate Adviser).

Graduate Courses in Gerontology (GTY)

All students must successfully complete the following 24 hours of core courses:

GTY 601 Biological and Physiological Aging. 3 credits. Biological theories of aging; cellular, physical, systemic, and sensory change; health maintenance.

GTY 602/PSY 602 Psychology of Aging. Semester course; 3 seminar hours. 3 credits. Prerequisite: Permission of instructor. Psychological

adjustment in old age;special emphasis on personality, cognitive, and emotional development;life crises associated with the aging process. Students must complete Social Sciences Research Methods before taking this course.

GTY 603 Social Science Research Methods Applied to Gerontology. 3 credits. Prerequisite: Graduate statistics. Application of social science methods and techniques to study of the aged; data sources, types of problems encountered;data analysis;research reporting;use of research findings.

GTY 604 Problems, Issues,and Trends in Gerontology. 3 credits. Application of knowledge in analysis of problems confronting aged persons;social issues and legislation;service delivery programs;current trends in gerontology.

GTY 605 Social Gerontology. 3 credits. This course will focus on the sociopsychological and sociological aspects of aging. Various sociopsychological and social theories of aging will be discussed. The course will provide a broad overview of several general topics such as the demography of aging, politics and economics of aging, and cross-cultural aspects of aging. The course will offer an in-depth analysis of particular role changes that accompany aging (i.e.,retirement, widowhood, institutionalization).

GTY 606 Aging and Human Values. 3 credits. Identification and analysis of value systems of the aged, exploration of religious beliefs; death and dying; moral, ethical and legal rights; human values and dignity.

GTY 607 Field Study in Gerontology. 3 credits. Systematic exploration and study in the field of an actual problem,issue, or task germane to the student's gerontology concentration.Application of specific concepts and approaches to assessment analysis. Arranged in consultation with the student's program adviser.

GTY 608 Advanced Topics in Problems,Issues and Trends in Gerontology. Semester course;3 lecture hours. 3 credits. Explores key issues and trends resulting from the aging of the society. Focuses on the development of responsive programs and services for older persons, and examines issues related to incipient and proposed changes to society's response to the health, income, health care financing and long-term and family support needs of aging persons.

Elective Courses

GTY 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.

GTY 501 Physiological Aging. 3 credits. This course is taught at an introductory level in contrast to the more substantive background required for GTY 601.Distinguishes between normal aging and those chronic illnesses often associated with aging in humans. This course would be valuable to those interested in the general processes of human aging.

GTY 612 Recreation,Leisure, and Aging. 3 credits. An analysis of the quality and quantity of leisure in maximizing the quality of life for the older person. Focus will be on concepts of leisure; the interrelationship of leisure service delivery systems and other supportive services; the meaning of leisure to the elderly in the community and within institutional settings;and innovative programming.

GTY 615/PSY 615 Aging and Mental Disorders. Semester course; 3 lecture hours. 3 credits. The course deals with common psychological disorders and problems of late life, their etiology, methods of evaluating psychological status, and intervention strategies that have been used successfully with older persons. Topics include epidemiology of psychological disorders and mental health service utilization; late-life stressors and crises;psychology of health,illness, and disability;techniques and procedures in the evaluation of the older adult;functional and organic disorders; institutionalization;individual,group, and family therapy, behavioral techniques; peer counseling and crisis intervention; and drugs and the elderly.

GTY 616 Geriatric Rehabilitation. Semester course; 3 lecture hours. 3 credits. Provides an overview of the process in geriatric rehabilitation with an assessment,psychosocial aspects, and rural issues in rehabilitation.Considers major disabling conditions in late life, and emphasizes the nature of the interdisciplinary rehabilitation process with aging clients.

GTY 624/SOC 624 Community and Community Services for the Elderly. 3 credits. A conceptual/theoretical overview of community focusing on the ecological,psychological,and social dimensions of community and on communities of the aged.

GTY 625 Aging and the Minority Community. 3 credits. An analysis of the relationship between the aging process and American minority communities. In addition to the sociological factors, the course will examine demographic, physiological and psychological aspects of minority aging. Attention will also focus on dominant social problems and federal policies toward the aged.

GTY 627 Psychology of Health and Health Care for the Elderly. Focuses on factors in the etiology, course, and treatment of illness; patient/practitioner relationship;patient compliance and psychosocial issues in terminal care.

GTY 638 Long-Term Care Administration. 3 credits. Focuses on unique knowledge and skills considered essential to effective long-term care administration.Emphasis is on the professional role of the long-term care administrator in providing for the health and social needs of the chronically ill and elderly. Applied skills in addressing the technical, human,and conceptual problems unique to LTC are addressed through cases and field exercises.

GTY 641/PSY 641 Survey of Psychological Assessment and Treatment of the Older Adult. 3 credits. A combination didactic and skills training course;review of major treatment strategies and techniques for utilization with the older adult client with emphasis on group, individual,and paraprofessional delivery systems;evaluation of crisis intervention and consultation team approaches;lectures, demonstration,and classroom practice of actual treatment techniques.

GTY 642/PSY 642 Practicum in Clinical Geropsychology. 3 credits. An initial practicum geared as an entry to the team practicum experience;focus on familiarizing the student with mental health service delivery systems for the elderly in the Richmond community;rotation through a limited number of facilities such as nursing homes, retirement centers, nutrition sites, emergency hotline services for the elderly, and various agencies involved in deinstitutionalization; possible extended placement in a particular facility.

GTY 691 Topical Seminar. 3 credits. Seminars on specialized areas of gerontological interest. Examples of special topic courses taught in previous years: Nutrition and Aging;Psychophysiology and Neurobiology of Aging; Wellness and Aging;and Preretirement Planning.

GTY 692 Independent Studies. 1-3 credits. Directed independent study in depth of a particular problem or topic in gerontology about which an interest or talent has been demonstrated.

GTY 798-799 Thesis. 3-6 credits. A research study of a topic or problem approved by the thesis committee and completed in accordance with the acceptable standards for thesis writing.

Department of Health Administration

Barker, Thomas C. *Professor Emeritus* PhD, State University of Iowa; health administration.
 Clement,Dolores G. *Associate Professor* DrPH,University of California; health policy and administration.
 Clement, Jan P. *Associate Professor* PhD, University of North Carolina; health policy and administration,and business finance.
 Cullen, Benjamin T. *Professor Emeritus* EdD, University of Virginia; personnel/labor relations and health administration.
 Gross, Paul A. *Professor Emeritus* MHA, Virginia Commonwealth University;health administration.
 Hurley, Robert E. *Associate Professor* PhD, University of North Carolina;health policy and administration.

Kraus, Richard C. *Professor* MHA, Virginia Commonwealth University; health administration.

Lodge, Jeffrey R. *Instructor* BA, Emory and Henry College; mathematics/computer science.

Luke, Roice D. *Professor* PhD, University of Michigan; medical care organization, health economics, and quality assurance.

McCue, Michael J. *Associate Professor* DBA, University of Kentucky health care finance.

Norville, Jerry L. *Professor Emeritus* MS, University of Colorado; MBA, Midwestern State University; MA, Antioch School of Law; health administration, long-term care, and personnel labor relations.

Ozcan, Yasar A. *Associate Professor* PhD, Virginia Commonwealth University; MBA, Southeastern Louisiana University; statistics, quantitative methods, and information systems.

Rossiter, Louis F. *Professor* PhD, University of North Carolina; health economics.

Shukla, Ramesh K. *Professor* PhD, University of Wisconsin; systems analysis/management, manpower planning, and health provider productivity.

Wisher, Karen W. *Associate Professor* JD, University of Richmond; health law.

Wan, Thomas T. H. *Professor and Chair* PhD, University of Georgia; MHS, Johns Hopkins University School of Hygiene and Public Health; health systems evaluation/analysis, medical sociology, and health demography/epidemiology.

White, Kenneth R. *Assistant Professor* PhD, Virginia Commonwealth University; MPH, University of Oklahoma; MSN, Virginia Commonwealth University; health administration, health care marketing, health professions.

Introduction

Education in health administration at the University began in 1949 with the establishment of a graduate curriculum in hospital administration. Early graduates received a certificate; the master's degree was awarded beginning in 1955.

These early efforts grew and developed into the Department of Health Administration which was established in 1972. The department now includes three major programs: (1) Master of Health Administration; (2) PhD in Health Services Organization and Research; (3) Master of Science in Health Administration, Executive Program. The department also cooperates with the T. C. Williams School of Law of the University of Richmond in offering a dual degree program in health administration and law. Both master's programs are fully accredited by the Accrediting Commission for Education in Health Services Administration (ACEHSA). In addition to these educational programs, the Department of Health Administration has a major research program and is involved in a wide range of public service activities, including continuing studies for health services administrators and other health professionals.

Departmental Purpose and Functions

The overall purpose of the Department of Health Administration is to provide educational programs and services related to the organization and administration of health services. In achieving that purpose, the department's principal functions are to provide high-quality education leading to careers in the administration of health care institutions, agencies, and systems and to provide advanced training and education for persons who will teach, plan, evaluate, and investigate health care policies and medical care systems. Corollary functions

are to provide assistance and other services for community organizations and to conduct health services and health policy research.

Facilities

The department is located in the William Grant House, formerly the Sheltering Arms Hospital, at 1008 East Clay Street in Richmond, Virginia. The chair's office and the Professional Graduate Programs offices are located on the second floor. The PhD program office and the Williamson Institute are located on the third floor of the building.

The Medical College of Virginia Hospitals, one of the largest teaching hospitals in the nation, and other clinical facilities of the MCV Campus are readily accessible to the department's students and faculty. In addition, the department has clinical affiliations and close working relationships with a large number of health care organizations and agencies in Virginia and throughout the United States. The organizations and agencies are used extensively as clinical facilities in the department's educational programs.

Endowed Awards, Lectureships, and Professorships

The **Robert Hudgens Memorial Award** was established and endowed by the department's alumni association in cooperation with the American College of Healthcare Executives (ACHE). The Hudgens Award is presented annually to the person selected by a special ACHE committee as the most outstanding young health care executive in the United States. It is a major, nationally recognized award presented at the annual ACHE's Congress on Administration.

The **Charles P. Cardwell Memorial Lectureship Series** was inaugurated and endowed by the department's alumni. It is held in conjunction with the annual ACHE's Congress on Administration. The series is coordinated by an executive committee of the department's alumni association.

The endowed **Arthur Graham Glasgow Professorship of Hospital Administration** was established in 1957 in honor of Dr. Glasgow who had demonstrated a vital interest in hospitals and hospital administration.

The **Herman L. Mullins Award** is presented annually for the most outstanding management study completed by a graduate student in health services administration. This award was established by the MHA Class of 1976 through the Health Administration Alumni Association as a lasting recognition for the contributions of Herman L. "Moon" Mullins as a teacher, adviser, and friend of the student.

The **Thomas C. Barker Preceptor Award** was established by the MHA Class of 1996 in honor of the first dean of the School of Allied Health Professions, who was affiliated with the Department of Health Administration. Dr. Barker had served as chair of the Department of Health Administration and MHA Program director prior to becoming dean. The graduating class nominates and elects the preceptor who has

demonstrated outstanding mentorship during the year of residency. Dedication to the MHA Program should be a consideration in the nomination.

The **Stuart D. Ogren Scholarship Fund** was established by institutional members of the Virginia Hospital and Healthcare Association, and Mr. Ogren's friends and colleagues in 1990. The fund honors Mr. Ogren, a former president of the Virginia Hospital Association. During his distinguished career, Mr. Ogren made significant contributions to the effective provision of medical care services in the Commonwealth and the formulation of health care policy in the Commonwealth and the Nation. These scholarships, supported by a \$175,000 endowment, are available to students who have been admitted to the department's graduate program in health services administration (MHA degree) program. Funds are employed to attract exceptionally well-qualified students (as defined by previous academic performance and work experience). The awardees are recognized each year at the Virginia Hospital and Healthcare Association's annual meeting.

The **Jerry L. Norville Award** is presented annually to the faculty member who, through example, demonstrates exceptional dedication and genuine concern for the welfare of students in the MHA Program. This award was established by the MHA Class of 1989 in honor of Professor Jerry L. Norville who served on the faculty for 20 years, and during that time, served in various capacities such as director of the MHA program, and as chair.

The **Cardwell Society** was instituted in 1983 by department alumni and in memory of the founder and first director of the then School of Hospital Administration, Charles P. Cardwell, to recognize those who annually make a major contribution to the Department of Health Administration. The society was established to help maintain the traditions and quality of the department through support of its residency program, expanded computer-assisted educational programs, capital and equipment requirements, and other educational and operational needs.

Officially initiated in 1987, the **David G. Williamson, Jr., Institute for Health Studies** was named in memory of Mr. David G. Williamson, Jr., formerly the vice-chairman of the Hospital Corporation of America and one of the department's leading alumni. Mr. Williamson played a major role in making it possible for the institute to be established. The institute serves as a bridge between the department and administrative and clinical leaders in health care by sponsoring instructional, research, and outreach programs focused on the organization and financing of health services. Such programs are designed to help resolve the often conflicting requirement that health care organizations be simultaneously cost effective, innovative, and responsible for serving society's needs.

Graduate Program in Health Services Administration

The graduate program in health services administration is designed to prepare individuals for administrative

roles leading ultimately to top-level executive positions in complex health services organizations. The curriculum combines emphasis in strategic and operational management, thus orienting students toward the broad spectrum of managerial problems and functions likely to be encountered by health services organizations.

The program's educational objectives and content are based upon the premise that a large number of students who select this curriculum aspire to become senior executives of health care organizations at some point in their careers. A comprehensive listing of these goals is set forth in a separate document, "Educational Objectives of the Graduate Program in Health Services Administration."

The graduate program in health services administration is designed primarily for full-time students. A limited number of part-time students may be accepted into the program. The part-time program is intended primarily for persons who already are employed in the health industry. The admissions standards and degree requirements for part-time degree candidates are the same as those for full-time degree candidates.

The graduate program was accredited initially in 1968, one of the first programs in the United States to achieve that status. It has maintained continuously its national accreditation status, and in 1993 the program was awarded an eight-year accreditation.

Dual Degree Program in Health Administration and Law

Advanced study in health administration and law is available through a dual degree program co-sponsored by the department and the T. C. Williams School of Law at the University of Richmond. The program leads to the awarding of the Master's in Health Administration (MHA) and Juris Doctor (JD) degrees. Participants are provided the necessary expertise either to represent clients within the health care industry or to function as legal policy makers or administrators who fully appreciate the legal environment of the health care field. Applicants for this program are required to meet the admission requirements of each program. For information regarding the dual degree program, contact the director of the program.

Admission Requirements – MHA and MHA/JD Programs

Applications are encouraged from individuals who have earned undergraduate or graduate degrees in any discipline or field of study. However, to be eligible for admission to the graduate program, completed course work must include basic preparation in economics, accounting, and business statistics. In addition, a working knowledge of college-level algebra is necessary preparation for the graduate program's courses in systems analysis and evaluation.

The foundation requirements may be met by completing specified prerequisite courses with a grade of "C" or better within the past five years at any accredited college or university or by completing specified foundation

courses within the School of Business at VCU. These requirements are:

1. one college-level semester course (3 credits) in financial accounting;
2. one college-level semester course (3 credits) in economics; and
3. one college-level semester course (3 credits) in statistics (business statistics preferred).

Any or all of these three foundation courses may be taken in VCU's School of Business during the summer semester immediately prior to the fall term when the student enrolls in the graduate program in health services administration. The foundation courses provide an excellent opportunity for students without a strong background in business to fulfill the course work requirements for entrance into the graduate program. In addition, students who have met all or some of the prerequisite requirements may strengthen their preparation for the graduate program by taking other foundation courses in the business school's summer session. These include courses in marketing, business law, finance, and other areas. The foundation courses cannot be applied toward the 60 semester hours required for the MHA degree. Foundation courses at the graduate level are available only to those who already have been admitted to a graduate program offered by the department.

To be considered for admission into the graduate program in full status, the applicant must meet the following minimum qualifications: (1) present evidence of personal achievement, scholarship, intellectual ability, and professional promise; (2) hold a baccalaureate or graduate degree from a college or university that is fully accredited by the Association of American Universities or by a regional accrediting agency; (3) have an overall grade-point average of 2.75 or higher on a 4.0 scale in undergraduate work or provide evidence of high achievement in a substantial amount of graduate-level course work; and (4) attain a satisfactory score (at least 50th percentile in each category) on the Graduate Record Examination (GRE) or the Graduate Management Aptitude Test (GMAT). Enrollment into the program is limited and competition is strong. Meeting the minimum qualification above is not generally sufficient for admission.

Applicants who have completed the prerequisite course work and meet the other requirements may be admitted into the graduate program in full status. Students in full status are candidates for the MHA degree. Full status is maintained as long as the student achieves a grade-point average of 3.0 in all course work each semester.

If an applicant presents qualifications that approximate the admissions requirements and standards, that applicant may (at the discretion of the Admissions Committee) be admitted into the graduate program on provisional status. Advancement to full status may be approved by the faculty when the student has satisfactorily completed one or more semesters of graduate studies. Students admitted on provisional status who do not meet GRE/GPA standards will be dismissed from the graduate program at the end of their first semester of graduate studies if they have not earned at least a 3.0

grade-point average for all courses attempted or if they have earned a grade of less than "C" in any course. Complete information regarding academic requirements and standards is set forth in Academic Policies and Regulations for the Graduate Program in Health Services Administration.

VCU is a state-aided institution, and preference is given to applicants with equal qualifications who are residents of Virginia. Persons from countries other than the United States may apply for admission to the department's graduate program. Foreign applicants must meet all the regular admission requirements, score a minimum of 600 on the Test of English as a Foreign Language, submit evidence of a pre-approved residency site in the home country, and submit evidence of financial responsibility as stated in Part I of this *Bulletin*.

Requests for further information regarding admission requirements, standards, and procedures should be sent to the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051 or to the Department of Health Administration, School of Allied Health Professions, Virginia Commonwealth University, P.O. Box 980203, Richmond, VA 23298-0203.

Transfer Credit

Students who have earned graduate credit before entering the Department of Health Administration's graduate program may be permitted, at the discretion of the faculty, to transfer a maximum of six semester hours of credit to count toward the MHA degree. Transfer credit may be allowed when, in the judgment of the faculty, the applicants have satisfactorily completed course work equivalent to courses in the graduate curriculum offered in this department. Normally, transfer credit is approved at time of admission.

Curriculum

Students are required to complete a total of 60 semester hours (including transfer credit, if any) to qualify for the Master of Health Administration (MHA) degree. This requirement includes 46 hours of core course work plus at least six semester hours of elective studies in health services administration and related disciplines, such as business administration, public administration, urban and regional planning, and gerontology. In addition, eight semester hours of practicum course work are required as a part of the administrative residency. At the discretion of the faculty, students with significant experience in health services administration may substitute additional elective courses for the administrative practicum courses. The graduate program is designed to provide a balanced combination of academic studies and field experience to enable students to achieve the program's educational goals and become well prepared to enter the field of health services administration.

The core curriculum of the graduate program in health services administration consists of 16 courses totaling 46 semester hours which must be completed by all degree candidates. These courses represent an integrated series of learning experiences designed to provide students with a common body of knowledge and

skills which are considered to be essential.

Core Courses	
HAD 602 Health Care Organization and Services	3
HAD 606 Financial Management in Health Organizations I	3
HAD 607 Financial Management in Health Organizations II	3
HAD 608 Seminar in Health Care Finance	3
HAD 609 Health Systems Analysis and Evaluation	3
HAD 610 Health Care Management Decision Support Systems	3
HAD 611 Hospital and Medical Law	4
HAD 612 Information and Management Systems	3
HAD 614 Health Care Marketing and Entrepreneurship	4
HAD 624 Health Economics	3
HAD 631 Managed Care	3
HAD 646 Health Care Managerial Roles and Processes	3
HAD 647 Operations Management in Health Care Organizations	3
HAD 648 Strategic Management in Health Care Organizations	3
HAD 692 Independent Study in Health Administration	1
HAD 692 Independent Study in Health Administration	1
	46

In addition to the core curriculum and elective courses, students in the MHA program complete a one-year series of executive skills workshops at no cost to them. These workshops are designed to focus on individual development of personal skills essential to success in health administration.

Students in the Dual Degree Program are required to complete 45 semester hours while in the Graduate Program in Health Services Administration. Students take all the regular MHA curriculum core courses except HAD 611 Hospital and Medical Law and the eight-credit Administrative Residency. MHA/JD students are waived from HAD 611 Hospital and Medical Law. It is not necessary to replace this course with another elective course in the MHA program.

Students in the MHA program must take one summer administrative internship of at least three credit hours. This may be completed between the first and second years in the MHA Program.

Administrative Residency

Purpose of the Residency. The administrative residency is an integral part of VCU's graduate program in health services administration. The basic purpose of the residency is to provide students opportunities to apply and further develop their administrative knowledge and skills through a period of applied experience in an operational setting. The administrative residency is supervised directly by experienced executives who serve as the students' preceptors.

Through a carefully selected and organized residency experience, students strengthen the foundation of general knowledge and skills gained through the core curriculum and develop further insight and expertise in their selected concentrations. Students serve their residency in the type of health care organization in which they wish to gain specialized knowledge, skills, and experience. Overall policies and guidance for the administrative residency are established by the Department of Health Administration and are included in *Handbook for the Administrative Residency of the Graduate Program in Health Services Administration*.

Appointment to the Residency. Students become eligible for entrance into the administrative residency after completing 52 semester hours of specified course work and achieving an overall GPA of 3.0. Students on academic probation because of performance during their final on-campus semester prior to their residency may, at the discretion of the faculty, be prevented from entering their residency although their overall GPA is 3.0 or higher.

In addition to meeting the above academic requirements, the student must, in the judgment of the faculty, present evidence of readiness for a clinical experience by demonstrating sufficient academic proficiency in the core areas of the curriculum and by demonstrating professional maturity.

The director of the professional graduate programs or his/her designee has the responsibility to coordinate residency placements. In making these assignments, the director will consider the preferences of the students, the preferences of the preceptors, and the recommendations of faculty advisers. Students' preferences may not always be met.

The length of the administrative residency is variable, depending upon student background and experience. For most students, the residency will be 12 months. Students who have had at least two years of experience in responsible management positions within health care organizations or agencies may petition the faculty to waive or reduce this requirement. Administrative residents are paid a stipend by the organization in which they are being sponsored.

On-campus Commitments During the Residency. During the residency phase of the graduate program, students must attend scheduled on-campus seminars and must participate in a series of electronic seminars on topics related to the residency experience. Equipment requirements are the same as those listed for the Executive MSHA program. During the on-campus seminar, students will participate actively in other educational activities associated with course work HAD 693, 694, and 695 taken during the residency year.

Residency Policies and Procedures. A complete statement of academic policies and procedures relating to the administrative residency phase of the graduate program is set forth in Administrative Residency Policies and Procedures, in the *Handbook for the Administrative Residency of the Graduate Program in Health Services Administration*.

Length of the Program. The curriculum is designed to provide students with some flexibility in determining the pace and length of their program of studies. Full-time students ordinarily will begin their studies during the fall semester and complete their course work requirements within 21 months. For most students, this portion of the graduate program will be followed by an administrative residency of 12 months.

Depending upon their educational background and experience, the pace of studies they elect, and the length of their residency requirement, some students will be able to complete all requirements and receive the MHA degree within 24 months after enrolling in the graduate program.

Requirements for Graduation

To qualify for the MHA degree, students must meet the following requirements: (1) achieve an overall grade-point average of 3.0 on a 4.0 scale for all graduate curriculum course work; (2) satisfactorily complete all requirements of the administrative residency including required course work taken during the period; (3) present a comprehensive seminar administered near the end of the graduate program; and (4) in the judgment of the faculty, demonstrate sufficient maturity, development, and abilities in health services administration to constitute readiness to enter the profession of health administration.

Degrees are conferred at commencement exercises of the University in May.

Academic Policies and Regulations

Academic policies and regulations for the graduate program in health services administration are set forth in separate documents published by the Department of Health Administration. These departmental documents, as well as publications that state University-wide policies and regulations, may be obtained by applicants at the time of their interviews.

Executive Master of Science in Health Administration Degree Program

The Executive Program is a two-year distance learning course of study leading to the award of a Master of Science in Health Administration (MSHA). It can be completed while working full time, because time away from work and home is minimized. The program is designed specifically for self-motivated, mature, and experienced professionals who are seeking advanced preparation in management.

The program is designed to meet the distinctive professional development needs of

- Clinicians
- Physicians
- Mid-level managers
- Executive-level managers
- Specialists

Curriculum

Completing the executive program's curriculum requires 24 months. Students enroll in four six-month semesters of course work. Each semester is composed both of on-campus and off-campus sessions. During the five on-campus sessions (ranging in length from seven to 14 days each), students attend executive program classes on the MCV Campus. During the off-campus session of each semester, students continue studies at their home/work site, employing a carefully planned array of distance learning technologies.

A new class begins each June/July. The schedule of courses is as follows:

First Semester	Credits
HAE 602 Health Systems Organization and Financing	3
HAE 624 Health Economics	3

HAE 645 Health Care Organization and Management Theory	3
HAE 690 Health Care Executive Collegium I	2
	11

Second Semester

HAE 646 Health Care Management Roles and Processes	3
HAE 614 Health Care Marketing	3
HAE 606 Health Care Managerial Accounting	3
HAE 615 Managerial Epidemiology	2
	11

Third Semester

HAE 610 Health Care Management Decision Support Systems	3
HAE 607 Advanced Financial Management in Health Organizations	3
HAE 611 Health Care Organization and Management Law	2
HAE 631 Introduction to Managed Care	3
	11

Fourth Semester

HAE 648 Strategic Management in Health Care Organizations	3
HAE 647 Health Care Operations Analysis and Management	4
HAE 691 Health Care Executive Collegium II	3
HAE 613 Employment and Labor Law for Health Care Organizations	2
	12

Executive Program courses are designed to meet the distinctive needs and preferred learning styles of the experienced health care professional. These courses prepare students to meet the challenges of the new health care marketplace while providing a solid foundation for lifelong professional development.

On-Campus Study

During the two-year curriculum, students spend five sessions on the MCV Campus. On-campus sessions are held during June/July and January and range from seven to 14 days each.

On-campus sessions are designed specifically for Executive Program students. Students attend lectures, participate in seminars, and make use of the department's learning laboratory, computer facilities, and library. Ample opportunity is provided to interact with other students, faculty, and visiting scholars/practitioners. Courses meet during the day. Evenings are reserved for study, group project work, informal interaction with fellow students, relaxation, and planned social events.

All courses are designed carefully to facilitate effective and efficient learning. Students are provided with detailed outlines of lectures, a complete handout set, and comprehensive learning/study guides for the material covered.

While in residence at the University, students stay in conveniently located hotels. Meals can be obtained for reasonable prices in the hotel or at a wide variety of restaurants in the immediate area. Students are encouraged to take advantage of the University's recreational facilities and the cultural/entertainment opportunities of Richmond and the surrounding area.

Off-Campus Study

Each semester is composed also of a five-month session when students continue course work at their places of residence/employment. During the off-campus session, students complete reading assignments and projects. They employ the following distance learning technologies in their studies:

- **World Wide Web (WWW) Based Courses.** The Executive Program's Web-based technology is the primary mode of communication among the students and faculty during the off-campus periods. The technology was originated by the Department of Health Administration and is now used all over the world. Each course in the Executive Program has its own electronic classroom. Faculty members distribute announcements and assignments, and conduct seminars/forums. Students can develop their own home pages, chat on-line, take practice quizzes and listen to recorded messages from faculty. The Web site and the Web-based technology are designed with the computer novice in mind. Students are trained in the usage of the software and can receive support from our computer instructor as well as faculty.
- **Computer-Assisted Instruction (CAI).** CAI makes it possible to offer individual lessons on a floppy-disk. By using a personal computer, students are guided through a series of instruction modules and problem sets. They proceed at their own pace and receive constant feedback regarding their level of knowledge and skill acquisition. No previous computer experience is required to use CAI packages.
- **Independent-Study Modules.** These modules contain selected readings, problem sets, discussion questions, and exercises. Each module is designed to help students attain a specifically defined learning objective.

Students are expected to devote a minimum of 15 to 20 hours per week to executive program study during the off-campus period of each semester.

Equipment Requirements

All associates admitted to the executive program must have access to a multimedia personal computer. The minimum system should include:

- Pentium-based computer;
- modem (28,800 baud minimum);
- 32 MB of RAM;
- 1+ gigabyte hard drive capacity;
- CD-ROM Drive (preferably 8X or above);
- 3.5 inch high density floppy drive;
- Soundboard and speakers (for streaming audio and video);
- Mouse;
- Windows 95 or NT workstation; and
- Microsoft Office 97 software (including Word, Excel and PowerPoint).

In addition, associates must be able to access the Internet from their personal computer. Access is usually obtained through a local Internet Service Provider by purchasing an Internet subscription.

Although associates can use a personal computer at the office, we strongly recommend that they have one at home. Once admitted to the program, it is recommended that associates enroll in a basic computer training course to become comfortable with a computer and its operating system. The associates will be instructed in the use of necessary software for course work and communicating with the Web site through the use of a Web browser (preferably Netscape Navigator 3.0 and above).

Those students who are very experienced in the use of personal computers and software may use equipment other than IBM. Non-IBM users should be skilled in the use of word processing, spreadsheet, and communication software compatible with the program's requirements (MS software for the MAC).

Admission Requirements

As application procedures and admission requirements for the executive program are different than other courses of study offered by the University, interested students should contact the department for a prospectus. The material can be obtained by writing Executive Program, Virginia Commonwealth University, P.O. Box 980203, Richmond, VA 23298-0203 or calling (804) 828-0719. Applications are accepted beginning in September for admission to the program in July of the following year. The application deadline is March 15 of each year.

The executive program admits students with diverse educational, work, and life experiences who have the demonstrated capacity to pursue a rigorous course of professional graduate study and assume positions of leadership in the health care financing and delivery industry.

To be considered for admission to the executive program applicants must, at a minimum:

- possess a baccalaureate degree from an institution of higher learning recognized by VCU and have a 2.75 grade-point average for all undergraduate work completed;
- have five years of increasingly responsible work experience;
- submit scores on a standardized aptitude test for graduate studies; and
- forward all required application and supporting materials to the School of Graduate Studies.

Previous educational experience. No exceptions will be made to the requirement that applicants must possess an earned baccalaureate degree from a recognized college or university. Applicants with less than a 2.75 undergraduate GPA who have exceptional professional experience will be considered for admission on provisional status. Provisional status will be removed after satisfactory completion of the first semester of the program. If an applicant has completed any graduate studies (whether or not a degree was awarded), performance in such course work will be considered in the admission decision.

Work experience. Applicants are expected to have at least five years of increasingly responsible professional work experience as documented in a professional résumé. The specific experience profile deemed appropriate for

admission to the Executive Program depends upon one's particular profession or occupation. The résumé is a very important element of the application materials. Applicants are encouraged to prepare the résumé in such a way that it accurately and completely describes their accomplishments.

Graduate studies aptitude tests. VCU requires that all applicants for graduate study submit standardized aptitude test scores. The Executive Program will accept scores on either the GMAT or the GRE. Applicants who have taken the GMAT or GRE in the last five years may submit previous scores. Those applicants holding a master's or professional doctoral degrees (for example, MD, DDS, JD, PharmD) may have GMAT or GRE requirements waived upon petition to the graduate dean. Applicants should make arrangements to take the examination of their choice at the earliest possible date.

Prerequisites. No specific previous course work is required for application to the program. Upon formal acceptance, students will be provided independent-study modules in three areas: microeconomics, accounting, and quantitative analysis. These modules include books, articles, programmed instruction handbooks, and computer-aided instructional material. Completing these independent-study modules precludes the need for taking prerequisite course work prior to instruction. Applicants having acceptable previous course work in accounting, economics, and/or statistics will not be required to complete these independent-study modules.

Financial Considerations

Interested students should contact the department for current tuition and fee information. In addition to tuition and fees, students will need to budget for the following expenses:

- Computer equipment
- Text books and reading packets
- Travel, meals, lodging, and personal expenses associated with attending the five on-campus sessions in Richmond.

Applicants are encouraged to consult a tax adviser regarding the rules and procedures governing educational deductions for income taxes.

If accepted to the Executive Program, students will be required to forward a nonrefundable payment of \$500 to hold a place in the class. This payment is applicable to first semester tuition and fees. Full payment for tuition and fees is due approximately 30 days prior to the beginning of each semester.

Doctoral Program in Health Services Organization and Research

The PhD in health services organization and research is a challenging 57-credit program that prepares individuals for positions as faculty, researchers, policy analysts, and top-level staff in complex health organizations. Students learn to apply research methods and scientific knowledge drawn from the behavioral and managerial sciences to the study of health organizations, services, and systems. The program is designed to meet the

distinctive professional development needs of (1) clinical professionals who want to prepare for positions as faculty and independent researchers; (2) administrative professionals who want to prepare for positions as faculty, researchers, or consultants; and (3) researchers and policy analysts who want to create depth through specialization in health services organization and research.

Courses are distributed across four areas: foundations of health services organization and research (9 credit hours); health services organization theory (12 credit hours); health services research methods (18 credit hours); and an area of specialization (9 credit hours). Students take two written comprehensive examinations, covering health services organization theory and health services research methods. Areas of specialization are drawn from elective courses and from independent study with faculty members in their areas of expertise, such as long-term care, mental health services, managed care, quality management, or international health. The course work is sequenced so that it can be completed in two years of full-time study or three years of part-time study (exclusive of dissertation credit). In addition, nine credit hours of dissertation credit are required. Students orally defend a written dissertation proposal before their dissertation committee, write the dissertation, and orally defend the completed dissertation.

Admission Procedures and Requirements

The program admits students with diverse educational, work, and life experiences who have demonstrated a capacity to pursue a rigorous course of doctoral study. Admission is limited, competitive, and open to students with clear career goals in health services administration and research.

Admission requirements include (1) a graduate degree in an academic or professional field with a grade-point average of "B" or higher; (2) working knowledge of college-level algebra, especially matrix algebra; (3) advanced courses in statistics and economics; (4) a minimum score of 550 on verbal and 600 on quantitative sections of the GRE; (5) for international students, scores from the Test of English as a Foreign Language; (6) transcripts and application forms; (7) three letters of recommendation; and (8) personal interviews with members of the Admissions Committee. The department recommends that candidates have at least one to two years experience in the health care industry before beginning the program. Applications received by April 15 are preferred.

Financial Aid

A selected number of graduate assistantships are available, covering tuition plus a stipend of about \$9,000. Students with assistantships must pursue full-time study (12 credits each in fall and spring semesters; 6 credits in summer semester). Some research assistantships, paying a stipend, are also available in the department.

Further information may be obtained by writing the Doctoral Program Director, Department of Health Administration, School of Allied Health Professions,

Virginia Commonwealth University, P.O. Box 980203,
Richmond, VA 23298-0203.

Graduate Courses in Health Administration (HAD)

HAD 602/PMH 602 Health Care Organization and Services. Semester course; 3 lecture hours. 3 credits. Examines the structure and functions of the American health care industry, the concepts and processes of health and illness, the institutional and individual providers of health services and related concepts.

HAD 606 Financial Management in Health Organizations I. Semester course; 3 lecture hours. 3 credits. Prerequisite: Financial Accounting. A theoretical and practical study of organization and functions of health care financial administration. Emphases are on institutional fiscal policies, accounting concepts and practices, internal and external controls, financial statistical reporting, and the use of financial data as management tools.

HAD 607 Financial Management in Health Organizations II. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 606. Advanced practices of health care financial management. Emphasis on techniques to aid in financial decision making. Areas of investigation and study include analysis of financial statements, cost allocations, reimbursements, rate setting, budgeting, and capital financing.

HAD 608 Seminar in Health Care Finance. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 606 and HAD 607. Advanced studies of financial issues and the application of analytic tools in case studies and exercises. Designed to enhance and strengthen the knowledge and skills provided in the graduate program's foundation and required courses in accounting and finance.

HAD 609 Health Systems Analysis and Evaluation. Semester course; 3 lecture hours. 3 credits. Prerequisite: Upper-division course in statistics. Introduction to principles and methods employed in evaluation research and program evaluation as these relate to health services. Focus is on conceptualization, design, and operational procedures used in program evaluation.

HAD 610 Health Care Management Decision Support Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 609. Applications of traditional industrial engineering techniques in health care institutions. Applications of operations research techniques to health care planning, control and decision making including deterministic, and stochastic decision analysis models and their use in health service administration.

HAD 611 Hospital and Medical Law. Semester course; 4 lecture hours. 4 credits. Examines basic principles and practices of law affecting hospitals and medical practice: the legal aspects of patient care and treatment, medical services, and other hospital-patient related functions and employment law.

HAD 612 Health Information and Management Systems. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 609 and HAD 610. Analysis of current information and management systems including manpower planning and productivity, financial planning and monitoring, quality assurance, staffing and scheduling, administrative information systems and patient care systems. Evaluation of alternative uses of computer technology in health care. Uses of national and organizational data bases.

HAD 614 Health Care Marketing and Entrepreneurship. Semester course; 4 lecture hours. 4 credits. Prerequisite: HAD 624. Examines the planning and marketing processes in the context of both the community and the institution. Considers the essential components of marketing planning and the development of a sound structure for marketing. Addresses principles and practices of health care marketing and business development, with emphasis on marketing plans.

HAD 615 Health Care Politics and Policy. Semester course; 3 lecture hours. 3 credits. Examines the political process with particular

emphasis on the impact of politics on health care. Focuses on current political issues in the health field, examining conflicts and anticipating effects on the health system.

HAD 624/ECO 624 Health Economics. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 500 or equivalent. Develops an understanding of (1) economics as a managerial tool in making choices or decisions that will provide for an optimum allocation of limited health care resources, and (2) economics as a way of thinking about and approaching issues of public policy in financing and organizing health and medical services. Individual research on crucial or controversial issues in the health care field.

HAD 626/PMH 617 International Health. I, II. Semester course; 3 lecture hours. 3 credits. Provides an overview of and/or introduction to international health. Focus is on the relationship between external factors and the health of populations.

HAD 631 Managed Care. Seminar course; 3 lecture hours. 3 credits. Prerequisites: Two semesters of graduate work and permission of the instructor. A seminar that examines the relationships between purchasers and providers of health care services and the development of new systems of financing and delivery that seek to improve performance and accountability.

HAD 638 Administration of Long-Term Care (LTC) Facilities and Programs. Semester course; 3 lecture hours. 3 credits. Focuses on unique knowledge and skills considered essential to effective long-term care administration. Emphasis is on the professional role of the long-term care administrator in providing for the health and social needs of the chronically ill and elderly. Applied skills in addressing the technical, human, and conceptual problems unique to LTC are addressed through cases and field exercises.

HAD 645 Structure and Functions of Health Organizations. Semester course; 3 lecture hours. 3 credits. Surveys concepts from organizational and management theories applicable to health organizations. Considers issues in organizational structure, strategy, and processes for health care organizations.

HAD 646 Health Care Managerial Roles and Processes. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 602 or permission of instructor. Focuses on the major concepts, principles, and theories of management and behavioral sciences as they relate to human behavior in health care institutions and agencies.

HAD 647 Operations Management in Health Care Organizations. Semester course; 3 lecture hours. 3 credits. Prerequisite: HAD 646. Analysis of the current state of management study and practice with the objective of achieving a balanced development of both knowledge and skills in solving the operations problems of health institutions. The managerial process is critically examined with emphasis on leadership behavior and development, structure and purpose of health care organization subunits, interfunctional coordination, and organizational processes.

HAD 648 Strategic Management in Health Care Organizations. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 614 and 647. Integrative seminar on strategic decision making in health care organizations. Considers the concepts and alternative models of strategic management, the strategic management process, and the evaluation of strategic decisions.

HAD 690 Departmental Research Seminar. Semester course; variable credit. Research seminar that focuses on research design and methods organized under a single topic or a series of related topics in health services research. Applied research training for master's-level students.

HAD 691 Special Topics in Health Services Organization and Research. 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Course is devoted to specialized content area for health administration. Examples include physician practice management and advanced managed care.

HAD 692 Independent Study in Health Administration. 1-3 credits. Prerequisite: Permission of instructor. Special study conducted under the guidance of a faculty sponsor.

HAD 693,694, 695 Practicum in Health Services Administration. I:2 credits;II:3-5 credits;III:3 credits. Prerequisite:Admission to the administrative residency. Examination of contemporary problems and issues in the organization, administration,and evaluation of health services. A principal focus is the application of alternative approaches to administrative problem solving. Special emphasis is placed on understanding and analysis of the internal and external factors that influence decision making in health care organizations.

HAD 697 Directed Research. Semester course;variable credit. Special course offered under the guidance of a faculty sponsor for one or more students to design and implement an applied research project in the field setting. Focuses on the application of research methods to policy or operational problems of health care institutions.

HAD 701 Health Organization Design and Assessment. Semester course;3 lecture hours. 3 credits. Prerequisites: HAD 704 and HAD 705 or permission from instructor. Analysis of medical care organizations at both micro and macro levels. Critical review of empirical research in organizational analysis and design.Identifies measurement issues related to quality of care and to formulation of evaluative research on health service programs.

HAD 702 Health Care Financing and Delivery Systems. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 701, HAD 704 and HAD 705. Critical review and evaluation of major innovations in organization,delivery, and financing of health care services. Selected topics may include risk assessment analysis of alternative health care delivery systems and consideration of alternative public financing of health care.

HAD 704 Foundations of Health Service Organization Theory. Semester course; 3 lecture hours. 3 credits. Examines the roots of foundational theories and concepts in organization theory and their application to research on health care organizations and systems. Emphasizes the environment and structure of health care organizations and systems.

HAD 705 Advanced Health Service Organization Theory. Semester course; 3 lecture hours. 3 credits. Prerequisites: HAD 704 or permission of instructor. Examines, in depth, selected organization theories, emphasizing their application in current health services research. Also investigates the process of theory growth on health services organizations.

HAD 760 Quantitative Analysis of Health Care Data. Semester course;3 lecture hours. 3 credits. Prerequisites:BUS 624 and HAD 609 or permission of instructor. Research course emphasizing computer application and statistical analyses of health care data generated from secondary sources, including data envelopment analysis.

HAD 761 Health Services Research Methods I. Semester course; 3 lecture hours. 3 credits. Prerequisite:Upper-division course in statistics. Research as a systematic method for examining questions derived from related theory and/or health service practice. Major focus is on the logic of causal inference, including the formulation of testable hypotheses relating to health services organization and management,the design of methods and measures to facilitate study, and the concepts, principles, and methods of epidemiology.

HAD 762 Health Services Research Methods II. Semester course; 3 lecture hours. 3 credits. Prerequisites:HAD 761,and BUS 632 or equivalent.Application of multivariate statistical analysis and evaluation research methods to health services research.Emphasis is placed on the use of advanced statistical methods (e.g.,LISREL,Event History Analysis) and designs to analyze panel data in the health field.

HAD 763 Health Program Evaluation. Semester course;3 lecture hours. 3 credits. Prerequisite:HAD 760, 761,or permission of instructor. Analysis of current evaluation research on personal health services and programs in a variety of social and health contexts. Emphasis is placed on the measurement of health care outcomes and the design of experimental and quasi-experimental studies in the health field.

HAD 791 Special Topics in Health Services Organization and Research. Semester course;1-6 credits. Prerequisite: Permission of instructor. Investigates a specialized content area in health administrative sciences in seminar format. Topics may change from semester to semester.

HAD 792 Independent Study in Health Services Organization and Research. Semester course; 1-3 credits. Special study or research leading to a publication. Conducted under the guidance of a faculty sponsor.

HAD 793,794, 795, and 796 Research Practicum. Semester course; 1-3 credits. Supervised investigation of selected problems in health services research. Includes conducting and analyzing field research. Available only to second year students.

HAD 898, 899 Doctoral Dissertation in Health Services Organization and Research. Semester course; 1-9 credits. Prerequisite:Completion of required course work and comprehensive examination.Dissertation research under direction of faculty adviser. A minimum of nine semester hours required for PhD degree.

Graduate Courses in the Executive MS Degree Program in Health Administration (HAE)

HAE 602 Health Systems Organization and Financing. 3 credits. Examines the structure and functioning of the U.S. health services financing/delivery system. Emphasizes foundational concepts useful for better understanding and analyzing patterns of health and illness; health care cost,quality, access, and utilization;professional behavior; competition in health care markets;and delivery/financing effectiveness and efficiency.

HAE 606 Health Care Managerial Accounting. 3 credits. Examines the functions of managerial accounting in the contemporary health service organization.Emphasis is placed on the formulation of institutional fiscal policies;managerial accounting concepts and practices; analysis and interpretation of basic financial statements;the design of financial systems;and the use of financial data as a tool for management planning and control.

HAE 607 Financial Management in Health Organizations. 3 credits. Advanced theory and techniques of managerial finance as applied to health service financing/delivery organizations. Emphasizes financial analysis/diagnosis of health service organizations and managerial decision making employing financial information.

HAE 610 Health Care Management Decision Support Systems. 3 credits. Application of operations research and industrial engineering techniques to increasing health service organization production efficiency. Managerial applications of production planning/control and decision models in health service organizations are emphasized.

HAE 611 Health Care Organization and Management Law. 2 credits. Elements of law and legal principles as they apply to the provision and financing of personal health care services. Emphasis is placed on a corporate law, contracts, medical malpractice, tort liability, medical-legal issues, and employment/labor law. Provides a legal foundation for the practice of health administration.

HAE 613 Employment and Labor Law for Health Care Organizations. 2 credits. Presents elements of law and legal principles as they apply to the organization and delivery of health services as embodied in employment and labor contractual arrangements. Emphasizes corporate law, contracts, labor and employment law and principles with applied problems and casework. Provides a legal foundation for the practices of health administration related to human resource management.

HAE 614 Health Care Marketing. 3 credits. Foundational theories, concepts, and techniques of marketing applied to the distinctive properties of health care services. Emphasis placed on the role of marketing and aligning organizational capacity and health care needs;market analysis and planning;strategic marketing management;tactical marketing mix design;designing and managing service delivery systems, and developing new offerings.

HAE 615 Managerial Epidemiology. 2 credits. The acquisition of analytical techniques to study and measure the health of populations is the focus of this course. Topics covered include: community health appraisal, health status measurement, health services utilized, managerial applications of epidemiology.

HAE 624 Health Economics. 3 credits. Foundational concepts of microeconomic theory and their application in analyzing health care policy; understanding the structure and dynamics of health care markets; and monitoring and controlling the allocation of resources within health organizations.

HAE 631 Introduction to Managed Care. 3 credits. Develops skills in analyzing the interrelationships among providers, consumers, employers and insurers in respect to the concepts of "Managed Care." Examines sources of change of the traditional health care system focusing on current issues and implications. Analyzes managed care entities with special attention to health maintenance organizations (HMOs) and preferred provider organizations (PPOs) as the prototypical managed care systems.

HAE 645 Health Care Organization and Management Theory. 3 credits. A survey of contemporary organization and management theory focusing on concepts and techniques particularly relevant to health service financing and delivery organizations. Emphasizes the health care organization's environment, goals, strategy, structure, and management processes.

HAE 646 Health Care Management Roles and Processes. 3 credits. Major theories and concepts of social and behavioral sciences as they apply to the design and execution of managerial functions in health services organizations. Emphasizes skills and techniques critical to executing the interpersonal, informational, and decisional roles of the manager.

HAE 647 Health Care Operations Analysis and Management. 4 credits. Operations management of health organizations with emphasis on current management and information systems. Focuses on performance evaluation, productivity, patient care systems and evaluation of alternative uses of computer technology.

HAE 648 Strategic Management in Health Care Organizations. 3 credits. Focuses on the formulation, implementation, and evaluation of strategy in health care financing/delivery organizations. Emphasizes concepts dealing with industry structure; the strategic management process; achieving and sustaining competitive advantage; and the social responsibility of health care organizations.

HAE 681 Special Topics in Health Administration. Variable; 1-3 credits. Offered in all semesters. Investigate a specialized content area in a semester-long, seminar format. Topics may change from semester to semester.

HAE 690 Health Care Executive Colloquium I - Leadership in Health Care Organizations. 2 credits. Analyzes the current management/ leadership role of the health care executive. Focuses on the requisite knowledge, skills, and values essential to success. Involves students in assessing their own leadership styles and skills and discussing among each other key concepts of leadership in health care.

HAE 691 Health Care Executive Colloquium II - Health Care Organization Diagnosis and Planning. 3 credits. Provides an opportunity for students to integrate as well as apply knowledge gleaned from prior course work and to share individual experiences in assessment of and correction of organizational problems that are either operational or strategic.

HAE 692 Independent Study in Health Administration. Variable credit. Offered in all semesters for students to investigate and study topics of major interest.

For descriptions of courses in other schools and departments, see the appropriate section in this *Bulletin* and the *Undergraduate and Professional Programs Bulletin*.

Department of Nurse Anesthesia

Drain, Cecil *Professor* PhD, Texas A & M University; nurse anesthesia, higher education.

Embrey, James *Associate Professor* PhD, Virginia Commonwealth University; nurse anesthesia, adult education.

Fallacaro, Michael *Professor and Chair* DNS, State University of New York at Buffalo; nurse anesthesia, higher education, research.

Hartland, William *Assistant Professor* PhD, Virginia Commonwealth University; nurse anesthesia, adult education.

Hotchkiss, Melissa *Assistant Professor* MS, Virginia Commonwealth University; nurse anesthesia.

Pontiflet, Addie *Assistant Professor* MS, University of Southern Maine; nurse anesthesia.

Reese, Charles *Associate Professor* PhD, California Pacific University; nurse anesthesia, adult education, regional anesthesia.

Basic Professional Program History

The program was first organized in 1969 as the School of Nurse Anesthetists, thus becoming the first academic program to be implemented in the newly organized School of Allied Health Professions on the MCV Campus.

A Letter of Intent for a proposed Master of Science degree in Nurse Anesthesia was submitted to the Commonwealth's Council on Higher Education in 1977. When approved in May 1978, the graduate degree in Nurse Anesthesia became the first such offering within the profession of Nurse Anesthesia. While of major importance to the University, it hallmarked a significant milestone for the profession of Nurse Anesthesia. The first class of graduate students was admitted in the Fall of 1979 and graduated in the Fall of 1981. A second hallmark was achieved in 1979 with the approval of the postgraduate curriculum for practicing Certified Registered Nurse Anesthetists (CRNA) offering a Master of Science in Nurse Anesthesia degree. The first students graduated in the Summer of 1983.

Philosophy

The philosophy of the department reflects the beliefs of the faculty and provides the foundation for the curriculum in the program. The department's philosophy is synergistic with the mission and goals of the School of Allied Health Professions and VCU.

The department is a social agency dedicated to the education and development of health care professionals in the field of nurse anesthesia. Consequently, the faculty recognizes and accepts the responsibility entrusted to it for the learning experiences of its students.

The philosophical orientation of the faculty subscribes to the belief that learning is a developmental process through which cognitive, affective, and psychomotor behaviors are developed and/or modified. This process includes the acquisition of information, the transfer of knowledge, the evaluation of new skills, and the development of a professional attitude and bearing.

The faculty subscribe to the belief that the learning experience is both positive and rewarding. It is a transactional experience between the student and teacher through formal and informal processes. The program's objective is the production of knowledgeable and skillful CRNAs. Hence, learning is a lifelong process that results in a change in thinking, values and behavior.

The teaching-learning process includes teacher-learner interaction in: setting goals, assessing, and selecting learning experiences; determining instructional methods and evaluating the learner's progress. Learning experiences are planned in manageable segments and provide for integration and continuity in the attainment of knowledge, skills, and attitudes consistent with the educational objectives and the individual needs of students. Each student is a unique human being possessing dignity, worth, and the right to equal educational opportunities. Faculty and students share the responsibility for creating an educational climate which reflects democratic values; fosters intellectual inquiry and creativity, and encourages the maximum development of each individual's potential.

The American health care system is becoming progressively complex. Technological advances and changing economic patterns foster competition for scarce resources while the patient population is becoming quite diverse. As a result, the role of the CRNA is becoming increasingly collaborative and complementary with other health professionals. In this environment, CRNAs have more responsibility and authority for coordination, decision making, and leadership of the multidisciplinary team, as well as for research, planning, and development of health resources.

Graduate education in nurse anesthesia at the master's level builds upon baccalaureate education with a nursing focus. It is designed to allow graduates the opportunity to become leaders and make significant contributions with the intended outcome of improving health care and advancing nurse anesthesia theory and practice through research. Consequently, the program prepares CRNAs through a team concept of a joint practice of anesthesia care composed of both nursing and medical components to meet the current and emerging health needs of society.

Objectives

The overall objective of the program is to prepare registered professional nurses for practice in the art and science of the specialty of nurse anesthesia. Given a patient or patient care situation in the practice of nurse anesthesia, the graduate will:

- formulate and discuss a patient's Anesthesia Care Plan (ASA Classification I-V);
- implement and evaluate anesthesia management plans;
- perform and utilize appropriate procedures during the anesthetic management of a patient;
- evaluate the postoperative course of a patient;
- perform, within medically established guidelines, resuscitation of the newborn infant, child, or adult;
- function, within medically established guidelines, as a team leader for cardiovascular and/or pulmonary emergencies;
- provide first echelon care and maintenance of all anesthesia equipment; and
- develop interpersonal behaviors consistent with that of a health care professional.

Accreditation

The nurse anesthesia program is fully accredited by the Council on Accreditation of Nurse Anesthesia Educational Programs. Graduates are eligible to take the examination for certification conducted by the Council on Certification of Nurse Anesthetists.

Admission Requirements

In addition to the general University requirements, the requirements for admission to the Master of Science in nurse anesthesia are:

- baccalaureate degree (nursing preferred);
- current licensure as a registered professional nurse in Virginia (by completion of the first semester);
- cumulative undergraduate grade-point average of 3.0 or higher on a 4.0 scale (preferred);
- upper-division undergraduate organic chemistry course, no lab required (recent);
- three semester hours of college statistics (recent);
- completion of the GRE within 5 years of application;
- a minimum of one year's experience in an area of acute/critical care nursing (recent);
- personal interview with members of the Admission Committee (by invitation); and
- three references: e.g., unit manager, immediate supervisor, and a physician from the applicant's work center.

Further inquiries should be made to the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051, (804) 828-6916.

Curriculum

First Year, Fall Semester	<i>Credits</i>
NUA 501 Principles and Practice of Nurse Anesthesia I	4
PMC 515 Pharmacology for Nurse Anesthetists I	3
PIO 501 Mammalian Physiology I	5
NUA 555 Professional Aspects of Anesthesia Practice I	1
	13
First Year, Spring Semester	
PHC 532 Medicinal Chemistry for Nurse Anesthetists	4
PMC 516 Pharmacology for Nurse Anesthetists II	3
NUA 573 Curriculum Development and Instruction in Nurse Anesthesia Programs	3
NUA 590 Research Methods in Nurse Anesthesia Practice	3
NUA 551 Principles and Practice of Nurse Anesthesia II	3
	16
First Year, Summer Semester	
NUA 699 Directed Research in Nurse Anesthesia or NUA 798 Thesis	2
NUA 533 Pathophysiology	3
NUA 552 Principles and Practice of Nurse Anesthesia III	4
NUA 553 Biomedical Instrumentation for Nurse Anesthetists	2
NUA 555 Professional Aspects of Anesthesia Practice II	1
	12
Second Year, Fall Semester	
NUA 699 Directed Research in Nurse Anesthesia or NUA 798 Thesis	2
NUA 593 Clinical Practicum I	6
NUA 631 Advanced Clinical Anesthesia Seminar I	2
	10

Second Year, Spring Semester

NUA 699 Directed Research in Nurse Anesthesia or NUA 798 Thesis	2
NUA 594 Clinical Practicum II	6
NUA 632 Advanced Clinical Anesthesia Seminar II	2
	10

Second Year, Summer Semester

NUA 699 Directed Research in Nurse Anesthesia or NUA 798 Thesis	2
NUA 692 Clinical Practicum III	6
NUA 633 Advanced Clinical Anesthesia Seminar III	2
	10

Third Year, Fall Semester

NUA 555 Professional Aspects of Anesthesia Practice III	1
NUA 693 Clinical Practicum IV	6
NUA 634 Advanced Clinical Anesthesia Seminar IV	2
	9

Postgraduate-Certified Registered Nurse Anesthetist (CRNA Program)

The Department of Nurse Anesthesia offers, based on advanced standing, a Master of Science in Nurse Anesthesia for the Certified Registered Nurse Anesthetist (CRNA).

Philosophy

The Master of Science degree is basic to entry-level specialization in nurse anesthesia. This practice of nursing is viewed as an expanded role in which the nurse anesthetist, as a clinical specialist, provides nursing and medically prescriptive services for the patient presenting for anesthesia. Anesthesia services can be provided best through a team concept composed of nursing and medical components.

The postgraduate CRNA Master of Science in Nurse Anesthesia curriculum is a single track design with a clinical or teaching option. This approach best reflects the achievement of the programs' stated objectives. This curriculum parallels the basic Master of Science in Nurse Anesthesia degree which ensures an expanded theoretical knowledge base and increased clinical competence. The similarities between the postgraduate and generic CRNA programs provide uniform credibility in the degree awarded.

Curriculum-Postgraduate CRNA

Four Semesters (16 months)

Fall Semester	
AHP 591 Special Topics	1
PMC 515 Pharmacology for Nurse Anesthetists I	3
PIO 501 Mammalian Physiology I	5
	9
Spring Semester	
PHC 532 Medicinal Chemistry for Nurse Anesthetists	4
PMC 516 Pharmacology for Nurse Anesthetists II	3
NUA 573 Curriculum Development and Instruction in Nurse Anesthesia Programs	3
NUA 590 Research Methods in Nurse Anesthesia Practice	3
	13

Summer Semester

NUA 533 Pathophysiology	3
NUA 553 Biomedical Instrumentation for Nurse Anesthetists	2
NUA 699 Directed Research in Nurse Anesthesia or NUA 798 Thesis	2
AHP 591 Special Topics	2
	9

Fall Semester

NUA 699 Directed Research in Nurse Anesthesia or NUA 798 Thesis	2
NUA 574 Teaching in Nurse Anesthesia Programs	2
NUA 693 Clinical Practicum IV	6
	10

Admission Requirements

Requirements for admission to the Master of Science in Nurse Anesthesia for the Post-Graduate Certified Registered Nurse Anesthetist (CRNA) are:

- a baccalaureate degree (nursing preferred);
- graduation from a nationally accredited educational program in nurse anesthesia;
- certification by a national examination as CRNA;
- current recertification as a CRNA by the Council on Recertification for Certified Registered Nurse Anesthetists;
- current licensure as a registered professional nurse in Virginia (by completion of the first semester);
- cumulative grade-point average of 3.0 or higher on a 4.0 scale (preferred);
- completion of the GRE within 5 years of application;
- three semester hours of college statistics (recent);
- upper-division undergraduate organic chemistry course, no lab required (recent);
- a minimum of one year's experience as a CRNA;
- references from current supervising nurse anesthetist (CRNA), chair/chief anesthesiologist, and one professional colleague;
- personal interview with members of the Admissions Committee by invitation; and
- proficiency examination (advanced standing).

Advanced Standing

Advanced standing is based on:

- graduation from a nationally accredited educational program in nurse anesthesia;
- certification by examination as a Certified Registered Nurse Anesthetist (CRNA);
- current recertification as a CRNA by the Council on Recertification for Certified Registered Nurse Anesthetists; and
- proficiency examination. Part A-Written: 100 multiple choice objective questions; Part B-Oral: two anesthesiologists and two CRNA graduate faculty. Advanced standing of one-third (31 SH) of the generic Master of Science degree in nurse anesthesia curriculum (79 SH) will be awarded for the following courses (nontransferable to the VCU transcript).

	<i>Credits</i>
NUA 501 Principles and Practice of Nurse Anesthesia I	4
NUA 551 Principles and Practice of Nurse Anesthesia II	3

NUA 552 Principles and Practice of Nurse Anesthesia III	4
NUA 555 Professional Aspects of Anesthesia Practice I,II,III	3
NUA 593 Clinical Practicum I	6
NUA 594 Clinical Practicum II	6
NUA 692 Clinical Practicum III	6
	32

Graduate Courses in Nurse Anesthesia (NUA)

NUA 501 Principles and Practice of Nurse Anesthesia I. Semester course; 4 lecture hours. 4 credits. Introduces the beginning nurse anesthesia practitioner to those concepts necessary to plan and execute safe individualized anesthetic. Covers pre- and post-patient evaluation, formulation of the anesthesia care plan, anesthetic techniques, prevention of complications, fluid management, anesthesia procedures, monitoring, and application/maintenance of equipment.

NUA 533 Pathophysiology. Semester course; 3 lecture hours. 3 credits. Pathophysiology of the neuromuscular, cardiovascular, respiratory, excretory, and endocrine systems; infectious diseases, gastrointestinal disorders; nutritional disorders; connective tissue diseases; muscle, skin, bone disorders, and environmental and behavioral disorders. The pathophysiology will be studied in relationship to anesthetic considerations.

NUA 551 Principles and Practice of Nurse Anesthesia II. Semester course; 3 lecture hours. 3 credits. A study of the theoretical and practical considerations involved in the administration and management of regional anesthesia.

NUA 552 Principles and Practice of Nurse Anesthesia III. Semester course; 4 lecture hours. 4 credits. Delineates those practices and techniques of anesthesia management that are considered as situation-specific for specialized procedures, diagnostic, or therapeutic procedures.

NUA 553 Biomedical Instrumentation for Nurse Anesthetists. Semester course; 2 lecture hours. 2 credits. A course surveying the basic essentials of biomedical instrumentation as utilized in those electronic devices most often encountered by nurse anesthetists; to include a brief descriptive review of the basic laws of electrical circuits and the physical principles of biophysical measurement.

NUA 555 Professional Aspects of Anesthesia Practice I, II, III. 3 semesters; 1 lecture hour. 1 credit each. Provides the student an opportunity to focus on a variety of nurse anesthesia practice settings. Studies the history of anesthesia, nurse anesthesia practice and the relationship of that practice in the development and growth of the American Association of Nurse Anesthetists.

NUA 573 Curriculum Development and Instruction in Nurse Anesthesia Programs. Semester course; 3 lecture hours. 3 credits. Covers curriculum development and instructional design, principles of teacher-learner communication and evaluation of learner growth and development pertinent to nurse anesthesia education. Explores relevant learning theories and implications for nurse anesthesia education.

NUA 574 Teaching in Nurse Anesthesia Programs. Semester course; 2 lecture hours. 2 credits. Prerequisite: NUA 573. Integrates theory with practical application. Requires that students select a clinical anesthesia topic, prepare a comprehensive manuscript and present a detailed lecture with appropriate behavioral objectives supported with audiovisual techniques focused for a specific audience.

NUA 590 Research Methods in Nurse Anesthesia Practice. Semester course; 3 credits. Required of all nurse anesthesia students. Understands and applies the steps involved in the research process. Emphasizes concepts, procedures, and processes appropriate for use in research. Develops a research proposal by exploring a topic in the area of anesthesiology. Applies Inferential and Advanced Statistical tests to hypothetical data. Critically analyzes and evaluates anesthesia research studies.

NUA 593 Clinical Practicum I. 675 clock hours. 6 credits. Introduces clinical care with supervised participation in actual administration of

anesthesia. Demonstrates internalization of theoretical concepts and techniques and application in anesthetic management. Emphasizes assuming greater responsibility for total anesthetic regime.

NUA 594 Clinical Practicum II. 675 clock hours. 6 credits. Provides intensive clinical experience in all clinical anesthesia areas. Emphasizes development of independent decision making. Includes clinical rotations to various affiliate sites to gain experience in management of specialized anesthetic considerations, and functioning in a variety of clinical settings.

NUA 631-634 Advanced Clinical Anesthesia Seminar I, II, III, and IV. 4 semesters; 16 semester hours. 8 credits. Intensively covers the advanced concepts and principles of anesthetic management. Includes individual and group presentations on specific assigned anesthesia topics from the current anesthesia literature.

NUA 692 Clinical Practicum III. 675 clock hours. 6 credits. Continuation of NUA 594. Continues intensive clinical experience in each of the clinical anesthesia areas along with rotations to various specialized affiliate sites. Allows students to function with increased autonomy. Includes independent research and collection of clinical data to support anesthesia projects.

NUA 693 Clinical Practicum IV. 675 clock hours. 6 credits. Continuation of NUA 692. Intensively applies all previous clinical experiences to demonstrate development of independent thought and judgment and ability to function with minimum supervision. Reviews all clinical experiences in preparation for writing the certification examination conducted by the Council on Certification. Concludes all clinical requirements.

NUA 699 Directed Research in Nurse Anesthesia. 2 credits. May be repeated up to four semesters. Students are required to take NUA 699 or NUA 798. Directed Research in Nurse Anesthesia provides the student an opportunity to gain experiences through guided library and practicum research in the area of anesthesiology. This research is executed under the supervision of an adviser and in conjunction with a research committee.

NUA 798 Thesis. 2 credits. May be repeated up to four semesters. Students are required to take NUA 699 or NUA 798. The master's thesis provides the student an opportunity to select, organize, and report the results of an investigation into a specific area of anesthesiology. This research is executed under the supervision of an adviser and in conjunction with a thesis committee.

Department of Occupational Therapy

Cash, Sandra H. *Assistant Professor, Assistant Chair, and Fieldwork Coordinator* MS, Virginia Commonwealth University; physical disabilities, orthotics, clinical education.

Copolillo, Al *Assistant Professor* PhD, University of Illinois at Chicago; adult physical rehabilitation, gerontology, assistive device use, cognition and perception, health promotion, health education.

Koontz Lowman, Dianne *Assistant Professor* EdD, University of Virginia; special education pediatrics, children with special health care needs.

Krishnagiri, Sheema *Assistant Professor* PhD, University of Southern California; occupation, theory, mate selection, outcomes research, physical rehabilitation, crafts, instrument development.

Lane, Shelly J. *Associate Professor and Chair* PhD, University of Texas Health Sciences Center; infants and children with developmental disabilities, assistive technology with young children, sensory integration and processing.

Madigan, M. Jeanne *Professor Emeritus* Ed.D, Loyola University, Chicago, Illinois; pediatrics, curriculum development, administration.

Peters, Sarah *Program Coordinator for the Interdisciplinary OT/PT Grant* MS, University of North Carolina at Greensboro; assistive technology, interdisciplinary teamwork, school system practice, developmental disabilities.

Shepherd, Jayne T. *Assistant Professor* MS, Virginia Commonwealth University; developmental disabilities, physical disabilities, environmental adaptations.

Simons, Dianne F. *Assistant Professor* MS, Virginia Commonwealth University; mental health, instructional technology.

Teitelman, Jodi L. *Associate Professor* PhD, Virginia Commonwealth University; gerontology, adult development, wellness, health promotion, health care trends.

Watts, Janet H. *Associate Professor and Director of Graduate Studies* PhD, Virginia Commonwealth University; psychosocial occupational therapy, theory, instrument development, geriatric practice, outcomes research.

Wolfe, Eleanor V. *Associate Professor Emeritus* MS, Texas Women's University; pediatrics, physical dysfunction.

History

The program in occupational therapy was initiated at Richmond Professional Institute in 1942. In 1965, the graduate program leading to a Master of Science degree in basic professional education in occupational therapy was initiated. The School of Occupational Therapy became a department in the School of Allied Health Professions in 1970.

Philosophy

The philosophy of the Department of Occupational Therapy embraces the Philosophical Base of Occupational Therapy stated by the American Occupational Therapy Association (1979):

Man is an active being whose development is influenced by the use of purposeful activity. Human beings are able to influence their physical and mental health and their social and physical environment through purposeful activity. Human life is a process of continuous adaptation. Adaptation is a change in function that promotes survival and self-actualization. Biological, psychological and environmental factors may interrupt the adaptation process at any time throughout the life cycle, causing dysfunction. Purposeful activity facilitates the adaptive process. Purposeful activity (occupation), including its interpersonal and environmental components, may be used to prevent and mediate dysfunction and to elicit maximum function. Activity as used by occupational therapists include both an intrinsic and a therapeutic purpose. (OTA. [1979]. The philosophical base of occupational therapy. *AJOT*, 33, 785.)

Mission

The primary mission of the Department of Occupational Therapy is the preparation of excellent, innovative, adaptable, and responsible occupational therapists as professional leaders for the state and the nation.

In pursuit of this mission, the department:

- fosters student commitment to scientific inquiry and professional competence, and promotes personal growth, balance, and dedication to lifelong learning;
- promotes faculty excellence and collaboration in teaching, scholarship, and research, that model integrity and competence;
- collaborates with the community through education, consultation, and the development of strong linkages with clinical educators and the community; and

- interacts dynamically with the OT profession and stakeholders, contributing proactively to the evolution of the profession.

Accreditation

The professional master's degree program to become an occupational therapist is accredited by the Accreditation Council for Occupational Therapy Education, 4720 Montgomery Lane, P.O. Box 3122, Bethesda, MD 20824-1220.

Facilities

The educational facilities of the Department of Occupational Therapy are located in the Virginia Mechanics Institute Building at the northeast corner of Tenth and Marshall Streets.

During the professional master's degree program, fieldwork assignments are made for students in a wide range of clinics and agencies in the Richmond metropolitan area. A 24-week extended fieldwork requirement will be arranged in approved clinical education facilities throughout the United States.

Honors and Awards

A. D. Williams Award. An annual award presented to the student who has achieved the highest academic average in each year in the professional master's degree program.

Commonwealth of Virginia Graduate Fellowship Award. These awards are presented to incoming graduate student(s) with high academic and professional potential. Preference is given to residents of Virginia and financial need is considered.

Patti Ann Maurer Scholarship. This award is given to the top ranked applicant for the Master's program.

Programs

Two courses of study are offered:

1. A Master of Science in occupational therapy, a professional degree program designed for college graduates who wish to become occupational therapists. This program may be completed in two calendar years or may be designed individually for students who need a slower pace. The professional master's degree program includes academic courses, a research project, and a minimum of 24 weeks of full-time fieldwork.
2. A Master of Science degree program for those who are registered occupational therapists. This post-professional master's degree program is designed individually in special areas of concentration. A minimum of 33 semester hours, including a thesis, is required.

Academic Regulations

Students are admitted to the occupational therapy programs with the expectation that they will direct maximum time and effort to the learning process. Outside activities must be scheduled by students for

such dates and hours that permit full compliance with the time requirements for course work. Tardiness, lack of regular attendance, or failure to meet deadlines for course assignments will not be excused because of employment or other outside activities.

To continue in the graduate curriculum, students are expected to maintain a cumulative GPA of 3.0 based on course work following matriculation.

- Graduate students who fail to maintain a 3.0 cumulative GPA or receive a grade of “D” (regardless of the cumulative GPA) will automatically be placed on probation and will be notified of probationary status.
- Conditions of Probation: students must earn a quality point average the semester of probation sufficient to result in a cumulative GPA of 3.0 in order to be removed from probationary status.

Students who are on probation due to receiving a “D” grade must retake that course, achieving a grade of “C” or better while also meeting all other academic standards.

Conditions of probation also may include recommendations for academic counseling, assignments by individual instructors, and other requirements identified by the Committee on Academic Standing and Student Progress. Conditions of probation will be detailed in a letter of notification of probation prepared by this committee.

Only one semester of academic probation is permitted in the program. If probationary students fail to meet academic standards (GPA of 3.0) a second semester or do not complete successfully deficient courses, they will be considered for dismissal.

As courses usually are offered once a year only and because early courses serve as prerequisites for later courses, students retaking a course or taking a reduced course load will have to continue under an adjusted curriculum plan. This will result in extending the student’s time in the program.

- Students who receive an “F” grade in any required course will be considered for dismissal by the committee.
- University standards require that a graduate student must not have more than six semester hours or 20 percent of semester hours attempted – whichever is greater – with a grade of “C.” Students who receive a grade of “C” on more than the allowable number of semester hours will be reviewed for possible academic termination by the Committee on Academic Standing and Student Progress. Students who are not terminated for this criterion will be placed on automatic probation.
- If a student withdraws or is terminated by the clinical faculty before the completion of the fieldwork level II course because of poor performance or because of unsafe practices with patients, the student will receive an “F” grade for the course.

If the student withdraws, is terminated, or fails a fieldwork experience, the course may be repeated only upon approval by the committee in consultation with the department chair and the fieldwork

coordinator. Students may be dismissed from the program or be allowed to continue contingent upon fulfilling remedial activities based on a plan prepared by the fieldwork coordinator and ratified by the committee. No more than one additional fieldwork experience will be rescheduled.

Opportunity to reregister and repeat the fieldwork course is contingent upon the fieldwork coordinator’s ability to locate another facility willing to offer a fieldwork experience to the student and the affirmative support of the committee.

- To continue in good standing, students are also expected to:
 - pay all fees;
 - maintain ethical behavior consistent with professional practice as defined in the *Occupational Therapy Department Student Handbook*; and
 - complete fieldwork requirements to the satisfaction of clinical and academic faculty.
- Although arrangements are made in advance, each student is reviewed prior to placement in the fieldwork II education. Students must have completed satisfactorily courses prerequisite to that fieldwork experience and be recommended by the faculty. They must demonstrate professional behavior as specified in the ethical behaviors listed in the *Occupational Therapy Department Student Handbook*. Medical problems or emotional instability may delay or prevent fieldwork placement.

Professional Master’s Degree Program

The Department of Occupational Therapy offers a program leading to a Master of Science in Occupational Therapy for qualified students who have earned a bachelor’s degree in a related field. Plans are being made to develop and implement a master’s program that will accept applicants who have completed prerequisites and at least 3 years of bachelor’s degree course work. Students will be accepted for 3 years of study culminating in a Master of Science in Occupational Therapy. June, 1999 is the anticipated start date for this “3+3” master’s degree program. Once approved, the 3+3 curriculum will replace the curriculum plan in the current *Bulletin*.

Admission Requirements¹

Applicants for the professional master’s degree program must complete the following prerequisites with a grade of “C” or better (credits are listed in semester hours):

	<i>Credits</i>
English	6
Biological Sciences	6
Must include:	
Human Anatomy with laboratory-1 course and Human Physiology with laboratory-1 course or Human Anatomy and Physiology (I and II) with laboratory	

¹ See also the section on graduate programs in the School of Allied Health Professions.

Social Sciences	15
Must include:	
Lifespan Development course(s) sufficient to cover entire lifespan (3-9)	
Abnormal Psychology (3)	
Other Social Sciences courses (psychology, sociology, social psychology, anthropology) (3-9)	
Statistics (3)	

These are considered minimal prerequisites, and applicants are encouraged to pursue additional study in liberal arts and science courses that develop intellectual competence, enrich interest areas, and promote an awareness of the breadth of social and cultural values. To fulfill the psychology prerequisite, a course in theories of personality is highly recommended. Experience in an occupational therapy setting required. Criteria for admission include grade-point average, scores on the GRE, and professional criteria, including experience, references, professional attributes, and statement of professional goals.

Admission is selective, as the number of applicants exceeds the number of students who can be enrolled.

Graduates of occupational therapy programs are required to take national/state certification or licensure examinations. Requirements of licensing and certifying agencies vary. Some licensure or certification agencies consider individuals convicted of a felony ineligible for licensure or certification. For specific information, prospective students should contact the licensure or certification agency for occupational therapy.

For further information and application materials, contact School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051, (804) 828-6916.

Curriculum Plan

The total program is planned for completion in two calendar years of full-time study and encompasses academic and fieldwork education as well as a research project.

First Year, Summer Semester	<i>Credits</i>
OCT 501 Basic Treatment Concepts and Skills	2
OCT 503 Occupational Life Roles and Tasks I	2
OCT 509 Activity Theory and Skills I	2
	6

First Year, Fall Semester	
ANA 525 Advanced Functional Anatomy (Occupational Therapy)	5
OCT 502 Occupational Therapy Applications of Anatomy	1
OCT 504 Occupational Life Roles and Tasks II	1
OCT 508 Psychosocial Dysfunction and Occupational Therapy Intervention II	5
OCT 602 Research Methods in Occupational Therapy	3
	15

First Year, Spring Semester	
ANA 529 Advanced Functional Neuroanatomy (Occupational Therapy)	3
OCT 506 Physical Dysfunction and Occupational Therapy Intervention II	5
OCT 510 Activity Theory and Skills II	3
OCT 605 Influences on Health and Health Care	3
OCT 698 Research in Occupational Therapy	1
	15

Second Year, Summer Semester	
OCT 693/694 Fieldwork – Psychosocial or Physical Dysfunction	9
	9

Second Year, Fall Semester	
OCT 505 Physical Dysfunction and Occupational Therapy Intervention I	4
OCT 507 Psychosocial Dysfunction and Occupational Therapy Intervention I	5
OCT 603 Administration and Supervision of Occupational Therapy Services	3
OCT 698 Research in Occupational Therapy	2
STA 591 Statistical Analysis in Occupational Therapy	1
	15

Second Year, Spring Semester	
OCT 698 Research in Occupational Therapy	3
OCT 693/694 Fieldwork – Psychosocial or Physical Dysfunction	9
	12

OCT 695 Fieldwork-Specialty (Optional)

Upon successful completion of the program, students are eligible to take the national certification examination. Certification is required by most employers as proof of professional competence.

Graduate Program for Occupational Therapists

The Department of Occupational Therapy offers a Master of Science degree program for registered occupational therapists.

Admission Requirements

Applicants must have earned a bachelor's degree from an accredited college or university and have graduated from an accredited occupational therapy program approved by the American Occupational Therapy Association. An official report of scores on the aptitude test of the GRE is required.

For information and application materials, contact the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051, (804) 828-6916.

Curriculum

The Master of Science post-professional degree includes a minimum of 27 credits of approved course work and six credits for the thesis. Students may plan for full-time study or may plan to enroll on a part-time basis. Full-time students must plan at least 12 months to complete all degree requirements.

Each occupational therapist accepted for the master's degree program will develop an individualized plan of study with the help of a faculty adviser. This study plan must be approved by the Committee of Academic Standing and Student Progress of the Department of Occupational Therapy.

Program of Study

Students select an area of concentration and related electives. Courses are chosen by the student with an adviser. Nine credits must be taken in at least one area of concentration. The remaining courses may reflect either single or varied interests and goals. These credits may be taken inside and outside the department.

In preparation for thesis research, students must take Research Methods in Occupational Therapy (three credits). A statistics course is required also. A previous undergraduate course may meet this requirement, or students may take a graduate statistics course as part of degree requirements. A thesis (six credits) is completed under the guidance of a committee. The thesis provides an opportunity to examine a problem of special interest.

Of the total course and thesis credits, a minimum of 18 credits is to be selected from course offerings in the Department of Occupational Therapy.

Graduate Courses in Occupational Therapy (OCT)

OCT 501 Basic Treatment Concepts and Skills. Semester course; 1 lecture and 2-4 laboratory hours. 2 credits. Introduces important occupational therapy concepts: the influence of activity on health, the basic occupational therapy process, evaluation, motivation, and learning. Develops skill in observation and interviewing as data gathering methods.

OCT 502 Occupational Therapy Applications of Anatomy. I. Semester course; 1 lecture and 3 laboratory hours for 8 weeks. 1 credit. Corequisite: ANA 525. Introduces evaluations and therapeutic interventions used by occupational therapists that are based on knowledge of functional anatomy. Stresses evaluation of joint range of motion and manual muscle testing and principles and methods of treating joint range of motion, strength, and endurance limitations.

OCT 503 Occupational Life Roles and Tasks I. Semester course; 1 lecture and 3 laboratory hours. 2 credits. Covers the principles and theories of growth and development of occupational performance from infancy through adolescence. Emphasizes sequential developmental knowledge and assessment of sensorimotor, cognitive, and psychosocial skills. Discusses the performance of self-care, play/leisure, and school/work tasks, and roles that are influenced by sociocultural and care-taking expectations.

OCT 504 Occupational Life Roles and Tasks II. Semester course; 2 laboratory hours. 1 credit. This course will examine the development of occupational behavior in the adult portion of the life span. It draws upon concepts of time, role, habits, interest, and values to examine how the normal adult proceeds through occupational choice, worker roles, and retirement. The course also examines the balance of work and play and its change in normal development. Finally the course will examine the effects and interrelationships of disability with normal occupational development in adulthood.

OCT 505 Physical Dysfunction and Occupational Therapy Intervention I. Semester course; 2 lecture and 6 laboratory hours. 4 credits. Focuses on physical and occupational performance problems that occur within the age range of infancy through adolescence. Explores a variety of frames of reference and evaluative and intervention approaches for children and their families in medical, education, home, and community settings. Uses a holistic approach that considers the child's development of sensorimotor, cognitive, and psychosocial skills and the expectations of his/her family sociocultural environment; includes level-one fieldwork.

OCT 506 Physical Dysfunction and Occupational Therapy Intervention II. Semester course; 3 lecture and 6 laboratory hours. 5

credits. Beginning with the early adults years and continuing through the rest of the life span, the emphasis of this course will be twofold: (1) to identify and describe physically disabling conditions (acute and chronic) that interrupt occupational development and function during this age range; (2) to apply the theories and principles of occupational therapy to the evaluation and treatment of physically disabled persons (acute and chronic) during this age range. Assigned level-one fieldwork will be a part of this course.

OCT 507 Psychosocial Dysfunction and Occupational Therapy Intervention I. Semester course; 3 lecture and 6 laboratory hours. 5 credits. This course will focus on psychosocial pathologies that occur within the infancy through adolescence age span (including specific learning disabilities, mental retardation, and other diagnostic classifications). Theories and principles of occupational therapy intervention, useful in medical, educational, and community settings will be explored. Assigned level-one fieldwork will be part of the course.

OCT 508 Psychological Dysfunction and Occupational Therapy Intervention II. Semester course; 3 lecture and 6 laboratory hours. 5 credits. This course will introduce common psychiatric disorders of young, middle, and older adults followed by review of theoretical frames of reference and related occupational therapy evaluation and intervention methods. Assigned level-one fieldwork will be included.

OCT 509 Activity Theory and Skills I. Semester course; 1 lecture and 2 laboratory hours. 2 credits. Introduces the use of activity for evaluation and treatment. Emphasizes analysis, adaptation and teaching of a wide range of therapeutic media.

OCT 510 Activity Theory and Skills II. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Focuses on development of client's skills in areas of play/leisure, self-care, homemaking, and work. Emphasizes nature of work, work evaluation, and adjustment along with adaptive devices, splint-making, and use of technology.

OCT 530 Nature of Occupational Therapy. Beginning summer 1999. Semester course; 2 lecture hours. 2 credits. Provides an overview of fundamentals of occupational therapy through use of official documents of the American Occupational Therapy Association and other authoritative sources. Introduces practice definitions, philosophical and ethical underpinnings, professional roles and organizations, and clinical reasoning process, as well as characteristics and values recommended for successful performance as a professional occupational therapist.

OCT 601 Advanced Theoretical Concepts in Occupational Therapy. Semester course; 3 lecture hours. 3 credits. Prerequisites: OCT 312, OCT 501, or student must be a registered occupational therapist. This course offers an advanced conceptualization of a generic theory base for occupational therapy. The course includes examination of the nature and organization of scientific knowledge, the medical model and other models of health care, sociological features of occupational therapy practice, and the study of human occupation and its disruption in illness.

OCT 602 Research Methods in Occupational Therapy. Semester course; 3 lecture hours. 3 credits. Covers the steps in the research process: problem definition, literature review, research design and data collection appropriate to occupational therapy, data analysis and interpretation, and research reporting. Includes projects applying these processes to occupational therapy research problems.

OCT 603 Administration and Supervision of Occupational Therapy Services. Semester course; 2 lecture and 2 laboratory hours. 3 credits. The management of human and nonhuman resources in the provision of efficient and effective occupational therapy services; the nature of formal and informal organizations, the administrative process, and administrative tasks. Includes supervision, consultation, and the planning of occupational therapy fieldwork education.

OCT 604 Theoretical and Therapeutic Application of Play in Occupational Therapy. Semester course; 3 lecture hours. 3 credits. This course begins with a broad coverage of theory related to the motivation for play, the form and content of play, its developmental nature, and its relationship to health and adaptation. Following this theoretical

introduction, the course focuses on practical application of play in occupational therapy (i.e., evaluating play behavior and remediating play dysfunction).

OCT 605 Influences on Health and Health Care. Semester course; 3 lecture hours. 3 credits. The nature of health, illness, and disability; the sick role; relationship between occupational therapy and the health care system; current professional issues in occupational therapy.

OCT 612 Occupational Therapy Assessment. Semester course; 1-3 credits. Introduction to the theory of measurement. Selection, administration, and reporting of formal and informal assessments useful in occupational therapy. Processes of standardizing occupational therapy assessments.

OCT 654 Occupational Therapy and Upper Extremity Dysfunction. Fall semester course; 3 credits. Prerequisites: Hand Management or post-professional master's degree matriculant or permission of instructor. Examines the occupational therapist's role in serving those with upper extremity dysfunction in the areas of work, leisure, and activities of daily living.

OCT 690 Occupational Therapy Seminar. Variable; 1-3 credits. May be repeated for a maximum of four credits. Investigation, presentation, and discussion of current problems and issues in the field of occupational therapy.

OCT 691 Special Topics in Occupational Therapy. Semester course; 1-3 credits. Designed around the interests of students, faculty expertise, and availability and expertise of Richmond-area occupational therapists or visiting lecturers. Format may include intensive mini-courses or workshops, an advanced course with some opportunity for election and development of knowledge and skills in a specialized area of occupational therapy.

OCT 693 Fieldwork-Psychosocial Dysfunction. 1-9 credits.

OCT 694 Fieldwork-Physical Dysfunction. 1-9 credits.

OCT 695 Fieldwork-Specialty (Optional). Twelve weeks full-time experience in programs providing occupational therapy services. 1-9 credits. Minimum total required for all fieldwork courses, 18 semester hours. Determination of the amount of credit and permission of the instructor and department chair must be secured prior to registration for the course. Supervised fieldwork experiences are arranged in various settings for the application of academically acquired knowledge. Placements include experiences in prevention, health maintenance, remediation, daily life tasks, and vocational adjustment. Fieldwork settings may include hospitals, rehabilitation centers, school systems, community agencies, camping programs, penal systems, and the like. Fieldwork experiences are arranged individually, but placement in a specified location can not be guaranteed. In the event of failure, the course may be repeated only upon recommendation by the academic and clinical faculty. Fieldwork must be completed no later than 24 months following completion of the academic phase.

OCT 697 Independent Study. 1-3 credits. The student will submit a proposal for investigating some area or problem in occupational therapy not ordinarily included in the regular curriculum. The student's desired study must be described in a contact written by the student and approved by the faculty member. The results of the study will be presented in written or oral report.

OCT 698 Research in Occupational Therapy. Semester course; 1-3 credits. Completion of a departmental proposal for a research project relevant to occupational therapy.

OCT 730 Research Project. Semester course; 3 lecture/seminar hours. 3 credits. Completion of research project relevant to occupational therapy.

OCT 793 Clinical Specialty Practicum. 2-4 credits. 3-9 hours of concentrated clinical experience in the student's chosen area of specialization under the supervision of an experienced clinician (minimum three hours per week for each credit), and one credit hour for guided library research related to topic of practice with preparation of a paper examining the theoretical and empirical bases of practice in specialty

area. A contract is prepared by the student and approved by a faculty adviser and clinical supervisor.

OCT 798 Thesis. 3-6 credits. Completion of a departmental proposal for a master's degree thesis relevant to occupational therapy.

OCT 799 Thesis. 3-6 credits. Completion of a master's degree thesis relevant to occupational therapy.

Graduate Certificate Program in Patient Counseling

Cain, Marlyne G. *Assistant Professor* ThM, Princeton Theological Seminary.

Faulkner, Ken A. *Assistant Professor* MDiv, Southeastern Baptist Theological Seminary.

Festa, Daniel K. *Assistant Professor* Dmin, Union Theological Seminary. Tartaglia, Alexander F. *Associate Professor and Chair* DMin, Andover Newton Theological School.

Williams, Cecelia A. *Assistant Professor* MDiv, New Orleans Baptist Theological Seminary.

Young, Robert A., Jr. *Associate Professor* DMin, Union Theological Seminary.

History

Patient Counseling is the practice of communicating emphatic concern, support, and sensitive spiritual counsel to the physically or emotionally troubled person in the traumas of life. There is a long history of a concerted effort toward this end at the MCV Hospitals of VCU. With the appointment of Dr. George D. Ossman as chaplain in 1943, the administration gave clear evidence of its awareness of the need for a specialized caring ministry to hospitalized patients and their families.

The chaplaincy program was significantly expanded in 1958 and was accredited to begin the education and clinical training of persons in patient counseling. Since then, a continuous program has been in existence and has evolved into the present program in patient counseling. Patient Counseling, as it exists today, became an integrated program in the School of Allied Health Professions in 1970.

Philosophy

With the rapid growth of health care and the increasingly complex problems of medical ethics and viable delivery systems, it is very important to educate qualified persons to deal with the human dimensions of illness and the personal and family stress related to it. Through this program, VCU has an opportunity to make an impact upon health care education by emphasizing the spiritual dimension of human needs in life crises. By so doing, this University has a significant role to play in the important task of keeping health care holistic and utilizing technical and scientific methodology in the context of a deep respect for the total life of persons.

Objectives

The Program of Patient Counseling is designed to assist an individual to work in the health field as one skilled in dealing with the whole person in the context of life's crises and in a cooperative interprofessional team approach. It is offered to persons who have an

existing identity in a helping or counseling profession. This includes clergy, social workers, institutional counselors, education specialists, psychologists, community health workers and others in the health care professions.

Future Plans

A master's degree in patient counseling, emphasizing the practical and clinical competence of such counseling, is in the planning stages.

Facilities

Newton House is the base for the educational program, and limited space is available in clinical areas to work with persons and families in crisis. The Main Hospital, mezzanine level, contains the chapel, family consultation room and administrative offices.

Accreditation

The program is accredited by the Association for Clinical Pastoral Education, Incorporated, through the Virginia Cluster for Pastoral Education. Advanced residents, upon vote of the faculty, may present themselves to the Association for Clinical Pastoral Education (Standards 1987) for certification as supervisor.

Code of Ethics

The professional behavior of the student is expected to be in accordance with the *Code of Professional Ethics*, as adopted by the Association for Clinical Pastoral Education (Standards, 1997) and the *Code of Ethics of the College of Chaplains, 1997*. This code may be found in the offices of the faculty.

Programs

Students and residents serve in the dual capacity of providing pastoral care service while learning. Night duty and weekend duty in rotation are required of all students in the program. Each student receives individual supervision by a member of the faculty.

Several courses are offered for persons at different levels of experience and training:

- Part-time programs are available for local persons who wish to commute. This requires two days per week for 16 weeks (some overnights are required). These programs are offered twice per year, in the fall and spring semesters.
- A course for 10 weeks in the summer session is full time and is available to graduate students (some over-nights required).
- A Residency I-level year is available to experienced persons who have completed the semester and/or summer program.
- A Residency II-level year is available to persons in advanced training who have completed the Residency I program.
- A Residency III-level is available to selected applicants who have completed the Residency II program.

Residents receive stipends for services rendered. Information about stipends may be secured by contacting the admissions director.

Admission Requirements

- Fall and spring semester programs: BA or its equivalent, or a BD, MDiv, MA, PhD, or equivalent; professional standing in the community; personal interview with a member of the supervisory staff.
- Summer session (10 weeks): BA or its equivalent; enrollment in an accredited graduate school or its equivalent, or demonstration of professional competence; personal interview with a representative of the program.
- Residency I: MDiv, MA, PhD, or equivalent; recognition in the professional community; demonstration of personal maturity; personal interview with supervisory staff.
- Residency II: MDiv, MA, PhD, or equivalent, professional standing in the community; two to five years experience in chosen profession. An expressed interest in pursuing the supervisory training process. Demonstration of personal psychotherapeutic or counseling experience. Intern year in an accredited center. Personal interview with supervisory staff.
- Residency III: All of Residency II requirements, plus at least one year of training in the MCV Campus Patient Counseling Program.

Curriculum

	Credits		
	Fall	Spring	Summer
Residency I			
PAC 551-552 Selected Issues in Health Care I-II	1	1	
PAC 553-554 Professional Identity, Function and Ethics I-II	2	2	
PAC 555-556 Theory and Practice of Patient Counseling I-II	3	3	
PAC 593-594 Supervised Clinical Practicum I-II	4	4	
PAC 561-562 Group Process I-II	2	2	
PAC 597 Clinical Research			3
PAC 595 Supervised Clinical Practicum III			5
PAC 596 Practicum in Group Process			2
PAC 592 Independent Study in Patient Counseling			2
	12	12	12
Residency II			
PAC 551-552 Selected Issues in Health Care I-II	1	1	
PAC 607-608 Advanced Group Process I-II	2	2	
PAC 611-612 Clinical Pastoral Supervision I-II	4	4	
PAC 697 Clinical Practicum in Research			3
PAC 691 Pastoral Counseling Practicum			5
PAC 693 Group Process Practicum			2
PAC 592 Independent Study in Patient Counseling			2
Elective: PAC 603-604 Patient Counseling Evaluation I-II OR PAC 605-606 Pastoral Counseling Theory and Practice I-II	5	5	
	12	12	12

Residency III

PAC 607-608 Advanced Group Process I-II	2	2	
PAC 694-695 Advanced Clinical Pastoral Supervision I-II	7	7	
PAC 685-686 Supervised Pastoral Counseling Practicum I-II	3	3	
PAC 696 Supervision Practicum			9
PAC 592 Independent Study in Patient Counseling			3
	12	12	12

Summer Intern Basic Program

PAC 591 Selected Topics in Health Care			1
PAC 515 Basic Clinical Patient Counseling			7
PAC 520 Use of Religious Resources in Patient Care			2
PAC 530 Introduction to Group Process			2
			12

Graduate Courses in Patient Counseling (PAC)

The Program of Patient Counseling has an integrated curriculum in which the summer basic intern and residency-level students experience their core courses as groups. Exceptions to this rule are by faculty invitation only. Admission to any course is upon approval of the instructor. Students may be asked to demonstrate competence in patient counseling.

PAC 510 Introduction to Patient Counseling. Semester course; 2-5 hours. Variable credit. Provides an opportunity to practice and develop relational skills with patients and their families as they adjust to the hospital situation, and to present this work for supervision and peer feedback in seminars and individual supervision. Offered fall and spring semesters. Special sections are offered to specialized professional groups.

PAC 511 The Professional As Helper. I,II. Semester course; 2 lecture hours. 2 credits. Utilizes the student's professional identity as a helping person to identify areas of growth and to develop a model for learning in these areas. Explores current literature in the field and application to the learning areas.

PAC 515 Basic Clinical Patient Counseling. 7 credits. Assigns the student to selected areas of the hospital to practice and develop relational skills with patients and their families as they adjust to the hospital situation; presents this work for peer and individual supervision.

PAC 520 Use of Religious Resources in Patient Care. Semester course; 2 credits. Covers religious rituals, methodology of usage, and philosophical and theological issues. Focuses on clinical material presented by students.

PAC 521 Caregivers of the Dying and the Survivors. Semester course; 3 lecture hours. 3 credits. Provides exposure to the phenomenon of death through literature, lectures, films and discussions in the context of small group experience.

PAC 530 Introduction to Group Process. Semester course; 2 credits. Explores in a small group techniques, procedures and relational skills common to group behavior.

PAC 540 Foundation of the Person. Semester course; 2 lecture hours. 1 credit. Provides a comparative look at theological and behavioral understandings of the person, with particular emphasis given to implications for health and illness.

PAC 551-552 Selected Issues in Health Care I-II. Semester course; 1 lecture hour. 1 credit. Presents theory, research and technique in specialized topics of current interest. Undergraduate credit is given to those persons who do not hold baccalaureate degrees.

PAC 553 Professional Identity, Function and Ethics I. Semester course; 2 lecture hours. 2 credits. Examines religious rituals appropriate for life's crisis points such as illness, loss, guilt, birth, death, and marriage from the perspective of professional identity and functioning.

PAC 554 Professional Identity, Function and Ethics II. Semester course; 2 lecture hours. 2 credits. Examines professional identity developmentally and conceptually. Presents and critiques key professional ethical issues, such as confidentiality, abortion, euthanasia, and patient rights.

PAC 555 Theory and Practice of Patient Counseling I. Semester course; 3 lecture hours. 3 credits. Emphasizes the role of the patient counselor, theological foundations, death and dying, and ministry to the poor and aging.

PAC 556 Theory and Practice of Patient Counseling II. Semester course; 3 lecture hours. 3 credits. Emphasizes psychological foundations of pastoral care and counseling, crisis intervention, human sexuality, marriage and family counseling, and pastoral counseling with addicts.

PAC 561-562 Group Process I-II. Continuous course; 2 lecture hours. 2 credits. Explores in small group settings techniques and procedures common to group behavior and encourages relational skills and techniques.

PAC 591 Selected Topics in Health Care. Semester course; 1 credit. Presents to beginning students a variety of selected topics designed to help them understand the various forces at work in health care and the resources that are available.

PAC 592 Independent Study in Patient Counseling. Variable; 2-3 credits. Provides opportunity to increase clinical and interpersonal skills in specialty areas through patient care, parallel reading, and individual supervision.

PAC 593-594 Supervised Clinical Practicum I-II. Continuous course; 4 lecture and 14 clinical hours. 4 credits. Provides the opportunity to apply and practice interview and therapeutic skills with patients and their families under faculty supervision in selected areas of the hospital. Provides individual faculty supervision and critical review in seminars.

PAC 595 Supervised Clinical Practicum III. Semester course; 3 lecture and 7 clinical hours. 5 credits. Emphasizes the clinical aspect of the students research projects.

PAC 596 Practicum in Group Process. Semester courses; 2 lecture hours. 2 credits. Continues PAC 561-562.

PAC 597 Clinical Research. Semester course; 1 lecture and 8 clinical hours. 3 credits. Completes an original project using the clinical areas of the hospital and presents this to the department.

PAC 603-604 Patient Counseling Evaluation I-II. Continuous course; 4 lecture and 20 clinical hours. 5 credits. Evaluates the developing counseling ability in various patient care situations and enhances the competence level. Evaluates patient counseling techniques and skills in patient care situations through case studies.

PAC 605-606 Pastoral Counseling Theory and Practice I-II. Continuous course; 8 lecture and 6 clinical hours. 5 credits. Explores issues and dynamics developed in the counseling relationship and involves critiques of two ongoing counseling relationships.

PAC 607-608 Advanced Group Process I-II. Continuous course; 2 lecture hours. 2 credits. Utilizes small group interaction as a vehicle for learning relational skills and techniques.

PAC 611-612 Clinical Pastoral Supervision I-II. Continuous course; 4 lecture hours. 4 credits. Utilizes experiences of supervision, and the literature in clinical supervision for those whose goal is to become certified as supervisors in Clinical Pastoral Education.

PAC 685-686 Supervised Pastoral Counseling Practicum I-II. Continuous course; 4 lecture and 6 clinical hours. 3 credits.

Prerequisite: PAC 605-606. Emphasizes the growing identity and competence as a counselor.

PAC 691 Pastoral Counseling Practicum. Semester course; 2 lecture and 4 clinical hours. 5 credits. Prerequisite: PAC 605-606. Emphasizes increased competency in counseling through the use of audio and video tapes.

PAC 693 Group Process Practicum. Semester course; 2 clinical hours. 2 credits. Prerequisite: PAC 607-608. Utilizes a small, interactive group to experience group dynamics.

PAC 694-695 Advanced Clinical Pastoral Supervision I-II. Continuous course; 2 lecture and 15 clinical hours. 7 credits. Critiques the supervision of beginning students. Emphasizes gaining skill in the theory and practice of supervision, developing and administering an educational program, integrating an understanding of the person as seen from the various helping disciplines, and developing skill in group functioning and leadership.

PAC 696 Supervision Practicum. Semester course; 30 clinical hours. 9 credits. Provides opportunity under supervision for designing and conducting a clinical educational curriculum for basic students in patient counseling. Provides careful supervision and evaluation.

PAC 697 Clinical Practicum in Research. Semester course; 1 lecture and 8 clinical hours. 3 credits. Studies an area of specialty within the hospital and develops a competency in that specialty through original research and supervision.

Department of Physical Therapy

Donegan-Shoaf, Lisa *Assistant Professor* MS, PT, James Madison University; clinical education.

Edwards, Donna *Instructor and Director of Physical Therapy at Medical College of Virginia Hospitals* MS, PT, Medical College of Virginia of Virginia Commonwealth University; clinical sciences.

Finucane, Sheryl *Assistant Professor* PhD, PT, Medical College of Virginia of Virginia Commonwealth University; neuroanatomy/histology.

Ford-Smith, Cheryl *Assistant Professor* MS, PT, Medical College of Virginia of Virginia Commonwealth University; clinical sciences.

Goldberg, Stephen J. *Professor (Anatomy)** PhD, Clark University; cranial nerve motor unit physiology.

Hirt, Susanne *Professor Emerita* MEd, PT, University of Wisconsin; neuroanatomy/gross anatomy.

Humphrey, Reed *Assistant Professor* PhD, PT, University of Pittsburgh; exercise physiology.

Lamb, Robert *Professor and Chair* PhD, PT, University of Maryland; biomechanics.

Lewis, Annabel *Assistant Professor* MS, PT, Medical College of Virginia of Virginia Commonwealth University; clinical sciences.

Mayhew, Thomas *Associate Professor* PhD PT, Medical College of Virginia of Virginia Commonwealth University; anatomy.

McClung, J. Ross *Associate Professor (Anatomy)** PhD, University of Texas-Galveston; neurobiology.

Payton, Otto *Professor* PhD, PT, University of Maryland; education.

Pidcoe, Peter *Assistant Professor* PhD, PT, University of Illinois at Chicago; bioengineering.

Riddle, Daniel *Associate Professor* PhD, MS, PT, Medical College of Virginia of Virginia Commonwealth University; orthopedic physical therapy.

Snyder-Shall, Mary *Associate Professor* PhD, PT, Medical College of Virginia of Virginia Commonwealth University; neurophysiology.

Sullivan, Scott *Associate Professor* PhD, MS, PT, Medical College of Virginia of Virginia Commonwealth University; health services organization and research.

Wheeler, Emma *Assistant Professor* MS, PT, Medical College of Virginia of Virginia Commonwealth University; clinical sciences/clinical education.

* Department in parenthesis indicates primary appointment.

History

The Department of Physical Therapy was established in 1945 to provide basic preparation for the practice of

physical therapy. Between 1945 and 1954, the program consisted of a 12-month professional course designed to train students for entry into the profession. This program was based upon at least three years of college work or the possession of an RN certificate. A two-year professional program after two years of preparatory college work was initiated in 1954. This program led to the degree of Bachelor of Science in physical therapy. In 1968, the Department of Physical Therapy became part of the School of Allied Health Professions. The two-year professional program leading to the Bachelor of Science degree continued through the 1988-89 academic year.

In August 1989, the Department of Physical Therapy, School of Allied Health Professions, began a three-year professional program based on three years of previous college work. This program prepares individuals to enter the physical therapy profession and leads to a Master of Science degree.

In 1946, an advanced graduate program offering the Master of Science degree to physical therapists was established and continued to function until 1952 when it was discontinued. The program was reinstated in 1968 and expanded when a full-time director of graduate studies was appointed in 1971. The current advanced master's degree program offers the opportunity for practicing physical therapists to expand their knowledge and skills in the basic and clinical sciences. In the early 1980s, the Departments of Anatomy, Physiology, and Physical Therapy began offering a PhD program for the purpose of developing physical therapy faculty.

Mission

The Department of Physical Therapy serves the people of the Commonwealth of Virginia and the nation by providing educational programs related to physical therapy. The department provides an environment that encourages free inquiry, scholarship, and problem solving. The department's primary function is to prepare the most qualified individuals for general physical therapy practice. Additional functions are to provide quality education leading to careers in teaching and research. Corollary functions are to provide assistance and services to the community and to engage in research and scholarly activities related to the practice of physical therapy.

Philosophy

Physical therapy is an integral part of the health care system. Expanding knowledge in the basic and clinical sciences, and changes in the needs and mandates of society, continually place new demands on the physical therapy profession. The faculty of the Department of Physical Therapy is committed to providing educational programs responsive to expanding knowledge and the needs of society.

The primary principle directing the activities of the department is the faculty's commitment to optimal patient care through physical therapy education, research and practice. The faculty strongly believes that physical therapists must have a thorough understanding of the theoretical bases for treatment and skills in

problem solving, evaluation, and communication. The faculty also believes that physical therapists have a responsibility to develop skills for life long learning (e.g., the ability to find information and to critically analyze that information).

The faculty is also committed to the development and sharing of new knowledge in the field of physical therapy through scholarship and research.

Objectives

The objectives of the Department of Physical Therapy, in concert with the mission of the University and the School of Allied Health Professions, are to:

- provide an entry-level post-baccalaureate educational program for full-time students with diverse backgrounds and experiences;
- provide an advanced master of science degree program with tracks in musculoskeletal physical therapy, and neurologic physical therapy to full- and part-time community, state, national and international students;
- contribute to a doctoral program which prepares physical therapists to contribute to the understanding and application of therapeutic procedures through basic and applied research and to teach both clinical and didactic physical therapy on all academic levels;
- provide an atmosphere which fosters critical thinking, intellectual curiosity and integrity, freedom of expression, personal growth and professional competence, and a commitment to learning for faculty and students;
- provide an environment which facilitates research and scholarship directed toward optimizing patient care; and
- provide services to the public and professional communities.

Facilities

The educational facilities for the Department of Physical Therapy are located on the basement floor of AD Williams/West Hospital. These buildings, located on the northeast corner of 12th and Broad Streets, house administrative and faculty offices, classrooms, physical therapy instructional, computer, and research laboratories, and student locker rooms. Classrooms in other buildings on the MCV Campus are used as needed.

Clinical education experiences for professional students are offered in physical therapy clinics throughout Virginia and the country.

Professional Physical Therapy Program

The goal of this program is to provide a quality educational program that prepares students for entry into the profession of physical therapy. The program prepares students to evaluate and manage patients with physical therapy problems effectively and in accordance with ethical principles. The program also provides students with strategies to continually define and meet their own educational needs in order to keep skills and knowledge

current throughout their professional careers. Upon completion of the program, students are awarded a Master of Science degree.

Objectives

Satisfactory performance in the experiences provided in the Professional Physical Therapy Program prepares the graduate to:

- apply the knowledge of the scientific basis of physical therapy evaluation, prevention, and treatment procedures to practice physical therapy in an effective manner;
- evaluate and manage physical therapy problems in an ethical, legal, safe, and caring manner;
- select and implement appropriate assessment procedures and, based on those procedures, formulate hypotheses about the physical therapy problems of patients;
- select and implement physical therapy treatment procedures, and assess the effectiveness of those treatment procedures;
- recognize when a patient requires: physical therapy treatment, treatment by another physical therapist, treatment other than physical therapy, and referral to a professional other than a physical therapist;
- consider cost effectiveness when designing and implementing physical therapy services;
- apply basic concepts and principles of management to effectively utilize and supervise support-personnel, and to obtain appropriate resources to manage patient care;
- apply basic educational principles to teach patients and their caregivers, and to teach colleagues and other health care professionals;
- apply basic principles of the scientific method to read and interpret professional literature, to participate in clinical research activities, and to critically analyze new concepts and findings;
- demonstrate effective verbal and nonverbal communication with patients and their caregivers, health care personnel, and members of the community;
- demonstrate effective professional writing skills to present patient information to colleagues and to document physical therapy services in an organized, logical and concise manner;
- demonstrate professional competence and a sense of responsibility to the patients, the community, and the profession;
- demonstrate awareness that learning for and within a profession is a lifelong process; and
- demonstrate an awareness of the influence of social, economic, legislative and demographic factors on the delivery of health care.

Accreditation

The Professional Physical Therapy Program is accredited by the Commission on Accreditation in Physical Therapy Education, American Physical Therapy Association.

Academic Admission Requirements

Prerequisites for admission to the Professional Physical Therapy Program include a minimum of 90 semester hours (or 120 quarter hours) in an accredited college or university. A grade of "D" in any required course is not acceptable. A minimum grade-point average of 2.7 (in a 4.0 system) is required to be considered for admission. The GRE is required. The program of study necessary to be considered for admission to the Professional Physical Therapy Program must include a minimum of:

- **English.** Six semester hours. Advanced placement or CLEP credits may be substituted for up to three semester hour credits. Courses in composition or scientific writing are strongly recommended.
- **Biological Sciences.** 12 semester hours including laboratory experience. Must include one course in human physiology; however, one course in physiology may be used as a substitute. May include general biology or general zoology. No more than four credits in botany may be applied to meet his requirement. Advanced placement or CLEP credits may not be used to meet these prerequisites.
- **Chemistry.** Eight semester hours of general chemistry with laboratory. Advanced placement or CLEP credits may be used to meet these prerequisites.
- **Physics.** Eight semester hours of general physics with laboratory experiences. Courses that emphasize mechanics, electricity, heat, and light are highly recommended. Advanced placement or CLEP credits may be used to meet these prerequisites.
- **Mathematics.** Three semester hours. These credits must be in college algebra, trigonometry, calculus or equivalent. Advanced placement or CLEP credits may be used to meet these prerequisites.
- **Statistics.** Three semester hours.
- **Psychology.** Six semester hours. Advanced placement or CLEP credits may be used to meet these prerequisites.
- **Social Science.** Six semester hours in social sciences such as sociology, economics, anthropology, history, etc. Advanced placement or CLEP credits may be used to meet these prerequisites.
- **Humanities.** Three semester hours in fine arts, foreign language, religion, speech, philosophy, etc.

Approximately 60 of the 90 hours required are specified. At least eight hours of electives must be upper-level courses. In order to complete the social science, psychology, and humanities requirements, students are encouraged to choose courses from the following categories: child, adolescent or abnormal psychology, personality development, psychology of adjustment, sociology, anthropology, economics, history, philosophy or logic, counseling, human relations, and public speaking.

In order to complete the total requirements, students are encouraged to elect courses from the following categories: computer science, embryology, histology, cell biology, comparative anatomy, kinesiology, physiology, foreign languages, and courses in physical education dealing with an analytical approach to human movement or motor learning.

Students are required to have current CPR certification. A minimum of 150 hours of clinical exposure in two or more physical therapy settings also is required. One of the three required letters of recommendation should be from a physical therapist.

Curriculum Plan for Professional Physical Therapy Program Master of Science Degree

	<i>Credits</i>
Fall Semester	
PHT 505 Applied Microscopic Anatomy for Physical Therapy	4
PHT 506 Functional Neuroanatomy	5
PHT 510 Rehabilitation I	3
PIO 461 Introduction to Human Physiology	3
	15
Spring Semester	
PHT 501 Gross Anatomy (Physical Therapy)	9
PHT 502 Kinesiology	4
PHT 537 Rehabilitation II	2
PHT 512 Clinical Problem Solving I	2
	17
Summer Semester	
PHT 520 Clinical Education I	3
	3
Second Professional Year	
Fall Semester	
PHT 508 Measurement and Assessment	6
PHT 507 Clinical Biomechanics	3
PHT 531 Scientific Inquiry	2
PHT 539 Foundations for Neurophysiologic Physical Therapy	3
PAT 540 Pathology	2
PHT 690 Physical Therapy Seminar	1
	17
Spring Semester	
PHT 540 Neurologic Physical Therapy	6
PHT 544 Orthotics and Prosthetics	2
PHT 546 Clinical Medicine	2
PHT 548 Orthopedic Physical Therapy	4
PHT 533 Physical Agents	3
PHT 691 Special Topics in Physical Therapy (Pharmacology)	1
	18
Summer Semester	
PHT 550 Clinical Education II	5
	5
Third Professional Year	
Fall Semester	
PHT 621 Electrotherapy	3
PHT 623 Cardiopulmonary Physical Therapy	3
PHT 625 Clinical Problem Solving II	1
PHT 627 Geriatric Physical Therapy	2
PHT 631 Professional Issues in Physical Therapy	3
PHT 633 Clinical Integration of Physical Therapy Concepts	1
PHT 691 Special Topics in Physical Therapy (elective)	1-4
HAD 602 Health Care Organization and Services	3
	17-20
Spring Semester	
PHT 632 Clinical Education III	8
PHT 692 Clinical Specialty Seminar	1
	9

The preceding curriculum plan is under continuous review by the faculty. Course titles, content, sequencing and time commitments are subject to change.

General Academic Policies and Regulations

All professional courses must be completed with a passing grade of "C" or better for the student to be eligible for promotion or graduation. Promotion is based on recommendation of the faculty. The student is expected to:

- maintain a grade-point average of 3.0 or better;
- complete satisfactorily all noncredit activities;
- obtain a passing grade in all courses;
- complete clinical education requirements to the satisfaction of the clinical and academic faculty;
- demonstrate personal characteristics that indicate commitment to the expectations of the profession of physical therapy and the educational program; and
- pay all fees.

Additional policies and regulations are provided to entering students.

Financial Assistance

A limited amount of financial assistance is available for physical therapy students. The amount of assistance awarded the individual student is based on the availability of funds and the need demonstrated by the student. VCU provides three types of student assistance: scholarships, loans, and campus employment.

For information on financial assistance, write to the Financial Aid Office, Virginia Commonwealth University, Medical College of Virginia Campus, Richmond, VA 23298-0244.

Advanced Graduate (Post-Professional) Programs

The Department of Physical Therapy is committed to improving physical therapy services through advanced education. The department offers a Master of Science degree program for persons who have completed their physical therapy training. Doctoral programs are offered in cooperation with the Departments of Anatomy and Physiology.

Admission Requirements

Applications are encouraged from individuals who are practicing physical therapists. Applicants must have graduated from a physical therapy educational program approved by the American Physical Therapy Association. International students must have an equivalent level of education as determined by the Physical Therapy Advanced Graduate Studies Committee. Individuals who are not physical therapists are not accepted into the advanced degree programs.

Additional admission requirements for graduate study in the Department of Physical Therapy are as follows: (1) a minimum GPA of 2.7 on a 4.0 scale for entry-level professional education; (2) satisfactory score on the general test of the GRE (taken no more than 5 years prior

to admission); (3) three satisfactory letters of recommendation; (4) applicant's written statement of intent for pursuing graduate studies in a particular specialty track; and (5) such additional requirements as may be established for individual specialty tracks.

International students must also score a 600 or above on the Test of English as a Foreign Language (TOEFL).

Financial Assistance

Some teaching and research assistantships are available from the Department of Physical Therapy. These assistantships are competitive, with doctoral students given first priority. Part-time employment as a physical therapy clinician is available in Richmond and surrounding areas. Doctoral students receiving stipends must receive approval of outside employment.

VCU provides three types of student assistance: scholarships, loans, and work study. For information on these types of financial assistance, write to the Financial Aid Office, Virginia Commonwealth University, MCV Campus, Richmond, VA 23298-0244.

Advanced (Post-Professional) Master of Science Program

The objective of the program is to train physical therapists in research, education and clinical problem solving skills so that they will be the clinical and academic researchers and teachers of the future.

Program Goals

At the completion of the program the student will:

- demonstrate an advanced ability to analyze the theoretical basis of measurement and treatment procedures;
- demonstrate skills in clinical or basic science research;
- demonstrate skills in teaching clinical examination and clinical therapeutic procedures; and
- demonstrate advanced clinical problem solving skills.

Specialization tracks allow the student to focus on a specific interest area. Currently specialization tracks are in the areas of neurological and musculoskeletal rehabilitation. Both tracks are designed to improve the knowledge base of the students in their chosen area of interest, as well as to help the student develop skills in critical thinking and problem solving.

Each student enrolls in core courses within the specialty area and elective courses that complement the core courses. In order to optimize the educational experience, the faculty have developed recommended sequences of courses in each of the specialty tracks. Students may elect graduate courses offered by any University department, in addition to courses offered by the physical therapy department. Independent study with a faculty member is encouraged. Students may elect to participate in an optional clinical specialty practicum under the guidance of a clinician who possesses advanced skills in the student's area of interest. The completion of a thesis under the direction of a faculty adviser is also a requirement of

each of the tracks. Students may study on either a part-time or full-time basis.

General Academic Policies and Regulations

To qualify for the Master of Science degree, students must meet the following requirements: (1) achieve an overall grade-point average of 3.0 on a 4.0 scale for all graduate course work; (2) complete a minimum of 25 course credit hours exclusive of thesis credits; and (3) satisfactorily complete the thesis and oral defense of the thesis.

Specialization Tracks

One of the following two specialty tracks is selected before admission to the program.

Neurologic Track. The curriculum provides the opportunity for physical therapists to critically analyze movement dysfunctions seen as a result of neurological pathologies using current theories of normal motor control and motor development. A framework is provided for the student to scrutinize commonly used neurologic physical therapy evaluation and treatment routines. Each student is required to assist in teaching one of the clinical courses in the professional program curriculum. The student may focus on neuropathokinesiology, motor development, or aging. The student plans and conducts a research study in the area of motor control or motor development.

Musculoskeletal Track. The curriculum provides the physical therapist an opportunity to integrate facts and principles related to the musculoskeletal system. Issues related to the biological, biomechanical, and clinical sciences are explored. Following completion of the program, the student will be able to apply this knowledge to the examination and rehabilitation of individuals with musculoskeletal problems. The curriculum emphasizes the integration of didactic, research and clinical knowledge. In addition, the student must assist in teaching material related to the musculoskeletal system in the professional program curriculum. The student plans and conducts a research study relevant to the evaluation or treatment of patients with musculoskeletal problems.

Specific objectives and sequences of courses for each specialty track can be obtained by writing the Coordinator of Advanced Graduate Studies, Department of Physical Therapy, Virginia Commonwealth University, Richmond, VA 23298-0224.

Doctor of Philosophy Degree Program

The Departments of Anatomy and Physiology of the School of Medicine together with the Department of Physical Therapy of the School of Allied Health Professions offers PhD programs in anatomy-physical therapy and physiology-physical therapy. The goals of the doctoral programs are to train students in research and educational skills in preparation for students to function as physical therapy faculty members. Application is made to either the Department of Anatomy or the Department of Physiology. Acceptance

into either of the programs requires approval by the admission committees of the cooperating departments.

Students in the Anatomy/Physical Therapy doctoral program take required courses within the Departments of Anatomy and Physical Therapy (for a total of approximately 38 course credit hours). Other courses may be required by the student's dissertation committee. Students in the Physiology/Physical Therapy program take required courses within the Departments of Physiology and Physical Therapy. In addition, other courses are required from other departments within the University (for a total of approximately 44 course credit hours). In both programs, the student plans and conducts a research study generally under the direction of a faculty member of the Department of Physical Therapy; however, the dissertation adviser may be from either of the two primary departments. In addition, the student is required to assist in teaching three courses.

For additional information regarding the doctoral program, write the Coordinator, Advanced Graduate Studies, Department of Physical Therapy, Virginia Commonwealth University, Richmond, VA 23298-0224.

Graduate Courses in Physical Therapy (PHT)

PHT 501 Gross Anatomy (Physical Therapy). 6 lecture and 6 laboratory hours. 9 credits. Examines the structural and functional anatomy of the human musculoskeletal system through lecture and cadaver dissection. A thorough understanding of fundamental facts and principles that apply to professional practice is developed through lecture, dissection, radiographic examination, and clinical correlation.

PHT 502 Kinesiology. 3 lecture and 1 laboratory hour. 4 credits. Introduces the student to the kinematics and kinetics of human movement. Emphasis is placed on osteokinematics, arthrokinematics and the structures that limit and/or guide movement.

PHT 505 Applied Microscopic Anatomy for Physical Therapy. Semester course; 3 lecture hours. 4 credits. Examines the basic components of cells in terms of their structure and function. Cells and tissues of greatest importance to physical therapists are studied in detail, and their response to injury is explored. Reviews methods of studying cells.

PHT 506 Functional Neuroanatomy. Semester course; 5 lecture hours. 5 credits. Examines the basic structure and function of the nervous system with special emphasis on topics of greatest concern to physical therapists. Uses neurobiological approach to integrate the basic health sciences of neuroanatomy, neurophysiology, and clinical neuroscience.

PHT 507 Clinical Biomechanics. Semester course; 3 lecture hours. 3 credits. Provides an opportunity to develop knowledge in sufficient depth to understand how selected biomechanical factors influence normal and pathologic human form and movement. Stresses validity and reliability of methods of evaluating musculoskeletal form and function.

PHT 508 Measurement and Assessment. Semester course; 3 lecture and 3 laboratory hours. 6 credits. Teaches some of the basic evaluation methods and measurement procedures used by physical therapists in history taking and physical examination. Includes lecture, demonstration, and practice in measurement of the length and girth body parts, manual and mechanical muscle testing, joint range of motion, accessory motion testing, and palpation.

PHT 510 Rehabilitation I. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Introduces basic clinical skills and procedures, including measurement of vital signs, patient lifting and moving techniques, progressive mobilization, medical asepsis, and principles of bandaging. Introduces record keeping and professional communication.

PHT 512 Clinical Problem Solving I. Semester course; 1 lecture and 2 laboratory hours. 2 credits. Presents and provides practice with models of clinical reasoning, communications, and ethical decision making; discusses psychosocial aspects of patient care.

PHT 520 Clinical Education I. Semester course; 240 clock hours. 3 credits. Provides full-time clinical experience in health care facilities in Virginia and neighboring states. Introduces students to the professional practice of physical therapy. Includes supervised clinical work with patients, the role of physical therapy in health care systems, and documentation procedures.

PHT 531 Scientific Inquiry. Semester course; 2 lecture hours. 2 credits. Provides guidelines for critical analysis of professional literature, for the utilization of research by the physical therapy professional, and for the development of a clinical research project.

PHT 533 Physical Agents. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Examines the theory and therapeutic application of massage, hydrotherapy, thermotherapy, ultraviolet, compression, and traction. Emphasizes clinical application and problem solving.

PHT 535 Growth and Motor Development. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Presents age-related differences and changes in physical structure and motor function across the human life span and current issues and trends in motor development theory and research.

PHT 537 Rehabilitation II. Semester course; 1 lecture and 2 laboratory hours. 2 credits. Presents principles of evaluation, goal setting, and program planning for spinal cord injured patients and cancer patients. Provides practice of rehabilitation techniques for severely and chronically disabled patients.

PHT 539 Foundations for Neurophysiologic Physical Therapy. Semester course; 3 lecture hours. 3 credits. Covers models of motor control related to the understanding of neurologic dysfunction and neurophysiologic principles for physical therapy.

PHT 540 Neurologic Physical Therapy. Semester course; 4 lecture and 4 laboratory hours. 6 credits. Prerequisites: PHT 535 and 539. Applies principles of motor development, control, and learning to the evaluation and remediation of motor disorders. Critically surveys current theory and practice of neuromotor therapeutics.

PHT 544 Orthotics and Prosthetics. Semester course; 2 lecture hours. 2 credits. Prepares the student to participate as a member of the professional prosthetic or orthotic clinic team, integrates material from other courses, and teaches basic skills in orthotic and prosthetic assessment, prescription, and training and performing initial and final prosthetic and orthotic checkouts.

PHT 546 Clinical Medicine. Semester course; 2 lecture hours. 2 credits. Comprehensive course in clinical medicine and sciences relevant to the practice of physical therapy. Medical practitioners from the MCV Campus and surrounding areas participate. Topics include psychiatry, pharmacology, hematology, oncology, dermatology, dentistry, rheumatology, neurology, and burn therapy.

PHT 548 Orthopedic Physical Therapy. Semester course; 3 lecture and 2 laboratory hours. 4 credits. Presents principles of evaluation and treatment of patients with musculoskeletal disorders.

PHT 550 Clinical Education II. Semester course; 400 clock hours. 5 credits. Provides full-time clinical experience in health care facilities throughout the country. Applies previous clinical and academic learning and provides increased responsibility for patient care in a supervised setting. Requires case study.

PHT 601 Advanced Measurement Concepts. Semester course; 3 lecture hours. 3 credits. Investigates the principles of measurement theory as applied to clinical practice. Reviews basic principles guiding electronic instrumentation and electromyography. Examines the theoretical bases for the examination and treatment approaches used in Orthopedic Physical Therapy or Neurologic Physical Therapy.

PHT 602 Biomechanics. Semester course; 3 lecture hours. 3 credits. This course covers selected material related to the effects of forces upon normal and pathologic human form and movement. Students have the opportunity to develop an understanding of the basic principals of biomechanics and methods of measurement used in biomechanics so they can better understand the clinical, academic, and research activities of their specific field of interest.

PHT 605 Foundations for Pathokinesiology. Semester course; 3-4 lecture hours. 3-4 credits. A study of the principles that form a foundation for understanding pathokinesiology and therapeutic kinesiology. Integration of principles of motor development, control, and learning with emphasis on abnormal motor behavior and its remediation.

PHT 606 Therapeutic Kinesiology. Semester course; 1-3 lecture and 3 clinical hours. 2-4 credits. A study of motor behavior in both normal and pathological conditions. Reading and discussion of the basic literature of current neurologic approaches to therapeutic exercises and an integration of these concepts into a comprehensive model of human movement.

PHT 607 Principles of Clinical Examination in Orthopedic Physical Therapy. 2 laboratory hours. 1 credit. May be repeated for a maximum of two credits. Principles and technique for evaluation of joint and soft tissue injuries and disabilities with an emphasis on history taking and accessory motion testing.

PHT 608 Advanced Musculoskeletal Sciences. Semester course; 3 lecture hours. 3 credits. Investigates advanced principles related to musculoskeletal anatomy and histology as they relate to physical therapy clinical practice. Examines the scientific basis for the assessment of muscle performance in patients. Examines recent literature related to the use of thermal and electrical modalities used on patients with problems of the musculoskeletal system.

PHT 611 Research Process. Semester course; 2 lecture hours. 2 credits. Readings, discussions, and reports on the current status of professional literature and validation of clinical practice, clinical administration, and professional education. A model for professional development, the role of research in the validation process, and the basis of research design are presented non-mathematically. Required of all advanced Master of Science degree students unless excused by the faculty.

PHT 621 Electrotherapy. Semester course; 3 lecture and 2 laboratory hours. 3 credits. Reviews basic physical principles related to electricity and electronics. Studies physical and physiological effects of electrical currents and their therapeutic indications and contraindications. Laboratory practice emphasizes the use of electrical currents for physical therapy evaluation and treatment.

PHT 623 Cardiopulmonary Physical Therapy. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Applies principles of pathophysiology of the cardiovascular and respiratory systems; includes physical therapy assessment and treatment of patients with cardiac and respiratory disorders.

PHT 625 Clinical Problem Solving II. Semester course; 18 clock hours. 1 credit. Students review, integrate, and develop strategies for using previously presented material and present case studies in oral and written form. Provides a summative learning experience.

PHT 627 Geriatric Physical Therapy. Semester course; 2 lecture hours. 2 credits. Discusses the physiological, cognitive, physical, and functional changes due to aging, necessary modifications of physical therapy procedures for geriatric patients, general principles of geriatric rehabilitation, and unique problems associated with physical therapy practice in nursing homes and extended care facilities.

PHT 629 Special Topics in Physical Therapy. Semester course; 1 lecture hour. 1 credit. Provides an opportunity to pursue and present a topic of interest that is related to physical therapy evaluation and treatment.

PHT 631 Professional Issues in Physical Therapy. Semester course; 3 lecture hours. 3 credits. Discusses professional issues facing the modern physical therapy practitioner, including ethical principles,

practice options, supervision, socioeconomic aspects of physical therapy service, departmental planning, third-party reimbursement, specialization, medical legal aspects of practice, and physical therapy education.

PHT 632 Clinical Education III. Semester course; 640 clock hours. 8 credits. Provides full-time work in a minimum of two clinical facilities located throughout the country. Students apply previous course work and demonstrate entry-level competencies by assuming increasing responsibilities for patient care. Students may request assignment to practice settings that meet personal interest and future professional goals.

PHT 633 Clinical Integration of Physical Therapy Concepts. 1-2 lecture hours. 1-2 credits. Integrates concepts from previous course work and clinical experiences. Covers principles of patient evaluation, assessment, and treatment. Uses a case study format and includes the topic areas of pediatrics, orthopedics, neurology, geriatrics, cancer/AIDS, rehabilitation, wound care, and acute care/ICU.

PHT 690 Physical Therapy Seminar. Semester course; 1 lecture hour. 1 credit. May be repeated for a maximum of four credits, required for advanced master of science degree students for two semesters. Reports on current problems and issues in the field of physical therapy.

PHT 691 Special Topics in Physical Therapy. 1-4 credits. Guided independent study of specific topics not discussed in courses or discussed in less detail in courses. Student's desired topic of study must be identified and approved prior to enrollment.

PHT 692 Clinical Specialty Seminar. Semester course; 0.5-3 credits. Individual reports dealing in depth with the history, current status, and problems in a given area of clinical specialization.

PHT 693 Clinical Specialty Practicum. 60 clock hours per credit. 1-9 credits. Concentrated clinical experience under the guidance of an approved preceptor.

PHT 798 Research in Physical Therapy. 1-15 credits. Research in preparation for the advanced Master of Science degree thesis or doctoral dissertation.

Department of Rehabilitation Counseling

Chandler, Anne L. *Associate Professor* PhD, Michigan State University; vocational development, loss and bereavement, cognitive-behavioral counseling.

Cull, John G. *Clinical Professor* PhD, Texas Tech University; behavioral medicine, reward deficiency syndrome.

Glenn, Margaret K. *Assistant Professor* EdD, George Washington University; substance abuse and disability, vocational rehabilitation, HIV/AIDS.

Luck, Richard S. *Associate Professor* EdD, University of Virginia; psychiatric rehabilitation, measurement and evaluation, substance abuse.

Martin, E. Davis, Jr. *Professor* EdD, University of Virginia; forensic rehabilitation, advocacy, rehabilitation philosophy.

McMahon, Brian T. *Professor and Chair* PhD, University of Wisconsin-Madison; ADA implementation, traumatic brain injury, disability management.

Reid, Christine *Assistant Professor* PhD, Illinois Institute of Technology; vocational evaluation, life care planning, deafness, case management.

Rosecrans, John A. *Professor* PhD, University of Rhode Island; psychopharmacology of substance abuse, nicotine.

Rule, Warren R. *Professor* PhD, University of South Carolina; Adlerian lifestyle counseling.

Wehman, Paul *Professor* PhD, University of Wisconsin; employment and significant disability, disability policy, rehabilitation research.

Emeriti Faculty

Gandy, Gerald L., PhD, University of South Carolina
Hardy, Richard E., EdD, University of Maryland
Jarrell, George R., PhD, University of South Carolina
Lawton, Marcia L., PhD, Northwestern University
Wright, Keith C., MS, Marshall University

Founded in 1955, the Department of Rehabilitation Counseling serves as a national leader in the professional preparation of Certified Rehabilitation Counselors who will exercise skill and competence on a high ethical level and with personal integrity. Accessible, innovative, research-based educational experiences that encourage the use of a critical and exploratory attitude are emphasized. The department seeks to perpetuate active programs of research and service, and maintain high levels of teaching competence. In partnership with students, community agencies, and consumer and professional organizations, the department endeavors to advance the personal, social, and economic independence of individuals with disabilities.

The Department of Rehabilitation Counseling is fully accredited by the Council on Rehabilitation Education (CORE), and is the only such program in the Commonwealth of Virginia. The purpose of accreditation is to promote the effective delivery of rehabilitation services to people with disabilities by fostering ongoing review and improvements of Rehabilitation Education programs. CORE has developed a field-based research accreditation process that has gained widespread acceptance in the professional accreditation movement. With over 1,600 alumni, the department also enjoys solid relationships with many community organizations that serve as excellent sites for clinical training.

Faculty Adviser

Every student must have a faculty adviser to guide the student regarding course selection and scheduling, to supervise his/her research, and to act as channel of communication with the department, to other departments, and to the School of Graduate Studies. When the Student receives notification of admission to the department, it is his/her responsibility to contact the faculty adviser to plan the program of study. Students consult with faculty advisers on a regular basis to ensure orderly progress through the entire program of study, choose clinical placement sites, select electives, and plan their careers.

Degree Requirements

Graduates from accredited Rehabilitation Counseling programs are typically trained in counseling theory and techniques; individual, group, and environmental assessment; psychosocial and medical aspects of disability; human development; cultural diversity; principles of psychiatric rehabilitation, case management and rehabilitation planning; issues and ethics in rehabilitation service delivery; technological adaptation; vocational evaluation and work adjustment; career counseling; implementation of the Americans with Disabilities Act; job development; and placement.

The minimum degree requirement is 48 graduate credits including 33 credits of didactic course work, 100 hours of fieldwork, 600 hours of internship, 6 credits of electives, and a comprehensive examination.

Full-Time Program of Study (Example Only)

	<i>Credits</i>
Semester I	
REH 525 Introduction to Rehabilitation	3
REH 611 Individual Counseling Approaches in Rehabilitation	3
REH 625 Research Measurement and Evaluation in Rehabilitation	3
REH 640 Medical Aspects of Disability in Rehabilitation	3
	12
Semester II	
REH 612 Group Counseling Approaches in Rehabilitation	3
REH 521 Foundations of Substance Abuse Rehabilitation	3
REH 623 Career Development and Vocational Assessment in Rehabilitation	3
REH 642 Psychiatric Information and Assessment in Rehabilitation	3
	12
Summer	
REH 691 Practicum in Lifelong Disability includes 100 hours of fieldwork (Adviser to assist in site selection)	3
	3
Semester III	
REH 633 Principles and Practices of Case Management in Rehabilitation	3
REH 694 Job Placement in Rehabilitation	3
REH 654 Disability, Development, and Diversity	3
Elective	3
	12
Semester IV	
Elective	3
REH 695-696 Supervised Clinical Practice includes 600 hours of internship and CRC/comprehensive examination (Adviser to assist in site selection)	6
	9

Comprehensive Examination

All students are required to complete the Certified Rehabilitation Counselor (CRC) Examination in conjunction with REH 695 or 696.

Specializations

In collaboration with the faculty adviser, students may wish to design a program of study around a specific area of interest. Specializations in substance abuse, mental health, physical/sensory disabilities, and gerontology are the most common in the department. Careful planning will typically allow students to meet the educational requirements for several additional credentials beyond the CRC; e.g., National Certified Counselor, Mental Health Counselor, Career Counselor, Gerontology Counselor; Certified Case Manager; Vocational Evaluator, Disability Management Specialist, Rehabilitation Provider (Virginia), or Master Addictions Counselor. Specialization is achieved through:

- customization of assignments in required courses such as REH 640, REH 633, REH 691, or REH 654. These courses often involve assignments that

- require the student to specify a population of interest which the student is free to select;
- required courses specific to your population of interest; e.g., REH 521;
- careful selection of elective course work; e.g., REH 522, REH 523, REH 533;
- careful selection of a 600-hour internship site and supervisor (REH 695-696); and
- additional elective course work beyond the required 48 credits.

Foundations of Clinical Training

According to CORE Standards and the requirements of the department, students must have supervised rehabilitation counseling fieldwork and internship experiences that include:

- a minimum of 100 clock hours of fieldwork experience (as part of REH 691)
- a minimum of 600 clock hours of internship experience in rehabilitation settings (as part of REH 695-696);
- written expectations and procedures for these experiences which are distributed to students and agency supervisors;
- the following activities: orientation to program components, policies and procedures; introduction to staff and their role and function; identification of the expectations for students; observation of all aspects of the delivery of rehabilitation counseling services; work assignments, performing the tasks required of an employed rehabilitation counselor in a rehabilitation setting from intake to discharge and/or placement; reporting, including all required academic reports as well as logs, weekly progress reviews, and summaries of activities; and
- evaluation of student performance, including self-evaluation by the student, the agency supervisor, and the faculty supervisor.

Internship experiences shall be carried out under the regularly scheduled supervision of a Certified Rehabilitation Counselor (CRC). The quality of supervision shall be maintained by involvement of VCU Faculty in terms of in-service training, consultation, information, and the provision of professional development resources to agency supervisors.

Colloquia and Grand Rounds

Periodically, special colloquia, grand rounds, workshops, and institutes are offered for department students and agency personnel. Students will receive reasonable notice of these events, and some may be required for specific classes. Students should make every effort to attend because these experiences significantly enrich the curriculum.

Time Limit for Completion of Degree

All degree requirements must be met within seven years from the date of initial enrollment.

Advanced Certificate Program

Post-master's preparation is available through the Advanced Certificate Program in Professional Counseling. This is designed for persons with MS degrees from VCU or other institutions who are seeking the Licensed Professional Counselor or Certified Alcohol and Drug Counselor credential in Virginia or other states.

Admission Deadlines and Requirements

Both full- and part-time students are valued and are welcome to apply. Applications are reviewed on an ongoing basis. To be considered, all pertinent materials must be received in the department by August 1st (for fall), December 1st (for spring) or May 1st (for summer).

Admission requirements include:

- an undergraduate grade-point average of 2.7 on a 4.0 scale; or 2.7 in the last 60 semester hour credits (Based upon transcripts provided to the School of Graduate Studies);
- three positive letters of reference from professors or employers (on reference forms provided by the School of Graduate Studies);
- satisfactory performance on either the GRE (804) 828-6916 or the MAT (804) 828-1193;
- a relevant and clear statement of goals for graduate study and career;
- statement of previous work or volunteer experience; and
- a personal interview with a faculty member may be required.

A complete set of application materials is available from the department office at (804) 828-1132.

Transfer Credit

A maximum of 13 hours of graduate credit may be transferred from another VCU graduate program or outside institution if not applied previously to another degree. Transfer credits must carry a grade of "B" or higher from an accredited institution. Acceptance of transfer credit is made at the level of the department chair and dean of the School of Allied Health Professions. Transfer credits earned as a nondegree seeking graduate student are limited to six semester hours of credit. Credits earned as deficiency hours or to demonstrate the ability to compete at the graduate level, though transferable, may not be applied to the 48 credit program of study.

Graduate Courses in Rehabilitation Counseling (REH)

REH 502 History and Techniques of Manual Communication I. Semester course;3 credits. A study of the basic principles of manual communication through nonverbal techniques, eye-contact training, fingerspelling, and basic patterns of American Sign Language Systems. Also a focus on history and development and various methods of communication with deaf persons.

REH 503 History and Techniques of Manual Communications II. Semester course;3 credits. A review and continued study of the development and techniques of basic sign language with emphasis upon additional sign vocabulary acquisition and improvement of expressive and receptive skills.

REH 504 Advanced Manual Communication:AMESLAN. Semester course;3 credits. A comprehensive and in-depth study of American Sign Language (AMESLAN) as an independent language of deaf persons with low verbal skills and emphasis on English and sign language idioms not known in most forms of manual communication.

REH 521 Foundations of Substance Abuse Rehabilitation. Semester course; 3 lecture hours. 3 credits. Focuses on models and processes of addiction;individual and family effects;co-existence with medical and psychological impairments;interdisciplinary approaches to referral,treatment, recovery, relapse prevention, client and community education;cultural and environmental influences;research resources.

REH 522 Clinical Evaluation, Assessment, and Treatment Planning in Substance Abuse Rehabilitation. Semester course; 3 lecture hours. 3 credits. Prerequisite: REH 521.Stresses development of professional competencies. Focuses on systematic approach to screening and on-going assessment;diagnostic criteria for dependence and abuse; testing and interviewing; co-morbidity;collaborative approaches to individualized clinical treatment planning; awareness of treatment resources.

REH 523 Contemporary Issues in Substance Abuse Treatment and Recovery. Semester course;3 lecture hours. 3 credits. Prerequisite:REH 521.Examines current issues and research in the field.Includes topics such as denial,social isolation,intervention;life-long nature of recovery, support needs, relapse prevention; legal,political,and ethical issues;special populations (e.g.physical disability); poly-drug abuse;perinatal addiction; program administration;professional readiness.

REH 525 Introduction to Rehabilitation. Semester course; 3 lecture hours. 3 credits. Provides a thorough overview of history, philosophy, legislation,organizational structure, and trends in the rehabilitation profession.Includes comprehensive review of the rehabilitation process. Focuses on professional identity, roles, functions, ethics, and career options for rehabilitation counselors. Requires evidence of computer proficiency for course completion.

REH 533 Directed Readings in Rehabilitation. Semester course;1-3 credits. May be repeated to a maximum of 6 credits. Provides intensive study in one or more topical areas of rehabilitation through directed readings under the supervision of a faculty member.

REH 611 Individual Counseling Approaches in Rehabilitation. 3 credits. This course is designed to acquaint students with various approaches involved in the individual counseling of rehabilitation clients. Emphasis will be placed on principles and techniques that assist individuals to develop a better understanding of vocational,educational,and personal adjustment problems related to severe and multiple disabilities and to make realistic plans regarding solutions to these problems. Audio-visual tape experiences will be offered.

REH 612 Group Counseling Approaches in Rehabilitation. 3 credits. This course is designed to acquaint students with various approaches involved in the group counseling of rehabilitation clients. Emphasis will be placed on principles and techniques that promote the development of effective interpersonal communications, decision making and leadership as they concern vocational,educational,and personal adjustment problems related to severe and multiple disabilities (e.g., substance abuse).Audio-visual tape experiences will be offered.

REH 613 Advanced Rehabilitation Counseling Seminar. 3-9 lecture hours. 3-9 credits. Prerequisites:REH 611 and 612 or permission of instructor. This course is designed to provide an opportunity for students to undertake a more in-depth study of selected approaches to individual and/or group counseling of rehabilitation clients. Principles and techniques relevant to vocational,educational,and personal adjustment problems related to severe and multiple disabilities will be systematically explored and studied.Audio-visual tape experience will be offered.

REH 614 Counseling, Death and Loss. 3 lecture hours. 3 credits. Prerequisites: REH 611 or permission of instructor. Explores the psychosocial processes of adaptation to severe losses such as those occasioned by the onset of disability, death, and developmental life

changes. Emphasizes the knowledge and skills required by rehabilitation counselors in dealing with losses experienced by their clients.

REH 623 Career Development and Vocational Assessment in Rehabilitation. Semester course; 3 lecture hours. 3 credits. Prerequisite: REH 625. Provides an overview of major theories of career development and work adjustment. Emphasizes theories relevant to rehabilitation practice; assessment of vocational interests, values, temperaments, aptitudes, abilities, achievement, and transferable skills; career counseling strategies.

REH 625 Research Measurement and Evaluation in Rehabilitation. Semester course; 3 lecture hours. 3 credits. Examines principles of measurement and evaluation; psychometric theory; determining need for testing; test selection, administration, and interpretation; accommodating test experiences; evaluating quality of published research; utilizing rehabilitation research to improve practice.

REH 633 Principles and Practices of Case Management in Rehabilitation. Semester course; 3 lecture hours. 3 credits. Prerequisite: 27 graduate credits. Explores benefit systems, ethics, goal development, rehabilitation planning, coordination and delivery of rehabilitation services, community resources, and documentation. Focuses on critical analyses of representative disability-specific case studies; e.g., substance abuse.

REH 640 Medical Aspects of Disability in Rehabilitation. Semester course; 3 lecture hours. 3 credits. Provides an overview of major physical, cognitive and sensory impairments. Emphasizes functional limitations, intervention resources, and contributions of medical and allied health professionals. Requires participation in grand rounds.

REH 642 Psychiatric Information and Assessment in Rehabilitation. Semester course; 3 lecture hours. 3 credits. Prerequisite: REH 625. Focuses on assessment, diagnosis, and treatment approaches to major DSM-IV impairments. Reviews diagnostic tests of psychopathology. Explores psychological adjustment to physical, sensory, and cognitive impairments. Requires participation in grand rounds.

REH 644 Alcohol and Human Behaviors. 3 credits. Prerequisites: REH 521, 522, 523, and 695 or permission of instructor. Understanding the significance of behavior as a tool in diagnosing, treating, and/or referring the addict; appreciation of particular cues to observe the predominant behavior associated with living problems and reflected by the alcohol or drug abuser.

REH 645 Delivery Services to the Alcoholic. 3 credits. Prerequisites: REH 521, 522, 523 or permission of instructor. Exposure to the 22 professional tasks of the alcoholism and drug abuse counselor through discussion centered around examples brought into class from clinical experience; understanding how these tasks, dealing with the alcoholic and drug abuser and his family, apply to different settings; a summary of the other five parts in the alcoholism concentration culminating in a philosophy of the alcoholism and drug abuse counselor.

REH 650 Occupational Alcoholism and Drug Abuse Program Development. 3 credits. This course is designed to provide information and data for graduate students on the importance of the effects of alcohol and other drugs in a work setting. Various types of programs used by business, industry, and other organizations to deal with such employees will be presented. The course context was developed to provide the student with the opportunity to gain knowledge and skills necessary to design, implement, and maintain systems to reduce human and productivity losses due to alcoholism/drug addiction and its effects.

REH 654 Disability, Development, and Diversity. Semester course; 3 lecture hours. 3 credits. Prerequisite: REH 525. Examines human development, family, gender, race, ethnicity, and their impact upon the processes of awareness, acceptance, and adjustment to disabling conditions. Reviews implications for counseling, planning, and service delivery.

REH 681-689 Institutes and Workshops. Orientation institutes and other short-term training programs are offered for rehabilitation

counselors newly recruited to the rehabilitation field and for the further professional development of those already employed. Content will vary according to the aims of the institutes or workshops. Length of time and number of credits are announced prior to each institute or workshop.

REH 691 Practicum in Lifelong Disability. Semester course; 3 lecture hours. 3 credits. Prerequisites: REH 525 and REH 611. Provides a comprehensive overview of significant disabilities and issues relating to productivity, independence, and inclusion. Examines issues across the lifespan such as education, employment, advocacy, housing, transportation, leisure, and health care. Focuses on service delivery systems, consumer perspectives, and ethics. Requires 100 hours of field experience.

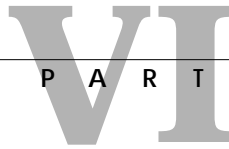
REH 693 Introduction to Field Experiences for Rehabilitation Counselors. 3 credits. This course provides for concurrent field experience. It is designed for students who have no training or experience in interviewing and counseling in rehabilitation settings.

REH 694 Job Placement in Rehabilitation. Semester course; 3 lecture hours. 3 credits. Explores occupational information, job matching systems, and job placement approaches. Focuses on demand-side job development, job seeking skills training, supported employment, transitional work, and placement techniques including job analyses, ADA implementation, and labor market surveys.

REH 695 Supervised Clinical Practice in Substance Abuse. Semester course; 1-9 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of 9 credits. Prerequisites: REH 691. Emphasizes mastery of setting specific roles and functions of the professional rehabilitation counselor. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor. Requires completion of Certified Rehabilitation Counselor examination and a total of 6 credits for degree completion.

REH 696 Supervised Clinical Practice in Rehabilitation Counseling. Semester course; 1-9 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of 9 credits. Prerequisites: REH 691. Emphasizes mastery of setting specific roles and functions of the professional rehabilitation counselor. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor. Requires completion of Certified Rehabilitation Counselor examination and a total of 6 credits for degree completion.

REH 697 Supervised Clinical Practice in Counseling. Semester course; 1-9 credits. (1 credit per 100 hours of supervised internship.) May be repeated to a maximum of 9 credits. Prerequisite: Admission into Advanced Certificate in Professional Counseling program. Emphasizes advanced development of counseling skills pursuant to licensure or other post-master's training needs. Stresses ethical decision making in practice. Involves scheduled seminars and meetings with faculty and agency supervisor.



School of the Arts

Richard Toscan, BA, MA, PhD
Dean

Thomas DeSmidt, AA, BFA, MFA
Associate Dean for Administration

Paul Petrie, BID, MFA
Associate Dean for Academic Affairs

Daniel J. Reeves, BA, MEd, EdD
Assistant Dean

Lydia Thompson, BFA, MFA
*Assistant Dean for Undergraduate
Admissions and Student Affairs*

Michael Drought, MFA
*Director of Graduate Studies
and Off-Campus Instruction*

The School of the Arts of Virginia Commonwealth University had as its beginning a sculpture course offered in 1926. In 1928, a one-faculty art department was formed under the direction of Miss Theresa Pollak and since that date has become one of the largest art schools in the United States, achieving national recognition through its quality programs in the visual and performing arts.

In 1969, the Department of Dramatic Art and Speech and the School of Music, formerly independent units within VCU, were combined with the visual arts departments of the School of Art to form the present School of the Arts.

The School of the Arts is accredited by the National Association of Schools of Art and Design and the National Association of Schools of Music and offers a rich and unique concept of graduate study for students in the visual and performing arts. It is one of the few state-aided professional art schools in the nation with a professional curriculum within a combined academic and professional environment. Located within an urban complex of higher education, students are provided not only with the advantages of comprehensive University facilities, but also with cultural opportunities offered in the greater Richmond community, including activities generated by over 50 museums and galleries and performances by nationally and internationally acclaimed arts organizations.

Graduate students study with faculty who are dedicated educators and who are also committed professional artists, designers and scholars. Each year, both faculty and students of the School of the Arts are honored with prestigious regional and national awards which attest to the school's high quality of instruction and commitment to excellence.

The graduate program in the School of the Arts offers advanced degrees in the following areas of study:

Doctor of Philosophy

Art History

Master of Arts

Architectural History

Historical Studies

Museum Studies

Master of Art Education

Art Education

Master of Fine Arts in Design

Visual Communications

Interior Environments

Film

Photography

Master of Fine Arts in Fine Arts

Ceramics

Fibers

Furniture Design

Glassworking

Jewelry/Metalworking

Painting

Printmaking

Sculpture

Master of Fine Arts in Theatre

Acting

Costume Design

Directing

Stage Design/Technical Theatre

Theatre Education

Master of Music

Composition

Music Education

Performance, including Conducting

Graduate Student Status

The School of the Arts recognizes two categories of graduate students. The first is comprised of those who

are accepted either provisionally or as students with full standing into the graduate degree programs of the various departmental areas. These students may matriculate full-time or part-time except for the residence limitation discussed elsewhere in this *Bulletin*.

The second category is that of the nondegree-seeking graduate student, or “special” graduate student. There are two types of “special” graduate students. The first is the student whose expectation of eventual acceptance into a graduate program is high and who wants to begin graduate work while application materials are being completed and processed.

Holders of the baccalaureate degree from recognized institutions may enroll in graduate courses as nondegree-seeking special graduate students, but such courses are not applicable toward a graduate degree from this institution unless the student is accepted into a graduate degree program prior to the conclusion of the semester in which the student registered as a nondegree-seeking graduate student.

A nondegree-seeking student who is later admitted as a degree-seeking student will not be allowed to apply toward a degree more than six credits earned as a nondegree-seeking student.

The second type of nondegree-seeking graduate student is the student who holds a baccalaureate degree, who wishes to take graduate courses for personal enrichment, and who does not intend to work toward a graduate degree. There is no limit to the number of credits that students in this category may take, as long as the academic performance is credible.

All nondegree-seeking (“special”) graduate students must have written permission from the chair of the appropriate department in order to enroll in classes.

Admission Procedures

Applications for admission to graduate degree programs in the School of the Arts may be obtained by mail from the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051 or picked up in person at 901 West Franklin Street, Room B-1.

General information about admission to graduate study and application procedures can be found in Part I of this *Bulletin*.

Admission Requirements

- For PhD degree, see PhD in Art History section.
- For all other degrees – MA, MAE, MFA, and MM:
 - Applicants should hold the baccalaureate degree from an accredited institution.
 - It is expected that applicants will have a 3.0 (“B”) average on the last 60 semester hours of undergraduate work.
- The prospective student should consult the appropriate section of this *Bulletin* for additional admission requirements for a particular degree program. Such requirements include:
 - the Graduate Record Examination (GRE) for applicants to art history;

- an audition and examination for applicants for music, as described in the program description for the MM degree;
- an audition or presentation of portfolio, as well as a personal interview, for applicants for the MFA in theatre; and
- a portfolio review for all applicants to the visual arts MFA degrees (a personal interview is encouraged).

Advising

All students accepted into advanced degree programs must make an appointment with the chair of the department prior to registration for their first semester of course work. Normally, the student’s initial adviser will be the chair of the department; but students may be assigned an adviser more directly related to their areas of concentration.

Students are encouraged also to consult faculty members outside their major area and arrange with the appropriate departmental chair to use facilities and equipment available in other departments.

Registration

Graduate art students are urged to plan their schedules and register during advance registration. Registration materials for students accepted into advanced degree programs are available in the department during the advance registration and registration periods. The advantage of advance registration is that of securing places in classes before they are closed and of obtaining proper counsel from advisers. All graduate students must see their assigned advisers for schedule planning and signature approval. New nondegree-seeking graduate students, or those contemplating registration as such, must secure written permission to register from the departmental chair.

Continuous Enrollment Policy for Graduate Students

Graduate students in the School of the Arts must observe the University Continuous Enrollment Policy as explained in Part I of this *Bulletin*.

Candidates for all advanced degree programs, after completing all formal course work, must register for at least one semester hour of credit each term, except summer, until the culminating graduate project (dissertation, thesis, creative project, exhibition, recital, etc.) is completed and the student is ready to graduate. If graduate degree candidates expect to avail themselves of the faculty and resources of the University in the preparation of the dissertation/thesis/creative project during a summer term, they must register for one semester hour during that term as well. Also, if candidates intend to graduate in August, they must be enrolled for at least one semester hour in the summer term.

Special Charges

All degree-seeking graduate students are charged an art comprehensive fee. The art comprehensive fee is not charged to students who are registered only in course work to complete a dissertation/thesis/creative project or who are enrolled in order to satisfy the one-credit requirement for continuous enrollment. Nondegree-seeking graduate students enrolled in any of the courses which require an additional outlay for materials will be billed for those individual fees by the Student Accounting Department.

In addition to the comprehensive fee for all majors in the School of the Arts, all students registering for private music lessons pay an applied music fee.

Financial Support

The School of the Arts awards a limited number of graduate assistantships and scholarships to full-time students. Applications should be made directly to the chair of the student's department. Applicants seeking financial support must submit complete applications by March 15 for fall admissions and November 1 for spring admissions.

Transfer Credit

A maximum of nine graduate credits may be transferred from other accredited institutions and applied to any of the graduate degree programs in the School of the Arts upon approval of the department chair.

Advanced Degree Candidacy

Students seeking an advanced degree in all programs must apply for advanced degree candidacy. Those seeking the MAE and the MM must submit the application during or after the completion of the first nine semester credits of graduate work and prior to the completion of 18 semester credits. Students pursuing the MFA degree must submit the application during or after the completion of the first 15 semester credits of graduate work and prior to the completion of 30 semester credits. Applications for candidacy are available in the departmental offices and the Office of Graduate Studies, School of the Arts. Admission to a degree program does not constitute candidacy, and admission to degree candidacy is not an automatic process. Departments carefully review applicants for candidacy on such basis as examination or review of creative work or performance. Upon certification by the department that the applicant has met all departmental expectations, including the minimum 3.0 grade-point average, and is adequately prepared to continue pursuing the degree program, the School of the Arts will admit the applicant to degree candidacy.

Students who are found to be inadequately prepared to continue their graduate programs, but who demonstrate the potential to ultimately fulfill degree requirements will be advised as to what additional work will be needed in order to meet departmental expectations.

Candidacy, in such instances, will be postponed until departmental expectations are satisfied; postponement of candidacy may result in termination of financial assistance. Students whose academic or creative work demonstrate no likelihood of successful completion of a graduate program will be denied candidacy by the School of the Arts.

School of the Arts Residency Requirements

Candidates for the Master of Fine Arts degree in the fine arts and theatre must complete a minimum of one-third of their degree program semester-hour credits within one calendar year.

Candidates for all master's degrees in the School of the Arts have five years plus two possible extensions of one year each to complete all degree requirements. The above limitations apply to both full-time and part-time students. A petition for an extension is initiated with the academic or thesis adviser.

Advanced Degree Requirements

- Students must achieve candidacy (with the exception of art history students).
- Students must complete all formal course work.
- Students must maintain at least a 3.0 cumulative grade-point average. No grade below "B" will count toward graduation for students in the art history and the visual communications degree programs. For all students in the theatre program, any grade below "B" in any course will result in termination from the degree program. Students in all programs in the department of music must not have more than six hours or 20 percent of semester hours attempted—whichever is greater—with a grade of "C." For all other degree programs in the School of the Arts, no grade below "B" is acceptable for any course within the student's major department, and a grade below "B" in a course in the student's major department will result in termination from the degree program.
- All students must complete the culminating project (dissertation, thesis, final examination, creative project, recital, etc.) as outlined in departmental guidelines. The thesis, or other written documentation related to the culminating project, must be done in a form that can be retained by the University and in accordance with departmental guidelines. Students preparing a thesis must use the guidelines set forth in *The Preparation of Thesis*, available in departmental offices or the Office of Graduate Studies, School of the Arts.

School of the Arts Library

The School of the Arts Library, located in the Pollak Building, has a collection of more than 450,000 slides and a working collection of current art publications and magazines.

VCU is a short distance from Washington, D.C., Baltimore, Philadelphia, and New York City and the

museums, libraries, and research facilities in those urban areas.

Graduate Courses in Art (ART)

ART 530 Guided Study Abroad. Semester course; 1-6 credits.

ART 592,692 Individual Projects/Fieldwork. Semester courses; 1-6 credits. By appointment with director of graduate studies after approval by department chair. (Obtain individual research project form from the dean's office prior to enrollment.) Individual work for graduate students.

ART 601-602 Seminar in Art. Continuous course; 3-3 credits. Discussion and research in the visual arts providing experience and involvement in the various studio areas for students not concentrating in these areas.

ART 690 Methods of Art Research. Semester course; 2 credits. Review of selected research methods relevant to the composition of a thesis in the student's master's degree area. Preparation of a proto-thesis concludes course work.

ART 705, 706 Research in the Arts. Semester courses; 3, 6 credits. By appointment with director of graduate studies after approval by department chair. (Obtain individual research project form from the dean's office prior to enrollment.) Individual research for graduate students.

Department of Art Education

Bleck, Charles F. *Associate Professor and Chair* PhD, University of North Texas; curriculum, painting.

Burton, David *Associate Professor* PhD, The Pennsylvania State University; philosophy, design.

Landis, Alan L. *Professor* DEd, The Pennsylvania State University; curriculum, jewelry.

Reeves, Daniel J. *Professor and Assistant Dean* EdD, Illinois State University; research, painting, computer graphics.

Shumard, Sally L. *Assistant Professor* PhD, Ohio State University; computer art, curriculum.

Wright, James *Associate Professor and Acting Chair* DEd, Pennsylvania State University; theory, sculpture.

The Master of Art Education program attempts to expand and further refine each MAE student's ability, knowledge, and attitudes in order to provide the profession with more effective art teachers, coordinators, supervisors, and other educational specialists in the arts.

Program Description

The MAE program is structured on an individualized basis rather than on a prescribed program of graduate studies. To benefit from the program's flexibility, the MAE student is assisted by a faculty adviser in determining his or her own educational needs and professional goals. With the assistance of the adviser, the MAE student determines a viable structure for the content and sequence of a program of graduate studies.

Such a program can utilize the collective expertise of the art education faculty as well as appropriate community resources. Graduate course work, therefore, could include both on-campus and off-campus involvement.

Opportunities for personal growth through the MAE program also include the rich resources of other graduate departments in the University in the visual and performing arts, education (including supervision, administration,

and special areas), the natural and social sciences, and the humanities. Alternative approaches to traditional thesis methods also are encouraged within the program.

Admission Requirements – MAE

Undergraduate Preparation. In addition to the School of the Arts admission requirements, applicants in art education must have completed a minimum of 36 semester hour credits in studio art at the undergraduate level. It is desirable for applicants to have had at least two years of teaching experience prior to beginning graduate studies.

Portfolio. Applicants must submit evidence of creative or professional involvement in the format of their choice. Included should be material such as slides of representative work, description of professional activities, articles published, curriculum and program material developed, and other documentation of activities with artists, teachers, and children.

Degree Requirements – MAE

Program Pattern	Credits
Art Education Electives	12
Approved Electives	15
Issues and Methods of Inquiry	3
Thesis Project Option or Nonthesis Option	6
	36

Thesis or Project Option

A thesis or project option may develop from graduate course work or professional involvement. Projects are those endeavors of thesis proportion that do not fit the traditional thesis format. A thesis or project may be explored by descriptive research, historical research, empirical/statistical research, design of learning packages, philosophical study, curriculum development, or action research.

Nonthesis Option

In lieu of the thesis, students may elect to complete six credit hours of graduate course work in the Department of Art Education. The selection of these six credits is subject to the approval of the student's adviser. In addition, the student must pass successfully a written and oral examination at the conclusion of all course work. The examination will pertain to the course work, to contemporary issues in the field, and to the student's particular area of expertise.

Graduate Courses in Art Education (AEN)

AEN 501-502 Concepts in Art Education. Continuous course; 1 seminar and 4 studio hours. 3-3 credits. A sequence of studies organized around six major components: communications, expressive media, conceptual expression, teaching strategies, teacher-affective attributes, and self-managing abilities.

AEN 508 Two-Dimensional Art Experiences. Semester course; 2 seminar and 3 studio hours. 3 credits. The course explores the media, techniques, and concepts of drawing, painting, and printmaking. Not offered for credit for studio art majors.

AEN 509 Three-Dimensional Art Experiences. Semester course; 2 seminar and 3 studio hours. 3 credits. Not offered for credit for studio art majors. Exploration of sculptural concepts with three-dimensional materials such as wood, metal, clay, fiber, plaster, plastic, and glass.

AEN 510 Experiences in the Arts. Semester course; 2 lecture and 3 studio hours. 3 credits. Explores traditional and contemporary forms of expression in the visual, literary, and performing arts. Leads students to discover relationships among apparently independent art forms using such activities as lectures, guest speakers, and required attendance at events in the arts.

AEN 520 Teaching Concepts Through the Arts. Semester course; 1 lecture, 1 seminar, and 3 studio hours. 3 credits. Open to all graduate students. Students will investigate and compare traditional and contemporary patterns of expression, develop experiential techniques for teaching concepts, and participate in a series of activities that reveal relationships among the arts and other subject areas. Seminars will include guests from the visual, performing, and literary arts.

AEN 550 Art for the Exceptional Learner. Semester course; 2 lecture and 3 laboratory hours. 3 credits. A study of exceptional learners including handicapped, gifted and talented, aged, and others, and their participation in and appreciation for the visual arts. Courses may include practicum and field experiences.

AEN 553 Art and Perceptual Communication. Semester course; 3 lecture hours. 3 credits. Explores art and perception as a means of effectively communicating through the senses. Emphasizes the analysis of the principles of art and design that affect the perception of art, advertising, and other media. Investigates light, color, perception, illusions, and other related topics.

AEN 591 Topics in Art Education. Semester course; variable credits from 1-3. May be repeated for a maximum of nine credits with different content. The course will explore selected topics of current interests or needs relative to art education. See the *Schedule of Classes* for specific topic to be offered each semester.

AEN 600 Seminar: Issues in Art Education. Semester course; 36 lecture hours. 3-6 credits. The course investigates contemporary issues and identifies problems in art education. Students prepare oral and written reports that explore new directions and discuss the implications for teachers and art programs.

AEN 601 Art for Elementary Classroom Teachers. Semester course; 2 lecture and 2 studio hours. 3 credits. An inquiry into the nature of art and its importance in the elementary curriculum. Through personal experiences with art concepts and media, students learn about themes, form and expression, and develop a broader understanding of the value of art for children.

AEN 611, 612 Literature in Art Education. Semester courses; 3 lecture hours. 3, 3 credits. Review, analysis, and assessment of significant historical and contemporary writings in art education and related fields.

AEN 652 Art Supervision and Administration. Semester course; 3 lecture hours. 3 credits. Exploration of the duties and responsibilities of the public school art supervisor and administrative positions in art education within various organizations or institutions.

AEN 665 Curriculum Development and Evaluation. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. A review of curriculum development including: needs assessment, determination of goals and objectives, curriculum writing, evaluation, and feedback processes. Theoretical approaches in the visual arts will be studied and curriculum models designed, developed, and analyzed.

AEN 670 Technology in Art Education. Semester course; 2 lecture and 3 studio hours. 3 credits. The students examine diverse aspects of new technologies in relation to art programs. These aspects include media and computer-assisted learning, and applications of computer graphics and other technology to artistic expression.

AEN 680 Teaching Laboratory. Semester course; 3 lecture hours. 3 credits. Observations and experimental teaching experiences with children in art. Group discussions and evaluation of ideas, objectives, and methods.

AEN 690 Issues and Methods of Inquiry in Art Education. Semester course; 3 lecture hours. 3 credits. Readings and discussions of studies in art education and related research emphasizing possibilities for implementation by art teachers. Methods of research in the field will be reviewed and sample research proposals will be developed by the students.

AEN 799 Thesis. Semester course; 1-6 credits. May be repeated. Prerequisite: Completion of all formal course work, candidacy and approval of the department chair. Preparation of a thesis is based upon independent research.

Department of Art History

- Brownwell, Charles E. *Professor* PhD, Columbia University; Seventeenth and Twentieth Century, American Architectural History and Decorative Arts; Renaissance to early Twentieth Century European Art and Architecture.
- Crowe, Ann G. *Assistant Professor* PhD, Stanford University; Nineteenth and Twentieth Century, museology.
- Farmer, James D. *Assistant Professor* PhD, University of Texas at Austin; Pre-Columbian, Native American, Modern Art of Mexico.
- Hill, Sharon J. *Associate Professor* PhD, New York University; Classical, Medieval.
- Hobbs, Robert C. *Rhoda Thalhimer Endowed Professor of American Art* PhD, University of North Carolina, Chapel Hill; Nineteenth and Twentieth Century American, Native American.
- Jacobs, Fredrika H. *Professor* PhD, University of Virginia; Aesthetics, Renaissance, Baroque.
- Koplin, Bruce M. *Associate Professor and Chair* MFA, Virginia Commonwealth University; museology, folk art of the U.S., and nineteenth-century decorative arts.
- Lawal, Babatunde *Professor* PhD, Indiana University, Bloomington; Traditional and Contemporary African Art, African-American Art, Art Renaissance, Baroque, Modern.
- Perry, Regina A. *Professor Emerita* PhD, Western Reserve University; African, Oceanic, Anglo-American, Colonial, African-American, Native American, architectural history.
- Phillips, Richard E. *Assistant Professor* PhD, University of Texas at Austin; colonial and modern art of Latin America, art of Spain, Late Gothic, Islamic Art.
- Risatti, Howard *Associate Professor* PhD, University of Illinois; Twentieth Century, criticism.

Affiliated Graduate Faculty

- Becker, Lawrence *Objects Conservator*, Virginia Museum of Fine Arts MA, New York University.
- Bradley, David *Associate Museum Director*, Virginia Museum of Fine Arts BS, Virginia Commonwealth University; museum development and marketing.
- Cormack, Malcom *Paul Mellon Curator*, Virginia Museum of Fine Arts MA, University of Cambridge; eighteenth- and nineteenth-century British painting.
- Holloman, James *Deputy Director*, Chesterfield Historical Society and Museums MA, College of William and Mary; museology.
- Lounsbury, Carl R. *Architectural Historian*, Colonial Williamsburg Foundation PhD, George Washington University; Seventeenth and Eighteenth Century American and English Architectural History.
- Trusch, Ida M. *Director*, Trusch-Gilbert Design Inc. MFA, Virginia Commonwealth University; museum exhibition design.

The department offers a broad-based education in the humanistic discipline of art history in three different tracks. The first track offers a degree in art history that stresses a general comprehensive knowledge of the field on the master's level, as well as the opportunity to develop professional skills of research and writing. Throughout, expertise is developed in criticism and the historiographic methods, such as connoisseurship, stylistic analysis, and

iconography. Individual research is encouraged through seminars, independent projects, and ultimately, the writing of a thesis.

The Department of Art History offers a second track which concentrates on the humanistic study of architectural history. General comprehensive knowledge in the field of architectural history as well as in that of art history is stressed in relation to work in the areas of urban studies and/or historic house museums.

The Department of Art History also offers a third track in museum studies, one which takes particular advantage of the rich cultural facilities of Virginia's urban environment. The program is run in coordination with numerous local and regional museums, stressing on-site instruction and internships. An opportunity is offered for the study of curatorial and administrative aspects, as well as educational programming for museums.

Overseas studies are available through University-sponsored programs abroad in Europe and Asia. Graduate assistantships and fellowships are available to full-time students.

MA – Historical

Graduate studies leading to the MA degree in art history are intended to train students to become creative and accomplished teachers and scholars in the discipline of art history. The program is designed to provide a comprehensive knowledge of the major areas and historical periods of art, as well as the various research and methodological skills requisite to the field.

The requirements listed below are in conjunction with School of the Arts graduate admission and degree requirements.

Admission Requirements

In addition to the School of the Arts requirements, applicants should have completed a minimum of 21 undergraduate semester credits in art history with additional work in relevant humanities and social science courses, such as English, philosophy, foreign language, and history. Students whose undergraduate training is less extensive may be admitted provisionally and subsequently attain full graduate status.

Degree Requirements

A total of 30 credits in course work and thesis:

Art History (period courses)	21
Historiography and Methodology	3
Thesis	6
	30

At least six of the 21 art history credits must be taken in seminar classes.

Degree candidates must have a reading knowledge of German or any appropriate Romance language. The requirement may be fulfilled after admission by passing the relevant foreign language examination.

Students also must demonstrate general programmatic competence in art history by passing a comprehensive examination, taken sometime toward the end of the course work.

The master's program culminates with a thesis, written under the direction of a departmental adviser and a thesis committee.

For more complete information and details on these procedures, contact the Department of Art History.

MA – Architectural History

The Art History Department offers a Master of Arts degree with a track in architectural history. While concentrating in architectural history, students are required to take courses in art history, as well as museum studies and/or urban studies and planning. Such a program is designed for students who wish to pursue careers as academicians or practitioners in the field, as well as for those who wish to pursue a doctoral degree. The courses taken in museum studies, or in conjunction with the Department of Urban Studies and Planning, provide a unique interdisciplinary approach to the study of architectural history.

Admission Requirements

In addition to the School of the Arts requirements, applicants should have completed a minimum of 21 undergraduate semester credits in art and/or architectural history of which six credits must be in the survey of architectural history. Some basic drafting experience is also required. Additional work in relevant humanities and social sciences, such as literature, philosophy, foreign language, and history is necessary. Students whose undergraduate training is less extensive may be admitted provisionally and subsequently attain full graduate status.

Degree Requirements

A total of 39 credits in course work and thesis:

Architectural History	12
Art History (period courses)	9
Historiography and Methodology	3
Urban Studies and Urban Planning and/or Museum Studies	9
Thesis	6
	39

At least three of the 12 architectural credits and three of the art history credits must be taken in seminar classes.

Degree candidates must have a reading knowledge of German or any appropriate Romance language. The requirement may be fulfilled after admission by passing the relevant foreign language examination.

Students also must demonstrate general programmatic competence in art history by passing a comprehensive examination taken sometime toward the end of the course work.

The master's program culminates with a thesis, written under the direction of a departmental adviser and a thesis committee.

For more complete information and details on these procedures, contact the Department of Art History.

MA – Museum Studies

The two-year program in museum studies stresses those attitudes and skills necessary to accomplish the major goals of any professional museum operation: to collect, to preserve, to exhibit, and to interpret the art and artifacts of the past and present within an extended curriculum and professional museum environment. The course of study also includes an internship for academic credit under the direct supervision and professional guidance of individuals in the field.

The curriculum provides a broad educational background in art history and, in the field, will include studies in connoisseurship, registration methods, exhibition design, and educational programs for museums. It also provides a more particularized experience in areas in which the student desires to develop expertise. These areas include museum theory and administration, historic house museum, curatorship and contemporary alternative space gallery.

Admission Requirements

In addition to the School of the Arts admission requirements, applicants should have completed a minimum of six credits in the survey of western art, nine credits of period studies, and some undergraduate work in the humanities. Any applicant whose training is less extensive may be provisionally admitted and subsequently may gain full graduate status upon completion of the deficiency.

Degree Requirements

	<i>Credits</i>
Museum Studies	15
Museum Internship	3
Art History (period courses)	18
Art Historiography and Methodology	3
Elective	3
Museum Project or Thesis	6
	48

At least three of the 18 art history credits must be taken in a seminar class. Museum studies students must have a reading knowledge of German or any appropriate Romance language. This requirement may be fulfilled after admission by passing the relevant foreign language examination.

Students also must demonstrate general programmatic competence in museum studies and art history by passing a comprehensive examination taken toward the end of the course work.

An internship at one of the cooperating local or regional museums is a degree requirement of particular importance, enabling students to apply their knowledge and to develop a personal awareness of effective museum exhibition procedures. As a culmination to the course of study, students may opt to plan and mount a major exhibition on campus or at a museum in lieu of a written thesis, with the approval of the department.

PhD Program in Art History

The PhD in the history of art is a research-oriented degree designed to train critical and productive scholars who are well-grounded in the literature, methodology, and major art historical problems in a designated area of study. The program's focus is on interdisciplinary and multicultural studies utilizing new critical methodologies.

Doctoral students will undertake an established program of course work and will be engaged in directed research and scholarly exposition within specialized areas of art historical inquiry. The PhD program in the history of art is designed to prepare participants for roles in teaching and curatorial positions at museums in departments of collection management and educational programming.

Degree Requirements

	<i>Credits</i>
Course Work Beyond the Master's Degree in Art History:	
Major Area	9
Minor Area	6
Art History Electives	9
Dissertation	6
	30

The requirements of the School of Graduate Studies for candidacy exams and dissertation committees apply to participants in this program. Part-time study for portions of the program is possible.

Admission to the PhD Program

To enter the doctoral program, the applicant must have the approval of the Graduate Committee, the chair of the Department of Art History and ultimately final approval from the director of graduate studies in the School of the Arts and the dean of the School of Graduate Studies. In addition to all required VCU graduate application materials, prospective PhD students should submit either a completed master's thesis or two writing samples. In certain cases, a personal interview with the graduate committee or a faculty member may also be requested. Students who have completed all of the requirements (including the language requirements) for the Master of Arts degree in the Department of Art History at VCU except the master's thesis may request admission to the doctoral program by submitting a formal written request accompanied by two research papers to the departmental Graduate Committee. The Graduate Committee may waive the requirements of the master's degree and the writing of the master's thesis, and grant the student entrance into the doctoral program. (Such a waiver does not constitute a master's degree). Students who have completed a Master of Arts degree in art history at VCU or any other accredited institution will be eligible to apply directly to the doctoral program.

Upon completion of the first nine credits of course work (first semester), the student will choose a program adviser, who, together with the departmental chair of the Graduate Committee, will advise the student in establishing a program of study.

For application materials, write to: Director of Graduate Studies, School of the Arts, 325 North Harrison Street, Pollak Building, Richmond, VA 23284-2519.

Requirements for the PhD Degree

Students must have demonstrated competency in one foreign language at the time of application to the PhD program. Reading proficiency in a second language must be demonstrated by the completion of the second semester of doctoral course work. (Although French and German are typically the two languages of proficiency, the student may be required to demonstrate proficiency in other languages for study in particular areas.) A foreign language requirement for a previous MA degree may upon appeal be applied to the language requirement for the PhD curriculum. Students must complete (with a grade of "B" or higher) 24 hours of course work beyond the master's degree (at least 6 must be seminar courses); satisfy the language proficiency requirement; pass the comprehensive slide and field examinations; gain approval for the dissertation proposal, and be granted candidacy; complete the dissertation and successfully defend the dissertation. All degree requirements must be completed within seven years of the first semester of enrollment in the doctoral program.

Majors and Concentration

Students will choose an area of major concentration from one of the following: Studies in Art and Architecture: Eighteenth Century to the Present; or Studies in Non-Western Art and Architecture (African, Oceanic, Pre-Columbian and Native American Art). Students will select an area of minor concentration, which may be from any area of art historical inquiry outside the major or, upon approval of the Graduate Committee, may be outside the department. Students will be particularly encouraged to undertake cross-cultural investigations.

Nine credits will be taken in the major area and six in the minor; nine additional elective credits may be taken from any art history area. With approval of the graduate committee, students may substitute three elective credits with a course outside of the department.

Comprehensive Exam/Admission to Candidacy

All masters and doctoral students enrolled in the graduate program in Art History must pass the departmental comprehensive slide examination given each semester. Doctoral students will be required to pass a field comprehensive examination, consisting of written and oral components. After satisfactory completion of the comprehensive examination and demonstration of proficiency in two languages, the student will work with an adviser to establish a committee and will submit to said committee a dissertation proposal. Upon approval of the dissertation proposal, candidacy for the doctoral degree will be granted. Only after candidacy is granted may a student enroll for dissertation credits. (A student who does not pass the comprehensive examination may

take that exam a second time.) This second examination must be taken within six months of the first attempt.

Dissertation

After admission to candidacy, participants proceed to complete and defend their dissertation. This is done under the supervision of the dissertation director working in concert with the dissertation committee. Participants are required to maintain continuous enrollment of at least three credit hours per semester (excluding summer) until they have attained 6 hours of dissertation credit, after which they may enroll for as few as one credit per semester. The number of credit hours per semester is expected to reflect the intensity of use of University resources, especially faculty time. The dissertation must represent independent research which is devoted to an original question or hypothesis with the appropriate development, analysis, and interpretation. Successful defense of the dissertation completes the requirements for the degree.

General Information

Financial Assistance. Although financial assistance is limited, funds are available. No prospective student should refrain from seeking admission to the school for financial reasons alone. However, since funds available through the School of the Arts are limited, applicants are strongly urged to seek additional sources to finance their education.

Research and Teaching Assistantships. Research and teaching assistantships may be available to doctoral students. Additional information is available from the director of graduate studies, School of the Arts.

Graduate Courses in Art History (ARH)

ARH 502 Historical Preservation and Architectural History. Semester course; 3 lecture hours. 3 credits. An introduction to the methods or research, record keeping and reporting used in architectural history, and to the evolution of the discipline, especially in relation to historic preservation.

ARH 504 Advanced Studies in Prehistoric and Ancient Art. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study of a selected aspect of artistic development in one or more ancient and prehistoric cultures, such as in Africa, Asia, Europe, or the Americas. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 505 Advanced Studies in Greek, Etruscan, and Roman Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study of a selected aspect of the art and ideas of the classical Greek and Roman cultures, including the Etruscans. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 514 Advanced Studies in Medieval Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study of a selected aspect of development in the art and ideas of Byzantine, Germanic, Romanesque or Gothic Europe or of Islam. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 519 Advanced Studies in Renaissance Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study

of a selected aspect of the development of the art and ideas of the Proto-Renaissance, Early Renaissance, or High Renaissance in Europe or Latin America. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 524 Advanced Studies in Baroque and Eighteenth-Century Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of England, France, the low countries, Italy, Spain, Latin America, Germany, and Austria during the Baroque period and/or eighteenth century. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 529 Advanced Studies in Nineteenth-Century Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the nineteenth century including Neoclassicism, Romanticism, Realism, Impressionism in Europe and/or America. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 539 Advanced Studies in Twentieth-Century Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the twentieth century in Europe and/or America. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 542 Advanced Studies in the Architecture of Richmond. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. An advanced, detailed study of a selected aspect of the development of the architecture of the City of Richmond. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 544 Advanced Studies in Art and Architecture of the United States. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of the United States. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 549 Advanced Studies in the Art and Architecture of Asia. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of India, China, Korea, Japan, Southeast Asia, or the Middle East. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 552 Art and Architecture of Central, Eastern, and Southern Africa. Semester course; 3 lecture hours. 3 credits. A study of the major art-producing cultures of Central Africa, including the Cameroon, Gabon, and Zaire; East Africa, including Kenya, Tanzania, and Mozambique; and Southern Africa, Bushman art, prehistoric cave paintings, and rock engravings.

ARH 554 Advanced Studies in African or Oceanic Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. An advanced, detailed study of a selected aspect of the development of the art and ideas of African or Oceanic cultures. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 555 Advanced Studies in Aesthetics and Art Theory. Semester course; 3 lecture hours. 3 credits. An advanced, detailed investigation of aesthetic theories and concepts in art.

ARH 556 Advanced Studies in Ideas and Criticism in Art. Semester course; 3 lecture hours. 3 credits. An advanced, detailed examination of specific concepts in the literature of art criticism with particular emphasis on the principle writings of leading American critics.

ARH 569 Advanced Studies in Museum Methods. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of nine credits. Advanced instruction in the major aspects of museum administration.

Lectures by museum personnel and workshops in a variety of museums. A major research project is required.

ARH 571 Advanced Studies in Film Theory. Semester course; 3 lecture hours. 3 credits. Advanced, detailed study of the theories and criticism of film, dealing with medium, form, function, and psychology.

ARH 574 Advanced Studies in Film. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed examination of selected topics in the history of film. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 575 Advanced Studies in the History of Photography. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. An advanced, detailed examination of selected topics in the history of photography. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 580 Registration Procedures for Museums. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A study of the standard registration procedures and the current vocabulary employed by the profession. Professional ethics will be stressed to enable the students to become more fully aware of the importance within the museum system.

ARH 581 Museum Exhibitions. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. The study of exhibitions for museums including design, fabrication, lighting, brochures, invitations, and publications.

ARH 582 Educational Program and Public Relations for Museums. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A study of programming for an art center/museum, including organization of permanent displays, special exhibitions, lectures, docent programs for children and adults, and traveling exhibition services. Special emphasis will be placed on the use of audio-visual materials and techniques in the exhibitions and interpretation programs, as well as the techniques of public information, including press releases, use of television, radio, newspapers, and scholarly publications.

ARH 583 Curatorship and Connoisseurship. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An examination of the curator's relationship and responsibilities to the museum system, research methods, methods of acquisition, organization of museum reference library (including slides and other audio-visual materials), exhibition catalogues, clippings, and file and computer retrieval systems.

ARH 584 Museum Administration. Semester course; 3 lecture hours. 3 credits. Prerequisite: ARH 464, 465 and/or permission of instructor. A study of museum organization, including staff organization and relationship of director to board, building and grounds, heating and humidity control, guarding and fire control, special installations and shops, membership programs, museum finances for operation and acquisition funds, grants, promotion, development, and overall responsibility to the community and profession.

ARH 590 Art Historiography and Methodology. Semester course; 3 lecture hours. 3 credits. Basic methodology for beginning art history graduate students. An examination of the traditional research methods of the art historical discipline, geared to familiarize students with standards in research and scholarship.

ARH 591 Topics in Advanced Art and Architectural History. Semester course; variable; 1-6 credits. May be repeated for a maximum of nine credits. Prerequisite: Permission of instructor. An in-depth study of a particular aspect of the art and architecture of both Old and New World cultures. Course consists exclusively of extended off-campus trips to sites and collections throughout the United States and abroad. See the *Schedule of Classes* for specific topics to be offered each semester.

ARH 593 Advanced Museum Internship. Semester course; 9 to 18 studio hours. 3 to 6 credits. May be repeated for a maximum of nine credits. Prerequisite: Permission of instructor, chair of the graduate

committee, and/or chair of the Department of Art History. Advanced fieldwork in a local, regional, or national museum.

ARH 602 Native American Art and Architecture of the Southwest United States. Semester course; 3 lecture hours. 3 credits. A study of the major prehistoric and historic native cultures of the Southwest, considered in terms of the characteristics that distinguish them from each other and that show continuity to modern forms. Emphasis is placed on use of modern Pueblo and non-Pueblo art forms as models for interpreting prehistoric forms of the Anasazi, Hohokam, Mogollon, Navajo and related cultures.

ARH 691 Topics Concerning the Yoruba Presence in the Americas. Semester course; 3 lecture hours. 3 credits. May be repeated. An examination of Yoruba-inspired cultural and artistic traditions in North and South America and the Caribbean. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 699 Museum Project. Semester course; 3-6 credits. Prerequisite: Permission of departmental graduate committee and chair of the Department of Art History. The planning, mounting, and documentation of a major exhibition on campus or in a local/regional museum.

ARH 714 Seminar in Pre-Columbian Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of Pre-Columbian art in the Mesoamerican and Andean regions.

ARH 752 Art and Architecture of Nigeria. Semester course; 3 lecture hours. 3 credits. A study of the culture and traditional art forms of Nigeria, from c. 500 BC to present, including architecture, sculptural works in wood, stone, ivory and metal, royal attire, jewelry, and weaponry. Special emphasis will be placed upon the art of the Yoruba and Benin bronzes.

ARH 759 Seminar in Aesthetics, Theory, and Criticism of Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. An advanced, detailed study of selected topics of aesthetics, art theory and criticism in a seminar situation. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 761 Seminar in Latin American Renaissance Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of Renaissance art in the Caribbean, Mexico, Central and South America.

ARH 762 Seminar in Latin American Seventeenth- and Eighteenth-Century Art and Architecture. Semester course; 3 lecture hours. 3 credits. May be repeated. Prerequisite: Permission of the instructor. Advanced research on specific topics related to the study of Baroque and Rococo art and architecture in the Caribbean, Mexico, Central and South America.

ARH 780 Aspects in Christian Iconography. Semester course; 3 lecture hours. 3 credits. Seminar: the study of meaning in the visual arts of Europe from the Middle Ages to the Neo-Classical period. Students will analyze special themes of a Christian or classical derivation and study major cultural shifts within a broader historical perspective.

ARH 781 Aspects of Buddhist Iconography. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Seminar: research into the origins and expansion of Buddhist art in Asia.

ARH 782 Aspects of Hindu Iconography. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Seminar: research into the origins and expansion of Brahmanical Hindu art in Asia.

ARH 789 Problems in Advanced Art and Architectural History. Semester course; 3 lecture hours. 3 credits. May be repeated. Seminar for scholarly research and discussion of specific issues.

ARH 791 Topics in Early Modern Art. Semester course; 3 lecture hours. 3 credits. May be repeated. An in-depth investigation of American and/or European Art and Architecture of the early twentieth century. See the *Schedule of Classes* for specific topic to be offered each semester.

ARH 797 Directed Research Project. Semester course; variable credit; 1-3 credits. May be repeated for a maximum of six credits. Prerequisite: Permission of instructor, coordinator of graduate studies and chair of the Department of Art History. Advanced individual work on subject to be formulated by student and instructor.

ARH 799 Thesis. Semester course; 1-6 credits. May be repeated. Prerequisite: Completion of all formal course work, comprehensive examinations, foreign language examination, and approval of the departmental chair of graduate studies and department chair. Preparation of a thesis based on independent research.

ARH 899 Dissertation Research. Semester course; variable credit. May be repeated. A minimum of six semester hours. Prerequisite: Completion of all course work and foreign language requirements; students must have been granted PhD candidacy. Preparation of a dissertation based on independent research.

The Master of Fine Arts in Fine Arts

Ceramics
Fibers
Furniture Design
Glassworking
Jewelry/Metalworking
Painting
Printmaking
Sculpture

General Program Description

Students may be admitted to one of the following School of the Arts Master of Fine Arts degree tracks: ceramics, fibers, furniture design, glassworking, jewelry/metalworking, painting, printmaking or sculpture. Students completing the MFA in Fine Arts will be prepared for professional artistic practice directed toward the creation of works of art, the application and transmission of knowledge about works of art, and their interrelationships with each other and with other aspects of culture. The graduate program advances the development of:

- individual studio and scholarly talents, interests, and philosophies, used creatively both to expand and preserve our cultural heritage;
- professional studio competence as exemplified by a significant body of work;
- individuals with the potential to solve contemporary problems in all aspects of the visual arts and to explore and address new questions and issues;
- professional competence in the dissemination of knowledge, including logical, clear verbal and written presentation of aesthetic ideas in teaching and other contexts; and
- scholarly competence in the organization, evaluation, and interpretation of knowledge.

Characteristics of the Program

In MFA studio art programs, assessment of progress is conducted on a regular and periodic basis through

scheduled critiques and final course critiques and evaluations. Students have frequent opportunities to exhibit their work in the context of their educational programs. They are encouraged to develop and present their work in circumstances that develop connections with the professional world related to their course of study. Students are admitted to degree candidacy after receiving approval by a faculty review committee.

Program Requirements

As a thesis project, the MFA candidate is required to present a final body of work demonstrating professional competence. The thesis is reviewed by a faculty thesis committee, and the culminating work is done in a form which can be retained by the University.

Degree Requirements, MFA in Ceramics, Fibers, Furniture Design, Glassworking or Jewelry/Metalworking

Program Pattern	Credits
Studio	42
Electives, including Art History	9
Graduate Seminar	9
	60

Degree Requirements, MFA in Painting or Printmaking

Program Pattern	Credits
First Semester	
Studio	
Major departmental studio	6
Departmental studio	3
Art and Critical Theory	3
Graduate Seminar	3
	15
Second Semester	
Studio	
Major departmental studio	6
Approved studio elective	3
Art and Critical Theory	3
Graduate Seminar	3
	15
Third Semester	
Studio	
Major departmental studio	6
Approved studio elective	3
Approved Academic Elective	3
Graduate Seminar	3
	15
Fourth Semester	
Departmental Studio	9
Approved Elective	3
Graduate Seminar*	3
	15
	60

* Enrollment in the Graduate Seminar is mandatory for the duration of the student's study in the graduate program.

Degree Requirements, MFA in Sculpture

Program Pattern	Credits
First Semester	
Studio (Graduate Sculpture)	8
Elective	3
Graduate Seminar	4
	15
Second Semester	
Studio (Graduate Sculpture)	8
Elective	3
Graduate Seminar	4
	15
Third Semester	
Studio (Graduate Sculpture)	8
Elective	3
Graduate Seminar	4
	15
Fourth Semester	
Studio (Graduate Sculpture)	8
Elective	3
Graduate Seminar*	4
	15
	60

* Enrollment in the Graduate Seminar is mandatory for the duration of the student's study in the graduate program.

Admission Requirements, MFA in Fine Arts

Undergraduate Preparation. In addition to the School of the Arts admission requirements, applicants in the visual arts must have completed a minimum of 36 semester hour credits in art at the undergraduate level.

Portfolio.

- **Ceramics, Fibers, Furniture Design, Glassworking and Jewelry/Metalworking:** 20 slides of recent representative work, four of which must be drawings, the remainder of which should be in the field of application.
- **Painting:** 12 slides of representative work.
- **Printmaking:** 12 recent unframed prints. Although all reasonable care will be given the work, the University will not be responsible for its condition.
- **Sculpture:** A minimum of 12 slides of representative work, three of which must be drawings.

Department of Crafts

- Hammersley, William S. *Associate Professor* MFA, University of Wisconsin, Madison; woodworking, furniture design.
- Hawthorne, John *Associate Professor* MFA, Cranbrook Academy of Art; fabric design, textiles.
- Ipsen, Kent F. *Professor* MFA, University of Wisconsin, Madison; glassworking.
- Iverson, Susan *Professor* MFA, Tyler School of Art; tapestry, textiles.
- Meyer, C. James *Professor* MFA, State University College, New Paltz; metalsmithing, jewelry.
- Rosenbaum, Allan *Associate Professor* MFA, Virginia Commonwealth University; ceramics.
- Thompson, Nancy K. *Professor* MFA, Indiana University; jewelry.

The Department of Crafts offers graduate course work in five disciplines: ceramics, fibers, furniture design, glassworking, and jewelry/metalworking.

Within the studio concentration, emphasis is placed on self-motivation, individual investigation, and the development of professional attitudes and skills. Students are expected to demonstrate a serious commitment to their work and to develop mature ideas and forms of expression.

Graduate Courses in Crafts (CRA)

CRA 547 Ceramic Technology. Semester course; 3 lecture hours. may be repeated. See the *Schedule of Classes* for specific topic to be offered each semester.

CRA 591 Special Topics and Practicum. Semester course; 1-3 credits. May be repeated. Prerequisite: Permission of instructor. A topical seminar/workshop offered in a variety of craft subjects or issues not included in the regular curriculum. See the *Schedule of Classes* for particular topic or topics to be covered each semester.

CRA 601 Metal or Jewelry. Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Personal investigation of materials, processes, and attitudes relating to the creative production of metal and/or jewelry forms.

CRA 621 Furniture Design. Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Design, research, and experimentation in wood and varied materials, relating to a body of work demonstrating the student's mastery of material.

CRA 641 Ceramics. Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Problems in the design and production of functional and nonfunctional ceramic objects as well as study of experimentation in ceramic technology and kiln design.

CRA 651 Glassworking. Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Prerequisite: Permission of instructor. Investigation of and experimentation with the ideas, material, and processes relative to the production of glass forms.

CRA 661 Textiles. Semester course; 9, 18, or 27 studio hours. 3, 6, or 9 credits. May be repeated. Work in contemporary and traditional textile techniques.

CRA 690 Graduate Seminar. Seminar course; 1 or 3 lecture hours. 1 or 3 credits. May be repeated. Degree requirement for graduate students in the Department of Crafts. A weekly seminar for the purpose of discussing contemporary issues in the arts as they affect the artist-craftsman.

Department of Painting and Printmaking

Bolduan, Ruth *Associate Professor and Acting Chair* MFA, The American University; painting.
 Campbell, Jewet *Professor Emeritus* Attended New York, Art Students' League; painting.
 DeSmidt, Thomas H. *Professor and Associate Dean* MFA, Syracuse University.
 Donato, Gerald M. *Professor* MFA, University of Wisconsin; painting.
 Drought, Michael *Associate Professor* MFA, University of Wisconsin; painting.
 Freed, David C. *Professor* MFA, University of Iowa; printmaking.
 Gower, Reni *Associate Professor* MFA, Syracuse University; painting.
 Kevorkian, Richard E. *Professor Emeritus* MFA, California College of Arts and Crafts; painting.
 Martin, Bernard M. *Professor Emeritus* MA, Hunter College; painting.
 Miller, James B. *Professor* MFA, University of Arkansas; painting and printmaking.
 Pollak, Theresa *Professor Emerita* Attended New York Arts Students' League; painting.

Russell, Milo F. *Professor Emeritus* MA, University of Virginia; painting.
 Tapia, Javier *Associate Professor* MFA, University of Texas; painting.
 Tisserat, Barbara *Associate Professor* MFA, University of Wisconsin; printmaking.
 Wetton, Philip S. *Professor* Diploma, Coventry College; printmaking.
 Yarowsky, Morris *Professor* MFA, California College of Arts and Crafts; painting.

The Department of Painting and Printmaking offers a graduate program of study leading to the MFA degree. Students admitted to the program are expected to have achieved a high level of competence in either painting or printmaking. The graduate program is designed to encourage the development of professional attitudes and skills, with an emphasis on individual investigation.

Graduate Courses in Painting and Printmaking (PAP)

PAP 525 Issues in Contemporary Visual Arts. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of six credits. Prerequisite: Painting and Printmaking majors only. The investigation of content and meaning of major directions in contemporary art as they relate to the studio. Students will relate their own work to major movements in contemporary visual art.

PAP 527, 528 Art and Critical Theory. Semester courses; 3 lecture hours. 3, 3 credits. Prerequisite: General art history or equivalent. Major themes in art criticism and theory from 1940 to the present. This course provides an introduction to the literature of art criticism as well as artists' writings in relation to studio production.

PAP 591 Topics in Painting and Printmaking. Semester course; 1-4 credits. May be repeated for a maximum of nine credits with different content. This course will explore selected topics of current interests or needs relative to painting and printmaking. See the *Schedule of Classes* for specific topics to be offered each semester.

PAP 605 Graduate Painting. Semester course; 6 or 12 studio hours. 3 or 6 credits. May be repeated. A studio class in which primary emphasis is placed on the creative disciplines of contemporary painting. Special attention is given to the development of personal expression through individual criticism.

PAP 615 Graduate Printmaking. Semester courses; 6 or 12 studio hours. 3 or 6 credits. May be repeated. Specialization in one printmaking medium with emphasis upon technical research and the aesthetic suitability of design to medium.

PAP 621 Graduate Drawing. Semester course; 6 studio hours. 3 credits. May be repeated. A studio class with individual criticism. Special attention is given to contemporary concepts. Permission of instructor required for non-painting and printmaking majors.

PAP 690 Graduate Seminar. Semester course; 1, 3 lecture hours. 1, 3 credits. May be repeated. Degree requirement for graduate students in the Department of Painting and Printmaking. Weekly seminar for the purpose of discussion of recent artistic developments in painting and printmaking. Critiques dealing with student work will take place.

Department of Sculpture

Helfgott, Myron *Professor* MFA, Southern Illinois University.
 Henry, Charles R. *Professor* MFA, Cranbrook Academy.
 King, Elizabeth *Associate Professor* MFA, San Francisco Art Institute.
 Seipel, Joseph *Associate Professor and Chair* MFA, Rinehart School of Sculpture.
 Van Winkle, Lester *Professor* MA, University of Kentucky.

"In dreams begin responsibilities," William Butler Yeats once said. And so, too, the sculpture department is

in the business of fomenting dreams and encouraging responsibility.

The sculpture department provides an environment of high expectation regarding self-motivation, intellectual capacity, and responsibility, in order to establish those conditions that promote the student's ability to construct a thinking self. Students are encouraged to explore technology's parameters, and discover applications to new and traditional modes of expression while continuing to examine the links between art, science, the humanities, and the conditions of the world. It is our mission to provide students with the seeds of discernment, vocabulary, and the skills of analysis and synthesis to become participants in the dialogue of our age.

The department has six full-time and numerous part-time faculty who represent various directions and attitudes relative to the making of art.

Both formal and informal contact with faculty are designed into the program. Through studio reviews, seminars and research, the students are expected to build an awareness of contemporary and historical definitions of art that will influence their creative work. In addition to their own investigations, the graduate students participate in and contribute to the undergraduate program.

The graduate students are provided with a generous amount of studio space and are given time, support, and encouragement to pursue their independently determined goals. While the graduate program is generally a 2 year, 4 semester in-residence program, students are expected to continue studio pursuits either on campus or at an alternative site throughout the calendar year.

Graduate Courses in Sculpture (SCU)

SCU 500, 600 Graduate Sculpture. Semester course; 4, 8, or 12 studio hours. 2, 4, or 6 credits. May be repeated. Emphasis on individual creative production with periodic exposure of student's work and ideas to the critical attention of the teaching faculty of the Department of Sculpture and other graduate students.

SCU 517 Seminar in Contemporary Sculpture. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of 12 credits. A forum for consideration and discussion of recent developments in the field.

SCU 590 Graduate Seminar. Semester course; 1 or 4 lecture hours. 1 or 4 credits. May be repeated. Degree requirement for graduate students in the Department of Sculpture. Weekly seminar for the purpose of exploring recent developments in sculpture and conducting critiques in which students can discuss the ideas and attitudes manifest in their work.

SCU 591 Topics in Sculpture. Semester course; variable; 1-4 credits. May be repeated for a maximum of 12 credits. This course will explore selected topics of current interests or needs relative to sculpture. See the *Schedule of Classes* for specific topics to be offered each semester.

The Master of Fine Arts in Design

Film
Interior Environments
Photography
Visual Communications

General Program Description

The purpose of this advanced degree program in design is to prepare the individual designer to assume a leadership role in a complex and expanding profession. The course work, applied experience, and research that constitute the program will enable the designer to better solve visual and spatial problems and to function more effectively as an administrator, planner, and educator.

The program offers the graduate student the opportunity to use appropriate courses and resources from schools within the University, to participate in internships and research with various agencies and organizations concerned with programs of design, and to view design as an interdisciplinary profession with an essential contribution to make toward the solution of the problems of today.

Characteristics of the Program

The Master of Fine Arts in Design is an advanced interdisciplinary program in the study of design which utilizes knowledge and human potential in alternative ways to define problems and create change.

Graduate students not only have the opportunity to work within a design field, such as visual communications, interior environments and photography/film, but also have the opportunity to develop competencies across fields and to engage in research and inquiry of a social or environmental nature to create new visual forms and communicative content in a rapidly changing society.

Internship and Field Experiences

Within a professional school of the arts in an urban university there are excellent opportunities for appropriate graduate field experiences. They include:

- formal arrangements with state agencies, industries, foundations, and community organizations which would enable the graduate designer to function as a member of a project team or task force;
- service to various organizations, offered as the need arises, possibly with the student working on a specific problem or project; and
- research internships developed with the University on school-supported or outside-funded projects, especially those that concern social problems, health care, and institutional environments.

Program Requirements

Thesis. The thesis or creative project is a requirement for the MFA, design (visual communications) degree, a thesis and exhibition is a requirement for the MFA, design (photography and film) degree, and a research-design project is required for the MFA, design (interior environments) degree. The culminating work is done in a form which can be retained by the University.

Examples of Thesis

Interior Environments. An investigation in a scholarly area or specific research and documentation of a technical or creative project.

Visual Communications. An exhibition of a visual communications problem appropriately documented or a specific research problem which explores the communicative, formal, and/or technological aspects of visual problem solving.

Photography and Film. An exhibition of a cohesive body of photographs and or film, with the appropriate written documentation.

Courses for MFA in Design (DES)

Courses Common to all Subspecialties

DES 601 Interdisciplinary Design Seminar. Semester course; 3 lecture hours. 3 credits. An introductory seminar for beginning graduate students across the three subspecialty areas that examines the mission of the contemporary designer and the technological, psychological, and aesthetic resources. Professional designers, educators from other fields on campus, and resource people from business and industry will participate.

DES 602 Advanced Design Seminar. Semester course; 3 lecture hours. 3 credits. May be repeated. An advanced seminar in which students and faculty from the three subspecialty areas meet and discuss the professional and conceptual aspects of interdisciplinary design activity. Students will draw upon past knowledge and current investigations.

DES 603 Design and Visual Communication Education. Semester course; 3 lecture hours. 3 credits. This course will explore the philosophical, informational, and technical aspects of design education.

School of the Arts and University Courses

The following courses common to all graduate programs in the School of the Arts are available to MFA students in design who desire to engage in research supervised by qualified professors within the school and other academic divisions within the University.

ART 592, 692 Individual Projects/Fieldwork
ART 704,705 Research in the Arts

A variety of graduate courses offered within the School of the Arts can be utilized as electives by the student in this degree program. Some examples are:

ARH 539 Advanced Studies in Twentieth Century Art and Architecture
ARH 574 Advanced Studies in Film
PAP 605 Graduate Painting
PAP 615 Graduate Printmaking
PAP 621 Graduate Drawing
SCU 500,600 Graduate Sculpture
THE 603,604 Problems in the History of Dramatic Literature

VCU offers a wealth of graduate courses which can, as electives, support the educational process and personal development of graduate students.

Department of Interior Design

Field, Jerry J. *Professor Emeritus* BS, Certificate in ID, Virginia Commonwealth University; Diploma, Parsons School of Design; history of interior design and architecture, period restoration.

Gao, Chaoyi *Assistant Professor* MFA, Virginia Commonwealth University; MFA, Central Academy of Art and Design (China); graphic communications, design processes.

Gunter, Ben D. *Professor Emeritus* MEd, University of Virginia; interior design education, business and commercial design.

Harwood, M. Buie *Professor and Chair* MFA, Louisiana Tech University; history of interior design and architecture, professional practice and standards, interior design education and process.

Long, James T. *Associate Professor* MArch, University of Kansas; design theory, design of the 20th century, color and lighting design.

Marlow, Craig H. *Associate Professor* MFA, Louisiana Tech University; graphic communication, government design, simulations, facilities management.

Petrie, Paul E. *Professor and Associate Dean* MFA, Syracuse University; interior design education, professional practice.

Whitehead, Camden *Associate Professor* MArch, Virginia Polytechnic Institute and State University; design process, materials, small scale mass production, joint conditions.

Yung, Ringo *Professor* MFA, University of Kansas; hospitality design, furniture construction, graphic communication, oriental architecture.

The graduate program in interior environments will provide individuals with design backgrounds the opportunity to expand their knowledge of intellectual, creative, cultural, and philosophical attitudes toward design at the post-professional degree level.

The depth of the program will stimulate professional excellence in a specific area of interior environments and will allow interaction with disciplines in the School of the Arts and the University.

The department offers accelerated undergraduate preparation for those interested individuals with non-interior design backgrounds. Assessment of the individual candidate's needs will determine the scope of the qualifying program. This is an opportunity to gain the skills and design experiences required to qualify for admission to the graduate degree program.

Specific Admission Requirements

Undergraduate Preparation. A minimum of 36 semester credits in studio art at the undergraduate level; additional semester credits are required in related courses such as architecture, business, environmental support systems, art/architectural history, and environmental psychology.

Portfolio. A minimum of 10 recent design projects which exemplify awareness, understanding, and competency in creative design, graphic skills, and technical ability are required. Other pertinent data should be included as necessary.

Degree Requirements

A minimum of 60 credits are required within prescribed courses. A research-design project is required to complete the program of study. This project is undertaken and developed in the context of IDE 699 and must consist of the testing of an original idea that is supported by research. This information will be synthesized through the design development process and culminate in an individual creative project of complex scale and scope. Documentation must follow established guidelines and be presented in a form that can be retained by the department and the University.

Typical Program Pattern

	<i>Credits</i>
First Semester	
Graduate Design Studio	6
Research Methods	3
Seminar Elective: Interdisciplinary	3
Studio Elective	3
	15
Second Semester	
Graduate Design Studio	6
Research-Design Thesis Investigation	3
Topics in Interior Design	3
Studio Elective	3
	15
Third Semester	
Graduate Design Studio	6
Fieldwork/Internship	6
Research-Design Project Thesis	3
	15
Fourth Semester	
Design Studies	3
Research-Design Project Thesis	9
Seminar Elective: Interdisciplinary	3
	15
	60

Graduate Courses in Interior Environments (IDE)

IDE 591 Topics in Interior Design. Semester course; 3 lecture hours. 3 credits. To be repeated. This course will explore selected topics of current and relevant interest in interior design. See the *Schedule of Classes* for specific topic offerings.

IDE 601 Graduate Design Studio I. 12 studio hours. 6 credits. Designing in specialized areas of interior environments at the advanced level. The subjects focus on the needs of the students.

IDE 602 Graduate Design Studio II. 12 studio hours. 6 credits. Designing in specialized areas of interior environments at the advanced level. The subjects focus on the needs of the students.

IDE 603 Graduate Design Studio III. 12 studio hours. 6 credits. Designing in specialized areas of interior environments at the advanced level. The subjects focus on the needs of the students.

IDE 621 Research Methods in Design. Semester course; 3 credits. Familiarizes students with the different types of research methods including design, historical, educational, and behavioral.

IDE 622 Design Research. Semester course; 3 credits. Work with graduate coordinator or adviser. Emphasizes thesis design research; students prepare a project proposal, conduct investigative research, and organize research material via written documentation.

IDE 623 Advanced Design Studies. Semester course; 3 lecture hours. 3 credits. Familiarizes students with the expanding body of knowledge about design studies including information on theory, emerging trends and issues, and future studies.

IDE 693 Fieldwork/Internship. Semester course; 6, 12 studio hours. 3, 6 credits. Approval of department chair and adviser. Professional experience in the cooperative solution of design problems in interior environments that relate theory to practice. Formal arrangements may be made with state agencies, industries, and community organizations and individuals.

IDE 699 Research-Design Project Thesis. Semester course; 2, 6 studio hours. 1, 3, 6, 9 credits. May be repeated. Approval of Departmental Review Committee. The project must test an original

design theory synthesized through the development of a design process, investigative research, and an individual project of complex scale and scope.

Department of Communication Arts and Design

Carter, Robert *Professor* MFA, University of Illinois; graphic design, computer graphic design, semiology, typography.
 Day, Ben *Professor* MFA, Louisiana Tech University; graphic design, typography, design theory.
 DeMao, John *Associate Professor and Chair* MPD, North Carolina State University; design theory, process and methodology.
 Malinoski, John B. *Associate Professor and Associate Chair* MFA, Rochester Institute of Technology; graphic design, typography, design theory.
 McLaughlin, Mary *Associate Professor* BFA, University of Illinois; typography, graphic design, exhibition design.
 Meganck, Robert *Professor* MFA, Cranbrook Academy of Art; graphic design, typography, illustration.
 Meggs, Philip B. *Professor* MFA, Virginia Commonwealth University; graphic design and design history.
 Ouchi, Akira *Associate Professor* MS, Illinois Institute of Technology; graphic design, typography, systems.
 Rexroad, Dennis H. *Assistant Professor and Director, Art Foundation Program* MFA, University of Kansas; media arts, graphic design, computer graphics.

The objective of this program is to develop the philosophy and personal direction of students through focusing their resources for functional and theoretical visual communications. The program offers study opportunities in graphic design, typography, computer-graphics, time arts, interactive design, design theory, and design education.

Students working in the Graduate Center for Visual Communications concentrate on the philosophical, communicative, and aesthetic relationships of visual problem solving and the interactive skills leading to the effective articulation of concepts. Although problems in visual communications anticipate refinement of students' technical abilities, education in this program does not emphasize technical instruction.

Specific Admission Requirements

Undergraduate Preparation. The 36 semester credits in studio art should include a minimum of 20 semester credits in visual communications and/or related fields. Under special circumstances, these requirements may be waived.

Portfolio. A minimum of 15 slides which demonstrate visual organization, creative problem-solving ability, and potential for research and growth are required. Under special circumstances, these requirements may be waived; applicants are accepted into a provisional course of study or accepted to full standing based on professional equivalency.

Interview. The department strongly recommends that applicants arrange an interview with the associate chairman during which they meet with graduate faculty and current students, and tour facilities. Applicants may call the department to schedule an interview.

Typical Program Pattern

First Semester	<i>Credits</i>
Visual Communications Seminar	3

Visual Communications Workshop	9
Graduate Elective	3
	15
Second Semester	
Visual Communications Seminar	3
Visual Communications Workshop	9
Graduate Elective	3
	15
Third Semester	
Visual Communications Seminar	3
Visual Communications Workshop	9
Graduate Elective	3
	15
Fourth Semester	
Visual Communications Seminar	3
Directed Research in Visual Communications	6
Thesis or Creative Project	6
	15
	60

Graduate Courses in Visual Communications (CDE)

CDE 519 Virtual Reality. Semester course;3 lecture and 3 studio hours. 4 credits. Prerequisite: Permission of instructor required.An exploration into the creation of fully immersive, interactive, virtual environments and their use as communication and artistic mediums.

CDE 537 Integrated Electronic Information/Communication Systems. Semester course; 3 lecture and 3 studio hours. 4 credits. Prerequisite: Permission of instructor required.A course concentrating on the design,development,authoring, production,and publication of electronic information/communication programs. Emphasis is placed on the creative integration of expressive form,communicative function, and effective application of advanced visualization technology.

CDE 567 Visual Interface Design. Semester course;3 lecture and 3 studio hours. 4 credits. Prerequisite: Permission of instructor. A course concentrating on the visual design and development of human-computer interface systems. Emphasis is placed on Visual Design Processes and methods in the diverse arena of user interface design.

CDE 593 Visual Communications Internship. Semester course; 3 or 6 credits. Prerequisite: Permission of chair required.May be repeated to a maximum of 6 credits. Supervised study in cross-disciplinary visual communications research projects to integrate theory with practice. Training is provided under the direction and supervision of qualified professional practitioners and a faculty adviser.

CDE 611 Visual Communications Workshop. Semester course; 18 studio hours. 9 credits. May be repeated.A team-taught studio course focusing on the philosophical,communicative, and aesthetic relationships of visual communications problem solving and the effective articulation of concepts.

CDE 621 Visual Communications Seminar. Semester course; 3 lecture hours. 3 credits. May be repeated.A detailed examination of selected theoretical,historical,aesthetic, and social areas of concern to the designer. Scholarly research,critical analysis, and discussion are expected.

CDE 631 Visual Communications Teaching Practicum. Semester course;1 lecture and 6 practicum hours. 3 credits. Prerequisite: Permission of department chair. Observation,instruction,and practice to develop skills in the design,organization,and conduct of courses in visual communications. Explores multiple teaching strategies, student development,learning styles, and evaluation techniques.

CDE 692 Visual Communications Research/Individual Study. Semester course;6 studio hours. 3 credits. May be repeated.The struc-

turing, research, execution,and presentation of an independent project in visual communications under the guidance of a faculty adviser.

CDE 697 Directed Research in Visual Communications. Semester course;12 studio hours. 6 credits. Prerequisites:Successful completion of 30 credit hours of graduate study and permission of department chair. Supervised investigation and presentation of selected problems in Visual Communications.

CDE 699 Creative Project. Semester course;1-6 credits. May be repeated.Prerequisites: Successful completion of 30 credit hours of graduate study and permission of department chair. A course based on exploration and testing of original and expressive ideas in visual communications. Executed under the supervision of a graduate adviser and review committee.

CDE 799 Thesis. Semester course;1-6 credits. May be repeated. Prerequisites:Successful completion of 30 credit hours of graduate study and permission of department chair. Preparation of a thesis based on carefully planned and executed independent research or study under the supervision of a graduate adviser and thesis committee. Research emphasis must be placed on problems/processes that represent significant study in design.

Department of Photography and Film

Bremer, David *Associate Professor* MA, Ohio University; still photography.
Heroy, John *Associate Professor* MFA,State University of New York at Buffalo;still photography.
Quarterman,Dale *Professor and Acting Chair* MS, Illinois Institute of Technology;still photography.
Strommer, Joan *Associate Professor* MFA, University of Minnesota; cinematography.

The Department of Photography and Film seeks through its graduate program to advance the highest standards of the media of photography and film by encouraging the creative and professional growth of both its students and faculty. The goal is to provide a forum for the development and exchange of visual ideas and to encourage its members to translate these ideas through the medium with a high degree of sensitivity and proficiency.

The program is meant to be flexible. Participants in the program may choose to emphasize their search for personal expression by using either traditional or electronic technology to accomplish their personal goals. The program culminates with the presentation of a body of work, either visual or written and visual, that coherently expresses some aspect of the medium.

The successful candidate for the MFA degree will be prepared adequately to continue to function as a working photographer and to begin a career in teaching or in photographic design.

Admission Requirements

Undergraduate Preparation. The 36 semester hour credits in studio art at the undergraduate level must include a minimum of nine semester hour credits in photography or cinematography.

Portfolio.

- **Photography:** A minimum of 20 recent photographs.
- **Cinematography:** A minimum of three recent films for which the applicant has had a primary responsibility in production. A videotape may be substituted for one of the films.

Degree Requirements

The advanced study of photography and film is both broad and varied. Therefore, the program's requirements are flexible and determined by the needs of each student on an individual basis. There are, however, a few definite requirements. Each student must have on completion of the program a knowledge of contemporary art history and design; a more in-depth knowledge of the history of his/her discipline, be it still photography or film; and an understanding of the critical dialogue that is connected with his/her medium. The extent to which courses are suggested for students to meet these requirements depends on their background.

Typical Program Pattern

	<i>Credits</i>
Studio and/or Research (in major)	24
Approved Electives	12
Graduate Seminar	12
History of Photography and Film	9
Graduate Exhibition	3
	60

Graduate Courses in Photography and Film (PTY)

PTY 500 Photographic Studio and Seminar. Semester course; 1 lecture and 6 studio hours. 3 credits. Prerequisite: Permission of instructor. Experimentation in the studio with both silver and nonsilver processes for creating the photographic image, leading to producing a cohesive body of work. The seminar examines the technical and aesthetic components of these processes and the language and theories of photographic criticism.

PTY 601 Photographic Studio. Semester course; 6, 12 studio hours. 3, 6 credits. May be repeated. Nonmajors by permission of instructor. Student will work on specific problems relating to the areas of their major interests. Options will be available in black and white photography, color photography, and motion picture photography.

PTY 621 Research in Photography and Film. Semester course; 6, 12 studio hours. 3, 6 credits. May be repeated. Nonmajors by permission of instructor. Students will engage in appropriate theoretical, experimental, or historical research in a specific area.

PTY 690 Seminar in Photography and Film. Semester course; 3 lecture hours. 3 credits. May be repeated. An examination of contemporary issues and developments in photography and film. Students will have a chance to discuss their work and the work of others.

PTY 693 Fieldwork, Internship. Semester course; 6, 12 studio hours. 3, 6 credits. May be repeated. Professional field experience in the theoretical and practical applications of photography and/or film through cooperative organizations. Formal arrangements will be made with state agencies, industries, community organizations, and professionals in the field.

PTY 699 Graduate Exhibition. Semester course; 1, 3 lecture hours. 1, 3 credits. To be taken the last semester of graduate program with approval of the chair and review of student's record. Students in this course will prepare and mount an exhibition of their own work. In addition, they will be asked to provide a complete documentation of the sources and ideas presented in the exhibition.

Department of Music

Austin, Terry L. *Associate Professor* PhD, University of Wisconsin at Madison; conducting.

Batty, L. Wayne *Professor* MM, Chicago Musical College; voice, choral music.
 Bick, Donald A. *Associate Professor* MM, University of Maryland; percussion.
 Bilyeu, Francile *Assistant Professor* MM, University of Tulsa; flute.
 Bilyeu, Landon *Associate Professor* MM, University of Tulsa; piano.
 Blank, Allan *Professor Emeritus* MA, University of Minnesota; composition, theory.
 Brooks, Christopher *Associate Professor* PhD, University of Texas at Austin; music history.
 Carrier, Loran *Associate Professor* DMA, University of Maryland; electronic music, composition.
 Day, Melanie K. *Assistant Professor* MM, Boston University; opera theatre, vocal coaching.
 Donnell, Cynthia S. *Associate Professor* MM, University of North Carolina, Greensboro; voice, lyric diction.
 Guerard, Sandra L. *Associate Professor* PhD, University of Connecticut; music education.
 Guthmiller, John *Associate Professor* DME, University of Colorado; voice, conducting.
 Lohuis, Ardyth *Professor* DMA, College-Conservatory of Music, University of Cincinnati; organ, church music, music bibliography.
 Marrion, Melissa Wuslich *Professor* MM, College Conservatory of Music, University of Cincinnati; piano.
 Murray, Robert P. *Professor* DMus, Indiana University; violin, viola.
 Newlin, Dika *Professor* PhD, Columbia University, history, literature, composition (applied).
 Patykula, John *Associate Professor* MM, Virginia Commonwealth University; guitar.
 Reeves, Daniel J. *Professor, Assistant Dean and Interim Chair* EdD, Illinois State University; research, painting, computer graphics.
 Richards, Douglas J. *Associate Professor* MM, Florida State University; jazz.
 Robinson, J. Lawrence *Professor Emeritus* MM, University of Michigan; organ.
 Smetana, Frantisek *Professor Emeritus* Diploma, Ecole Normale de Musique Paris, France; cello.
 Vlahevcic, Sonia K. *Professor* PhD, Catholic University; piano, theory.
 West, Charles *Professor* DMA, University of Iowa; clarinet.

The Department of Music views graduate students as sensitive musicians who bring with them a particular educational background and a variety of life experiences. They have defined for themselves their professional and artistic goals. The graduate program is a collaborative effort among the students and the faculty to help each student achieve these goals.

The music curriculum allows individual uniqueness and expertise. Its flexibility accommodates the personal aspirations of the student while it emphasizes quality musicianship. At VCU, a great deal is expected of graduate-level musicians, and the atmosphere in which they work is both provocative and challenging.

As musicians, all students perform regularly in recitals and concerts. These performances include more than 150 public concerts presented each year as well as studio and departmental recitals. VCU student and faculty composers frequently are featured in works for traditional instrumentation and/or for electronic media. Participating in the VCU musical community means involvement in a musically rich environment, studio lessons with artist-teachers, small classes, independent study, and participation and touring with performing organizations and ensembles.

Admission Requirements

In addition to the School of the Arts admission requirements, applicants in music must audition. Appointments for auditions are arranged through the

Department of Music office. Audition tapes may be sent by out-of-state applicants. Preparation in music history and theory is assessed through the submission of a departmentally developed written examination or through the GRE Advanced Music Examination.

Audition Requirements

Performance. Two representative works from different periods of music.

Composition. The portfolio should consist of a minimum of four works demonstrating a variety of compositional styles, including the demonstration of traditional instrumental and vocal writing.

Conducting. The audition/interview will cover the following areas: knowledge of orchestration and music literature, ability to play and harmonize simple melodies at sight, and proficiency in at least one performance area.

Music Education. An appointment should be scheduled for a pre-acceptance interview with the coordinator of Music Education.

Program and Degree Requirements

Comprehensive Examinations. A written comprehensive examination, which may be supplemented by an oral examination, will be designed and graded (pass/fail) by the student's applied teacher and/or adviser, along with selected members of the Graduate Committee. The topics covered in the written examination will include music history and theory as well as repertoire according to degree concentration. The examination will contain six questions of which three will be answered within a three-hour time period. This examination is offered during the penultimate week of each semester; specific times may be obtained through the Graduate Committee. It is recommended that this examination be taken in the student's final semester of study.

Piano Proficiency Examinations. These exams, graded to the pianistic needs of the various fields of concentration, must be passed prior to the granting of the degree. The specific requirements are detailed in the *Handbook for Graduate Studies in Music*.

Performance Achievement Levels. Ten achievement levels have been established for applied instrumental and vocal study. These achievement levels are explicit in terms of expected repertoire, with technique and sight-reading requirements included at the discretion of the area faculty.

The table indicates the achievement levels expected for entrance into and required for graduation from each curriculum.

Curriculum	Entrance	Graduation
Performance		
Solo Performance	VIII	XX
Conducting	VI	VIII
Composition	VI	VIII
Music Education	VI*	VIII

* For students who choose recital option with degree track.

Performance (Master of Music)

Within the performance track, there are two emphases: solo performance and conducting.

Solo Performance. The applied music faculty is comprised of artists/teachers who remain active professional performers, including musicians from the Richmond Symphony Orchestra and principal freelance performers in the metropolitan D.C. area. Faculty include soloists with major orchestras, operatic and concert singers, coaches, and conductors. Performance opportunities are available for instrumentalists and vocalists in orchestra, chamber groups, choirs, musical theater, opera, and jazz groups. Student soloists also appear with many regional and University ensembles.

Solo Performance	Credits
Music History Electives	2
Analysis for Performance and Composition	6
Bibliography and Methods of Research	2
Conducting, Rehearsing, and Interpreting Performance	3
Ensemble (two semesters)	6
Approved Electives	2
Lecture Recital	5
Recital	3
	32

Conducting. VCU offers the diversity of ensemble conducting experiences essential to the development of the graduate conductor. Conducting majors ordinarily elect to specialize in either band, choral, or orchestral conducting. At the discretion of the major teacher, the student also will assist in rehearsing and conducting major departmental ensembles. Each student will be expected to demonstrate skill in rehearsing and conducting at least one work in each of the areas outside his specialization. Conducting students will meet recital requirements through cumulative conducting experience with various ensembles and an expository paper.

Conducting	Credits
Conducting	6
Ensemble	2
Bibliography and Methods of Research	2
Analysis for Performance	6
Music History, Literature, Composition, or Theory (at least one course in each area)	8
Approved Electives	5
Recital	3
	32

Composition (Master of Music)

The composition degree program is centered on private study with faculty members who are themselves published composers as well as outstanding performers. Emphasis is placed on the development of traditional compositional skills as well as contemporary techniques. The availability of two separate electronic music studios gives the University comprehensive facilities.

The degree recital requirement is fulfilled by the presentation of a full program of original works, a score and expository paper on the major original work. The student may choose to give a lecture-recital in which such a work is discussed by the composer and performed,

though the expository paper is still required. The exit portfolio should consist of a minimum of four works, any of which may be presented in fulfillment of the previously mentioned requirements.

	<i>Credits</i>
Music History Elective	2
Analysis for Performance and Composition	6
Bibliography and Methods of Research	2
Conducting, Rehearsing, Interpreting	3
Composition	6
Ensemble (two semesters)	2
Approved Electives	8
Composition Recital	3
	32

Music Education (Master of Music)

The Master of Music (education) is a flexible program which allows the student to choose between two emphases, one addressing the goals of the researcher and the other designed to meet the needs of the music education student who intends to pursue a career in higher education or the student who seeks to enhance skills as a teaching practitioner in the public/private schools.

In addition to required core courses, the student works with the adviser to plan a program and to select electives consistent with the chosen emphasis and the student's individual needs and circumstances. Students have the opportunity to take courses during the fall, spring, and summer as full-time or part-time students. In addition to course work, a thesis, recital, or research project is required.

	<i>Credits</i>
Master of Music: Education (Research Track)	
Bibliography and Methods of Research	2
Analysis for Performance	3
Music History	4
Philosophy of Music Education	3
Methods of Education Research	3
Thesis	3
Electives	14
	32

	<i>Credits</i>
Master of Music: Education (Practitioner's Track)	
Bibliography and Methods of Research	2
Analysis for Performance	3
Music History	4
Philosophy of Music Education	3
Project or Recital	3
Electives	17
	32

Additional Information

Students in all fields of graduate music study may, with the approval of their adviser, department chair, and the director of graduate studies, elect independent study for the fulfillment of course requirements.

All degree-seeking students in music should consult the current *Handbook for Graduate Studies in Music* for specific departmental policies which pertain to their degree programs, the calendar of proficiency examination dates, and comprehensive examinations.

Graduate Courses in Performance (APM)

APM 563-564 Pedagogy. Continuous course; 2 lecture hours. 2-2 credits. A study of the musical, physiological, and psychological aspects of teaching instruments or voice. Second semester will include practical experience in teaching students under faculty supervision. Sections: (1) piano, (2) voice, (3) organ, (4) percussion, (5) brass, (6) woodwinds, (7) strings, and (8) guitar.

APM 571 Choral Pedagogy. Semester course; 3 lecture hours. 3 credits. Teaching competencies relative to the choral training and use of the unchanged, changing, and matured voice will be stressed. Included are consideration of vocal production, pronunciation, aural skills, reading skills, and stylistic interpretation.

APM 575-576 Score Reading. Continuous course; 2 laboratory hours. 1-1 credit. Prerequisite: APM 274 or the equivalent. No degree credit for graduate composition majors. A progressive course in reducing scores at the keyboard, beginning with simple choral scores and progressing to full orchestra and band.

APM 585 Opera Theatre. Semester course; 1 lecture and 4 studio hours. 2 credits. May be repeated up to four times for credit. Prerequisite: Permission of instructor. Explores aspects of opera through study, written research, and fully staged public performances of operatic scenes and/or one-act operas.

APM 600-Level Private Instruction: Principal and Secondary Performing Mediums. Semester courses; one half-hour or 1 hour private lessons per week. 1 to 3 credits. Repeatable without limitations. One hour practice daily for each credit. Lessons are available in the following areas: bassoon, carillon (one credit only), cello, clarinet, conducting, composition (three credits only, by permission of instructor), double bass, drum set (undergraduate, one credit only), euphonium, flute, French horn, guitar, harp, harpsichord, oboe, opera performance, organ, percussion, piano, saxophone, synthesizer, trombone, trumpet, viola, violin, and voice. In order to register for any private lesson, non-music majors must obtain correct course number in either room 132, Performing Arts Center, or at the music table during registration; music majors need to consult their advisers. In order to register for any private lesson, non-music majors must obtain correct course number in either Room 132, Performing Arts Center, or at the music table during registration; music majors need to consult their advisers. Additional fee required.

APM 663 Advanced Pedagogy. Semester course; 3 lecture hours. 3 credits. Further study in pedagogical systems and techniques with emphasis on materials for intermediate and advanced-level students. Studio observation will be included. Sections: (1) piano, (2) voice, (3) organ, (4) percussion, (5) brass, (6) woodwinds, and (7) strings.

APM 670 Large Ensembles. Semester course; 3 or 4.5 laboratory hours. 0.5 or 1 credit. Each section may be repeated up to six times for credit. Auditions required for sections 1, 3, and 4. Sections: (1) orchestra, (2) University band, (3) symphonic band, (4) chorus, and (5) Choral Arts Society.

APM 671 Piano Technique Seminar. Semester course; 1 lecture hour. 1 credit. Physiology of piano playing. Alternative approaches to building and reconstructing technique.

APM 673, 674 Piano Literature and Performance Practice. Semester course; 2 lecture hours. 2, 2 credits. To familiarize the student with a broad repertoire of performing and teaching material. Discussion of approaches to styles and idioms of various periods, solution of technical and musical problems encountered in specific pieces, evaluation of various editions of piano literature.

APM 675 Teaching Practicum. Semester course; 2 lecture hours. 2 credits. A semester of supervised studio teaching consisting of intermediate and advanced piano literature.

APM 679 Conducting, Rehearsing, and Interpreting. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Acquisition of refined conducting competence including effective and efficient rehearsal procedures, recognition and correction of errors, effective

communication, appropriate stylistic interpretation, and complex dexterous skills.

APM 681 Group Piano Methods and Management. Semester course; 2 lecture hours. 2 credits. Management, methods, and materials for group teaching. Includes beginning students of all ages, intermediate level students, and college keyboard skills classes.

APM 690 Small Ensembles. Semester course; 2 or 3 laboratory hours. 0.5 or 1 credit. Each section may be repeated up to six times for credit. Auditions required for all sections. Sections: (1) Ensemble for New Music, (2) the Madrigalists, (3) Collegium Musicum, (4) Women's Chorus, (5) vocal ensembles, (6) piano ensembles, (7) accompanying, (8) Percussion Ensemble, (9) Percussion Lab Ensemble, (10) woodwind ensembles, (11) brass ensembles, (12) chamber orchestra, (13) string ensemble, (14) guitar ensembles, (15) small jazz ensembles, (16) Jazz Orchestra I, (17) Jazz Orchestra II, (18) Jazz Orchestra III, (19) Basketball Pep Band.

APM 799 Recital. Semester course; 1, 3, 6 credits. Public presentation of a full recital. Content to be approved by Graduate Committee.

Courses in Music History (MHT)

MHT 551-552 Orchestral Repertoire. Semester courses; 1 lecture hour or 1 lecture and 2 laboratory hours. 1 or 2 credits. Performance and study of selected major symphonic works from historical, analytical, and stylistic perspectives. Research reports will include comparisons of interpretations. Repertoire will consist of basic audition pieces selected by orchestras. Laboratory sessions will utilize available instrumentation for performance.

MHT 591 Topics in Music. Semester course; variable; 1-3 credits. May be repeated for a maximum of nine credits. Flexible term courses in selected aspects of music performance, theory, literature, or history. See the *Schedule of Classes* for specific topic to be offered each semester.

MHT 592, 692 Individual Project. Semester courses; 1-6 credits. Prerequisites: Permission of supervising faculty member, adviser, and department chair. Individual work in an area not otherwise available to the student. Open only to degree-seeking graduate students in music.

MHT 650 Seminar in Music History. Semester course; 2 lecture hours. 2 credits. May be repeated up to four times with different topics. Prerequisite: MHT 690. An intensive study of a limited phase or segment of music history through examination of relevant materials and extended class discussion.

MHT 666 Twentieth-Century Music. Semester course; 2 lecture hours. 2 credits. Prerequisite: MHT 690 (may be taken concurrently). Impressionistic, expressionistic, neoclassic, and neoromantic influences and styles of music. Development of new sound-generating techniques and methods for ordering the new tonal materials (offered every fifth semester).

MHT 667 Music of the Middle Ages and the Renaissance. Semester course; 2 lecture hours. 2 credits. Prerequisite: MHT 690 (may be taken concurrently). Principal musical developments from the first through the sixteenth centuries. Sacred and secular monophonic, homophonic, and polyphonic forms and styles; the development of instrumental idioms and forms.

MHT 668 Music of the Baroque. Semester course; 2 lecture hours. 2 credits. Prerequisite: MHT 690 (may be taken concurrently). Principal developments, c. 1590-1750; accompanied monody and the beginning of opera; forms and styles of sacred and secular compositions (offered every fifth semester).

MHT 669 Music of Rococo and Classical Eras. Semester course; 2 lecture hours. 2 credits. Prerequisite: MHT 690 (may be taken concurrently). Major development in sacred and secular forms and styles, c. 1730-1828; social and artistic influences on music; dominance of instrumental music; Mozart, Beethoven, and the German Symphony (offered every fifth semester).

MHT 670 Music of the Romantic Era. Semester course; 2 lecture hours. 2 credits. Prerequisite: MHT 690 (may be taken concurrently). Influence of the Romantic Era on concepts of musical forms and styles; the development of the art song, the growth of opera, the exploitation of instruments and tonality (offered every fifth semester).

MHT 690 Bibliography and Methods of Research. Semester course; 2 lecture hours. 2 credits. A course to introduce graduate students to the chief bibliographic materials in music and music education to help develop skills of research and writing necessary to produce a thesis or other formal research paper. Offered yearly, fall semester.

Courses in Music Theory (MHT)

MHT 513 Arranging. Semester course; 3 lecture hours. 3 credits. Practical, technical, and conceptual considerations of arranging and transcribing for vocal and instrumental groups will be explored. Students will demonstrate competence in these creative areas to the optimum level of school and/or church music organizations.

MHT 615 Seminar in Music Theory. Not offered every year. Semester course; 2 lecture hours. 2 credits. May be repeated up to four times with different topics. Topical discussions and relevant research appropriate to the principal eras of music development.

Courses in Music Composition (MUC)

MUC 611-612 Analysis for Performance and Composition. Continuous course; 3 lecture hours. 3 credits. Analysis of the organization, combination, and manipulation of constructive devices of music from the eighteenth century to the present with demonstration of this knowledge through performance.

MUC 620 Composition Seminar. Semester course; 2 lecture hours. 2 credits. May be repeated up to four times for credit. Discussion, analysis, and criticism of selected compositions pertinent to the improvement of student skills and understanding.

Courses in Music Education (MUE)

MUE 583 Special Workshop in Music Education. Semester course; 0.5-3 credits. Flexible term courses on selected aspects of music education. See the *Schedule of Classes* for specific offerings each term.

MUE 595 Music and the Exceptional Individual. Semester course; 3 lecture hours. 3 credits. A comprehensive study of music activities for special populations (e.g., mentally retarded, emotionally disturbed, learning disabled, cerebral palsied, etc.) of all ages. Topics will include identification of populations, programs, facilities, literature, services, and resources.

MUE 597 Human Response to Music. Semester course; 3 lecture hours. 3 credits. The human response to music in relation to physiological, cognitive, and affective responses; music ability and preference; acoustics and research methods applied in human responses to music problems will be studied.

MUE 646 Aesthetics. Semester course; 2 lecture hours. 2 credits. A study of music from the standpoint of design and craftsmanship as it embodies the principles of art defined and reflected in the literary writings of philosophers and composers. Examples of other art forms will be examined when relevant.

MUE 661-662 Music Education Philosophy and Technology. Continuous course; 3 lecture hours. 3-3 credits. Development of educational competencies that are intrinsic to contemporary educational processes including strategy design, evaluation procedures, curricula structuring, and school administration. Alternatives within these areas of competence will be developed and substantiated through philosophical rationale.

MUE 675 Pedagogy of Music. Semester course; 2 lecture hours. 2 credits. A class designed to train the prospective teacher to present the elements and materials of music in a program designed for the general classroom; to include listening, performing, composing, and incorporating music in a meaningful aesthetic experience.

MUE 676 School Music Supervision and Administration. Semester course; 2 lecture hours. 2 credits. The study of the organization, curriculum, course content, administration, and personnel problems in public school music.

MUE 799 Thesis. Semester course; 1-3 credits. May be repeated. Prerequisite: Permission of the music education coordinator. Preparation of a thesis based on independent research.

Department of Theatre

Black, George *Professor* PhD, University of Georgia; directing, management.
 Campbell, Kenneth *Professor* PhD, University of Denver; directing.
 Erickson, Maurice Leonard *Associate Professor* MFA, Ohio University; acting.
 Hopper, Elizabeth *Associate Professor* MFA, University of Wisconsin, Madison; costume design.
 Hopper, Gary *Associate Professor* MFA, Boston University; acting.
 Keller, Ronald E. *Associate Professor* MFA, University of Massachusetts, Amherst; set design.
 Leong, David *Professor and Chair* MFA, University of North Carolina at Greensboro; stage movement, directing.
 Parker, James W. *Professor* PhD, City University of New York; theory, criticism, dramatic literature, acting.
 Rodgers, Janet B. *Assistant Professor* MFA, Brandeis University; voice and speech for the stage.
 Szari, Louis J. *Associate Professor* MFA, University of Texas, technical theatre.
 Toscan, Richard *Professor and Dean* PhD, University of Illinois; theatre history and literature.

The Department of Theatre offers intensive MFA degree programs in performance, design, and theatre education. The curriculum provides graduate students with the educational and professional foundations essential to attaining the highest standards in the art of the theatre. Applicants are admitted only upon satisfactory demonstration of ability and genuine interest through audition and interview. The demands of the program are stringent, and only those students who are willing to commit themselves to the work in the department, who are capable of observing strict professional discipline, and who are in good health should apply.

The MFA program is based on the philosophy that the nature of theatre requires the creative collaboration of all theatre artists working together. All share the responsibility of solving problems relating to the planning, preparation, and realization of productions.

The curriculum consists of an intensive program of related practical and theoretical studies.

Admission Requirements, MFA in Theatre

In addition to the School of the Arts admission requirements, applicants in theatre must have completed a minimum of 30 semester-hour credits in theatre at the undergraduate level. Professional experience will be considered also.

An audition or presentation of portfolio is required in addition to a personal interview which the applicant must arrange with the graduate adviser of the Department of Theatre.

Special Degree Option Requirements

Performance (Acting and Directing). Students must present upon entrance at least six hours of undergraduate production or technical theatre course credit or the equivalent in professional experience.

Production (Costume and Stage Design). Students must present upon entrance at least six hours of undergraduate performance course credit or the equivalent in professional experience.

Theatre Education. Students must present upon entrance at least three hours of undergraduate acting or directing credit and three hours of undergraduate design or technical theatre credit or the equivalent in professional experience.

Candidacy

After the completion of 15 and before the completion of 24 semester hours, or one full academic year, whichever comes first, the student seeking an advance degree from the Department of Theatre must apply for candidacy. In addition to maintaining a minimum 3.0 GPA, prior to applying for candidacy, candidates for the professional degree focus options in **acting** must have completed two roles, at least one with a faculty director (this requirement may be completed in part by the acting practicum required during the first year of matriculation); in **directing** must have completed one stage management assignment and one directing assignment (which may be an assistant to the director assignment and both of which may be accomplished in the directing practicum required during the first year of matriculation); in **stage design** must have served in a design position of substantial authority for at least one TheatreVCU or TheatreVirginia production (which may be accomplished in the stage design practicum during the first year of matriculation); in **costume design** must have completed two costume design classes and served in a position of designated authority (which position may be accomplished in the costume design practicum during the first year of matriculation). Candidates for the **theatre education** degree must have completed one stage management assignment and one directing assignment, which may be an assistant to the director assignment, as well as completed the theatre education practicum in classroom observation resulting in the presentation of a 50 minute class taught in the area of the students' specialty.

In addition to the requirements listed previously for the various area specialties, the process of evaluation for advancement to candidacy may require the presentation of a portfolio and/or audition; written, oral, and/or practical testing; and other devices deemed by the Department of Theatre to be serviceable measurements to determine the prospective success of the candidate at the advanced level in the program. Each candidate for the Master of Fine Arts in Theatre may stand for evaluation for admission to candidacy a second time if the initial evaluation for candidacy is unsuccessful. If after the second evaluation the student is denied candidacy, he is obliged to withdraw from the program. In special circumstances where unusual strength in another area is

evidenced and when the student is acceptable to the graduate faculty, the student may be invited to transfer into another degree option. The completion of 18 semester hours is the latest point at which a student may transfer into another degree option without lost credits.

Degree Requirements – MFA

Core Requirements

Candidates in all degree track options for the MFA in Theatre must satisfy the following core requirements:

	<i>Credits</i>
Theory and Criticism	6
Theatre Literature	6
Theatre History	6
Creative Project and Creative Project Evaluation or Thesis	6
	24

PROGRAM TRACK REQUIREMENTS

Professional Track

Professional Studio: Acting

To be repeated 6 times for a total of 60 credits

Program includes:

Acting
Voice
Physical Acting
Practicums
Professional Internships
Core
Project and Project Evaluation

Total 60

Professional Studio: Directing

To be repeated 6 times for a total of 60 credits

Program includes:

Directing
Minor
Electives
Practicums
Professional Internships
Core
Project and Project Evaluation

Total 60

Professional Studio: Costume Design

To be repeated 6 times for a total of 60 credits

Program includes:

Costume Design
Costume History
Rendering
Computer Drafting
Scene Design
Scene Painting
Practicums

Total 60

Professional Studio: Stage Design

To be repeated 6 times for a total of 60 credits

Program Includes:

Stage Design
Scene Painting
Costume Design or Lighting Design
Directing
Computer Drafting
History of Interior Design and Architecture
Practicums
Professional Internships
Core
Project and Project Evaluation

Total 60

Theatre Education Track

Theatre Education

Program includes:

Total 60

Directing, Acting, Voice, or Physical Acting, 12 credits
Elective, including design
Elective, 12 credits
Core, 24 credits
Internship, 12 credits

Theatre Education candidates select a major area specialty, present a minor in either acting, directing, or literature, as well as participate in practicum situations both in the department and at TheatreVirginia.

Graduate Courses in Theatre (THE)

THE 501, 502 Stage Voice and Speech. Semester course; 3.3 credits. May be repeated with permission of instructor. Provides advanced work on breathing, support and projection of the voice with application to the demands of classical texts including Shakespeare, Moliere, and Greek drama.

THE 505-506 Stage Design. Continuous course; 1 lecture and 4 studio hours. 3-3 credits. Prerequisite: Permission of instructor. A professionally oriented study of the techniques, methods, and problems of stage design. Participation in departmental productions.

THE 507 Introduction to Graduate Study in Speech and Theatre. Semester course; 3 credits. A study of methods used in graduate research in drama and speech.

THE 508 Scene Painting. Semester course; 1 lecture and 4 studio hours. 3 credits. This course may be repeated for a maximum of nine credits. A detailed study of methods of painting scenery based on traditional and contemporary theories. Participation in departmental productions.

THE 509-510 Theatre History. Semester course; 3 lecture hours. 3-3 credits. Study of the component arts of theatre as they contribute to the development of theatrical performance from its origins to the present day.

THE 513-514 Acting Styles. Continuous course; 6 studio hours. 3-3 credits. Prerequisite: Permission of instructor. Open only to theatre majors upon satisfactory audition. A study of the history and theory of acting styles from the Greeks to the present.

THE 517 Physical Acting. Semester course; may be repeated for a total of 12 credits. Prerequisite: Permission of instructor. Exploration and discovery of the principles of movement and their practical application to the stage. Emphasis on character development, solo and group scene work, physical comedy, and stage combat.

THE 519 Instructional Methods in Theatre and Speech. Semester course; 3 lecture hours. 3 credits. A study of the basic methods used in the teaching of theatre and speech communication.

THE 525 Theatre Administration. Semester course; 3 lecture hours. 3 credits. The business aspects of successful theatre operation—college, commercial, community, regional—from basic purchasing methods to publicity and “house” operation for the finished product.

THE 593 Professional Internship. Semester course; 3-9 credits. May be repeated. Prerequisite: Permission of department chair. Majors only. A practicum in theatre conducted in cooperation with selected professional or semiprofessional theatre organizations.

THE 603, 604 Problems in the History of Dramatic Literature. Semester courses; 3 lecture hours. 3.3 credits. An advanced, detailed study of a selected aspect in the development of dramatic literature.

THE 605-606 Advanced Studies in Stage Design. Continuous course; 1 lecture and 4 studio hours. 3-3 credits. Prerequisite: Permission of instructor. An advanced study in specific problems in stage design.

THE 607 Problems in Scenic Techniques. Semester course; 1 lecture and 4 studio hours. 3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced, detailed study of selected problems in contemporary theory and practice of scenic technique.

THE 609 Seminar in Production Process. Semester course; 1 lecture and 4 laboratory hours. 3 credits. May be repeated with a change of topic for a maximum of nine credits. Students and faculty in design, technical theatre, and performance working together in studio situations to identify and solve problems relating to the planning, preparation, and realization of productions.

THE 613 Advanced Problems in Acting. Semester course; 3 credits. May be repeated with permission of instructor. Focus on acting problems related to the actor's needs to develop proficiency in craft areas.

THE 621, 622 Problems in Costume Design. Semester courses; 2 lecture and 2 studio hours. 3,3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced study in specific problems in costume design.

THE 623, 624 Advanced Studies in Modern Drama. Semester course; 3 lecture hours. 3,3 credits. Intensive, detailed studies of selected subjects in major Continental and American drama.

THE 630 Production. Semester course; 6 laboratory hours. 3 credits. May be repeated. The design, rehearsal, and performance of dramatic works.

THE 640, 641 Advanced Theatre Projects. Semester course; 1 or 2 lecture and 4 or 8 laboratory hours. 3 or 6 credits per semester. May be repeated. Individual or group projects in acting, directing, costume design, stage design, or dramaturgy.

THE 651 Advanced Design Studio. Semester course; 1 lecture and 4 laboratory hours. may be repeated. Intensive individual training in design and presentation processes as they apply to contemporary professional production.

THE 661, 662 Problems in Stage Directing. Semester courses; 3 lecture hours. 3,3 credits. May be repeated. Prerequisite: Permission of instructor. An advanced, detailed study of selected aspects of directing techniques for the stage.

THE 693 Colloquium and Practical Training. Semester course; 2 lecture and 2 studio hours. 3 credits. May be repeated for a maximum of twelve credits. Literary, historical, and theoretical studies together with specialized voice and movement training related to dramatic works in production.

THE 694 Theatre Education Professional Internship. Semester course; 1,3 lecture hours. 1,3,6 credits. May be repeated.

Prerequisites: THE 596 and 519 and permission of the graduate adviser in theatre. Research, design, and either implementation or thoroughly planned implementation of a curricular research and development project of relevance to a formal speech and/or theatre education program.

THE 695 Professional Studio. 10 credits. Repeated six times for a maximum of 60 credits. Students on the Professional tracks of acting, directing, costume design, and stage design enroll in the appropriate section of Professional Studio each semester for six semesters. Under the umbrella title of Professional Studio, the work modules for each degree track in each enrollment period are assigned in cooperation with and evaluated by the Department of Theatre director of graduate studies.

THE 697 Research and Special Problems in Theatre. Semester course; 1,3 credits. May be repeated with permission of graduate adviser. Individually directed study and research under faculty supervision on approved research problems or projects in theatre.

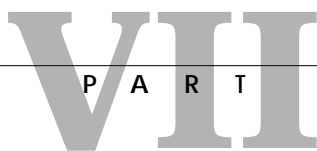
THE 698 Creative Project. Semester course; 3 credits. Provides the culminating performance or design experience in the student's degree emphasis. Adjudicated by the faculty.

THE 699 Creative Project Evaluation. Semester course; 3 credits. Provides the student in acting, directing, costume design, and stage design the opportunity to document and evaluate the creative project. Defended before a committee of the faculty.

THE 703-704 Dramatic Criticism and Theory. Continuous course; 3 lecture hours. 3-3 credits. The major dramatic theories from Aristotle to the twentieth century and associated movements as they affect the development of western drama.

THE 791 Seminar in Special Issues in Theatre. Semester course; variable; 1-3 credits per semester. May be repeated for a maximum of nine credits. See the *Schedule of Classes* for specific subjects to be offered each semester. Prerequisite: Permission of instructor. An advanced, detailed study of selected, contemporary issues not included in the regular curriculum.

THE 799 Thesis. Semester course; 1-6 credits. May be repeated. Prerequisite: Permission of the department graduate studies adviser and department chair. Preparation of a thesis based on independent research.



School of Business

Howard P. Tuckman, BS, MA, PhD

Dean

Edward L. Millner, BA, PhD

Associate Dean for Graduate Studies

E. G. Miller, BS, PhD

Associate Dean for Administration

Iris W. Johnson, BS, MS, EdD

Associate Dean for Undergraduate Studies

Charles J. Gallagher, BS, PhD

Associate Dean for External Affairs

Ruth W. Epps, BS, MS, MACC, PhD

Chair, Department of Accounting

Anson Seers, BS, MS, PhD

Chair, Department of Management

George Kasper, BS, MBA, PhD

Chair, Department of Information Systems

David A. Dubofsky, BE, MBA, PhD

*Chair, Department of Finance, Insurance
and Real Estate*

John H. Bowman, BS, MA, PhD

Chair, Department of Economics

Pam Kiecker, BA, MBA, PhD

*Chair, Department of Marketing
and Business Law*

Virginia Commonwealth University's School of Business can be traced back to 1917 when a board of private citizens organized the Richmond School of Social Economy for Social Workers and Public Health Nurses. By 1937 the school was called the Richmond Professional Institute, was affiliated with the College of William and Mary, and had added business courses to the curriculum. The school began offering a graduate program in 1962. Since then, the program has continued to develop and mature to meet the needs of the future.

Degree Programs

The School of Business offers degree programs leading to the Master of Arts in Economics, Master of Business Administration, Master of Science in Business, Master of Taxation, and the PhD in Business.

Post-Baccalaureate Certificate Programs

The School of Business offers post-baccalaureate certificates in accounting, human resource management, information systems, marketing, and real estate and urban land development.

Enrollment in Graduate Courses

Due to accreditation policies, students may not enroll in any graduate business or economics courses (except BUS 500) for credit without first being admitted formally to a graduate degree program. Exceptions may be granted by the associate dean for graduate studies in business to students with superior academic records. No credit will be given for graduate classes taken prior to acceptance into a graduate degree program in business or economics unless such an exception has been

granted. A form to request such an exception is available from the Graduate Studies in Business Office.

A "graduate transient" classification may be granted to a student in good standing in any recognized graduate school who desires to enroll in the School of Business for any one semester or summer session. Students will be required to present certificates of graduate standing but will not have to submit the data normally required for an admission decision. A special form is available to facilitate enrollment.

Transfer Credit

A maximum of six semester hours of acceptable graduate credit earned in a degree program at an AACSB-accredited institution may be transferred and applied toward the graduate degree. Acceptance of transfer credit is made at the discretion of the associate dean for graduate studies in business.

All transfer work must be at the "A" or "B" grade level. Students must be in good standing both at VCU and at the institution from which the credits were earned. Additionally, students must have had full admission during the time these credits were earned at that college or university. Transfer credit shall not be older than seven years at the time the degree is awarded.

Credit to be earned at other institutions after acceptance in the graduate program must be approved in advance, and approval is granted at the discretion of the associate dean for graduate studies in business. Such work is approved only under unusual circumstances such as job transfers or other extenuating circumstances.

Advising Program

All students admitted to graduate programs are assigned advisers. Students are expected to work with

their advisers to plan their graduate programs. Except for the general option in the Classic MBA program, each student is required to complete an approved program form and file it with the Office of the Associate Dean for Graduate Studies in Business no later than the end of the first semester in which the student is admitted. The curriculum plan described on the form must be approved by both the adviser and the associate dean for graduate studies in business. Courses taken without approval are taken at the student's own risk.

Students are responsible for knowing and fulfilling all general and specific requirements relating to the completion of their degree programs. Answers to specific questions may be obtained from the Graduate Studies in Business Office, (804) 828-1741.

Change in Program or Concentrations

Students who desire to change their graduate programs or areas of concentration within the school must make that request in writing to the associate dean for graduate studies in business. The associate dean will advise them of the necessary requirements and whether the change is possible. The student must be in good standing at the time of change.

Notification

The student should notify in writing both Records and Registration and Graduate Studies in Business, 1015 Floyd Avenue, Richmond, VA 23284-4000, of any address changes. Students who do not wish to register in any given semester must notify in writing the Graduate Studies in Business Office of their intent not to register and their plans for continuation in the program.

Student Appeals

Appeals for exceptions to policies or academic standards may be made in writing to the School of Business Graduate Studies Committee, School of Business, Virginia Commonwealth University, 1015 Floyd Avenue, Richmond, VA 23284-4000, or by calling (804) 828-1741.

Individual Research Projects

Various opportunities exist for students to work closely with faculty on individual research projects. BUS 690, 693, and 697 are suitable for this purpose. No more than one research course may be taken as part of a program.

Registration in all research courses requires approval of both the student's adviser and the associate dean for graduate studies in business. Forms for this purpose are available upon request from the Graduate Studies in Business Office. Students are expected to seek permission to register in research courses by the end of the semester or summer session preceding the semester or summer session for which registration is desired. The written research report is required to be filed at the Office of the Associate Dean for Graduate Studies in Business no later than the last day of classes of the semester or summer session in which the course is taken.

Financial Aid

The School of Business offers a limited number of graduate assistantships to full-time students for the academic year. For further information, write to the Graduate Studies in Business Office.

Graduate students also are eligible for funds administered under the National Defense Loan and college work-study programs. For further information, write to Director of Financial Aid, Virginia Commonwealth University, Richmond, VA 23284-2526.

Graduate Faculty

- Ackley, R. Jon *Associate Professor* EdD, Utah State University; administrative systems management and organizational communication.
- Aiken, Peter *Assistant Professor* PhD, George Mason University; Information Systems.
- Andrews, Robert L. *Associate Professor* PhD, Virginia Polytechnic Institute and State University; decision sciences.
- Baranoff, Etti *Assistant Professor* PhD, University of Texas; risk and insurance.
- Barker, Randolph T. *Associate Professor* PhD, Florida State University; management.
- Beall, Larry G. *Associate Professor and Director, Center for International Urban Management* PhD, Duke University; economics.
- Blanks, Edwin E. *Associate Professor and Vice Provost for Academic Administration* MS, Virginia Commonwealth University; information systems.
- Bowman, John H. *Professor and Chair, Department of Economics* PhD, Ohio State University; economics.
- Boykin, James H. *Professor and holder of Alfred L. Blake Chair* PhD, American University, M.A.I., CRE, real estate.
- Byles, Charles M. *Assistant Professor* DBA, Kent State University; management.
- Canavos, George C. *Professor* PhD, Virginia Polytechnic Institute and State University; decision sciences.
- Chin, Amita *Assistant Professor* PhD, University of Maryland; information science.
- Coffman, Edward N. *Professor* DBA, George Washington University; accounting.
- Coppins, Richard J. *Associate Professor* PhD, North Carolina State University; information systems.
- Cowles, Deborah L. *Associate Professor* PhD, Arizona State University; marketing.
- Daniels, Kenneth N. *Assistant Professor* PhD, University of Connecticut; finance.
- Daughtrey, William H., Jr. *Professor* JD, University of Richmond; business law.
- Davis, Douglas D. *Associate Professor* PhD, Indiana University; economics.
- Dubofsky, David A. *Professor and Chair, Department of Finance, Insurance and Real Estate* PhD, University of Washington; finance.
- Edmunds, Wayne L. *Associate Professor* ML and T, College of William and Mary, CPA; accounting.
- Epps, Ruth W. *Associate Professor and Chair, Department of Accounting* PhD, Virginia Commonwealth University; CPA, accounting.
- Everett, John O. *Professor* PhD, Oklahoma State University, CPA; accounting.
- Ferguson, Jerry T. *Professor* PhD, University of Florida; real estate.
- Franzak, Frank J. *Associate Professor* PhD, University of Maryland; marketing.
- Fuhs, F. Paul *Assistant Professor* PhD, University of Massachusetts; information systems.
- Gasen, Jean B. *Associate Professor* PhD, University of Wisconsin at Madison; information systems.
- Gilbreath, Glenn H. *Professor* PhD, University of Alabama; decision sciences.
- Gray, George R. *Associate Professor* PhD, University of Alabama; human resource management and industrial relations.
- Griggs, Walter S. *Associate Professor* EdD, College of William and Mary; business law.
- Harless, David W. *Associate Professor* PhD, Indiana University; economics.
- Hoffer, George E. *Professor* PhD, University of Virginia, economics.

- Holley, Charles L. *Professor* DBA, University of Tennessee; CPA; accounting.
- Hubbard, Elbert W. *Associate Professor* PhD, University of Cincinnati; finance.
- Hubona, Geoffrey *Assistant Professor* PhD, University of South Florida at Tampa; information systems.
- Hull, Rita P. *Professor* PhD, Oklahoma State University; CPA, CIA; accounting.
- Humphrey, Ronald *Associate Professor* PhD, University of Michigan; management.
- Johnson, Iris W. *Associate Professor and Associate Dean for Undergraduate Studies* EdD, Virginia Polytechnic Institute and State University; office automation management.
- Kasper, George *Associate Professor and Chair, Department of Information Systems* PhD, State University of New York at Buffalo; management information systems.
- Kiecker, Pamela *Associate Professor and Chair, Department of Marketing* PhD, University of Colorado; marketing.
- Kurtulus, Ibrahim S. *Associate Professor* PhD, University of North Carolina; management.
- Little, Michael W. *Associate Professor* PhD, Michigan State University; marketing.
- Mann, Robert I. *Associate Professor* PhD.
- McDermott, Dennis R. *Associate Professor* PhD, Ohio State University; marketing.
- McEwen, Ruth Ann *Associate Professor* PhD, Georgia Institute of Technology; CPA; accounting.
- Melton, Kim I. *Assistant Professor* PhD, University of Tennessee; management operations.
- Miller, Don M. *Associate Professor* PhD, Virginia Polytechnic Institute and State University; decision sciences.
- Miller, Elbert G., Jr. *Associate Professor and Associate Dean for Administration* PhD, University of Alabama, CLU, CPCU; management science and insurance.
- Miller, Marianne *Assistant Professor* PhD, University of Oregon; human resource management and industrial relations.
- Millner, Edward L. *Professor and Associate Dean for Graduate Studies* PhD, University of North Carolina; economics.
- Minor, Elliott D., III *Associate Professor* PhD, University of South Carolina; management operations.
- Mitchell, Shannon K. *Associate Professor* PhD, University of Virginia; economics.
- Murphy, Neil B. *Professor* PhD, University of Illinois, CCM; finance.
- Myers, Donald W. *Professor* DBA, Georgia State University; human resources management.
- Myers, Phyllis S. *Associate Professor and Director, Insurance Studies Center* PhD, University of South Carolina, CLU; finance and insurance.
- Narula, Subhash C. *Professor* PhD, University of Iowa; decision sciences.
- Ngwenyama, Ojelanki *Associate Professor* PhD, State University of New York Birmington; computer science and information systems.
- Olds, Philip R. *Associate Professor* PhD, Georgia State University; CPA; accounting.
- O'Toole, Dennis M. *Associate Professor* PhD, Ohio University; economics.
- Pearce, C. Glenn *Associate Professor* PhD, Georgia State University; management.
- Peterson, Steven P. *Associate Professor* PhD, Indiana University; economics.
- Phillips, Richard A. *Associate Professor* PhD, University of North Carolina; real estate.
- Pitts, Michael W. *Associate Professor* DBA, University of Tennessee; management.
- Pratt, Michael D. *Professor and Director, Center for Urban Development* PhD, University of Kansas; economics.
- Ramirez, Gabriel G. *Professor* PhD, Georgia State University; finance.
- Rasnic, Carol *Professor* JD, Vanderbilt University; business law.
- Redmond, Richard T. *Associate Professor* DBA, Kent State University; decision sciences.
- Reilly, Robert J. *Professor* PhD, University of Tennessee; economics.
- Rimler, George W. *Professor* PhD, Georgia State University; management.
- Salandro, Daniel P. *Associate Professor* PhD, University of Pittsburgh; finance.
- Schwartz, Bill N. *Professor* PhD, University of California at Los Angeles; CPA; accounting.
- Scotese, Carol *Assistant Professor* PhD, Penn State; economics.
- Seers, Anson *Professor and Chair, Department of Management* PhD, University of Cincinnati; organizational behavior.
- Shin, Tai S. *Professor* PhD, University of Illinois; finance.
- Sleeth, Randall G. *Associate Professor* PhD, University of Massachusetts; management.
- Smith, Alfred L., Jr. *Assistant Professor* LLD, New York University; business law.
- Smith, Charles H. *Associate Professor* PhD, University of Maryland; decision sciences.
- Spede, Edward C. *Associate Professor* PhD, Virginia Polytechnic Institute and State University; CPA; accounting.
- Spindle, Roxanne *Associate Professor* PhD, University of Colorado; CPA; accounting.
- Spinelli, Michael A. *Associate Professor* PhD, West Virginia University; decision sciences.
- Stratton, Leslie *Assistant Professor* PhD, Massachusetts Institute of Technology; economics.
- Sutherland, John W. *Professor* PhD, University of California at Los Angeles; information systems.
- Thompson, Robert B., III *Associate Professor* PhD, University of Florida; accounting.
- Tondkar, Rasoul H. *Professor* PhD, University of North Texas; accounting.
- Trumble, Robert R. *Professor* PhD, University of Minnesota; industrial relations, organization theory and economics.
- Tuckman, Howard P. *Professor and Dean* PhD, University of Wisconsin; economics.
- Upton, David E. *Associate Professor* PhD, University of North Carolina, CFA; finance.
- Urban, David J. *Associate Professor* PhD, University of Michigan; marketing.
- Vijayakumar, Jayaraman *Assistant Professor* PhD, University of Pittsburgh.
- Weistroffer, Heinz R. *Associate Professor* PhD, Free University of Berlin; information systems.
- Wetzel, James N. *Associate Professor* PhD, University of North Carolina; economics.
- Wier, Benson *Assistant Professor* PhD, Texas Tech University; CPA; accounting.
- Williams, Larry *Professor* PhD, Indiana University; organizational behavior.
- Williams, Margaret *Associate Professor* PhD, Indiana University; organizational behavior and human resource management.
- Wijnholds, Heiko de B. *Associate Professor* DCom, University of South Africa; marketing strategy and international marketing.
- Wood, D. Robley, Jr. *Professor* DBA, University of Tennessee; management.
- Wood, Van R. *Professor* PhD, University of Oregon; international business.
- Wynne, A. James *Associate Professor* PhD, University of Nebraska; information systems.
- Yoon, Youngohc *Associate Professor* PhD, University of Texas at Arlington; information systems.

General Requirements for Master's Degrees in the School of Business

In addition to the general academic regulations stated in Part I of this *Bulletin* and the regulations listed earlier in this section, master's students in the School of Business are subject to the following requirements:

1. A course for which a passing grade was received cannot be repeated without prior written permission of the associate dean for graduate studies in business. An appeal to the School of Business Graduate Studies Committee is required.
2. Students who satisfy all requirements except the 3.0 average may be allowed to take a maximum of six additional credit hours to raise the average. Students are required to appeal to the School of Business Graduate Studies Committee for permission.
3. A foundation course may be waived by the associate dean for graduate studies in business, based on satisfactory completion of equivalent undergraduate work prior to acceptance in the program. CLEP credit at the "B" or higher level may be

accepted in lieu of foundation courses with permission. The waiver of courses is at the discretion of the School of Business.

4. A maximum of two one-year extensions may be granted by the associate dean for graduate studies in business in the time allowed to complete a degree if satisfactory progress has been demonstrated on the part of students requesting extensions. For extensions, write to the associate dean for graduate studies in business.
5. Students are not permitted to take undergraduate courses equivalent to foundation courses once they are admitted to the graduate program without the written permission of the associate dean for graduate studies in business.
6. Grades received for undergraduate courses are not included in the calculation of the cumulative graduate grade-point average.
7. All students admitted into a program must have earned a bachelor's degree or its equivalent. To be accepted in the graduate program, in addition to other requirements, applicants must be in good standing at the college or university they previously attended.

Master of Arts in Economics

Master of Arts students are expected to demonstrate competence over a rigorous and current core curriculum in microeconomic and macroeconomic theory and in econometrics. Preparation in these areas encompasses much of the material to which first-year doctoral students would be exposed. Using these core courses as a foundation, it is the role of a challenging set of graduate level electives to demonstrate how economic analysis has been and can be used to develop solutions to a wide variety of both theoretical and applied problems.

Graduates of the program should be well-qualified to conduct applied economic analysis in either a government or corporate research setting or to teach a range of courses at the undergraduate level. The program is also an excellent preparation for entry into a doctoral program in economics or finance.

Students may elect a general Master of Arts in Economics or may specialize in financial economics. The concentration in financial economics allows students to study the overlapping interests of economics and finance and provides the student with a thorough overview of financial economics and finance. It combines the theoretical and quantitative foundation obtained in the core courses of the general Master of Arts with an in-depth study of their application to financial markets.

Both a thesis and a nonthesis option are available. The general Master of Arts requires 30 semester hours of work, while the track in financial economics requires 33 semester hours.

Admission Criteria

Admission criteria include undergraduate performance, the Graduate Record Examination (GRE), intellectual capacity, experience, and other indicators of the ability to pursue graduate study profitably. The GRE

subject test in economics is not required. Applicants to the financial economics track may substitute the GMAT for the GRE. Applications should be completed at least eight weeks prior to the beginning of the semester or summer session desired.

A. Requirements for the general Master of Arts in Economics:

- One course in each of the following subject areas is a prerequisite for the general Master of Arts in Economics: intermediate macroeconomic theory, intermediate microeconomic theory, introductory econometrics, and calculus. The student's adviser will review the student's economics and mathematical background to determine the extent to which the student has satisfied the prerequisites. Required prerequisites may be taken after admission.
- The general Master of Arts requires 30 semester hours of 600-level credit. Under the thesis option, the 30 hours must include five core courses, three economics electives, and two business or economics electives.

Degree Requirements with Thesis

Core Area	<i>Credits</i>
ECO 604 Advanced Microeconomic Theory	3
ECO 607 Advanced Macroeconomic Theory	3
ECO 612 Econometrics	3
ECO 798-799 Thesis in Economics	6
	15
Economics Electives	9
Electives in Economics, Business, or another approved field	6
	30

Degree Requirements without Thesis

Core Area	<i>Credits</i>
ECO 604 Advanced Microeconomic Theory	3
ECO 607 Advanced Macroeconomic Theory	3
ECO 612 Econometrics	3
ECO 690 Seminar in Economic Methodology and Research	3
	12
Economics Electives	12
Electives in Economics, Business, or another approved field	6
	30

B. Requirements for the Specialization in Financial Economics:

- One course in each of the following subject areas is a prerequisite for the specialization in financial economics: intermediate macroeconomic theory, intermediate microeconomic theory, introductory econometrics, calculus, and finance. The student's adviser will review the student's economics and mathematical background to determine the extent to which the student has satisfied the prerequisites. Required prerequisites may be taken after admission.

- The specialization in financial economics requires 33 semester hours of 600-level credit. Under the thesis option, the 33 hours must include 10 core courses and 1 approved elective.

Degree Requirements with Thesis

Core Area	<i>Credits</i>
ECO 604 Advanced Microeconomic Theory	3
ECO 607 Advanced Macroeconomic Theory	3
ECO 612 Econometrics	3
ECO 617 Financial Markets	3
BUS 622 Financial Management of Financial Institutions	3
BUS 623 Financial Management	3
BUS 635 Investments and Security Analysis	3
BUS 639 International Finance	3
BUS/ECO 798-799 Thesis	6
	30
Approved Elective	3
	33

Degree Requirements without Thesis

Core Area	<i>Credits</i>
ECO 604 Advanced Microeconomic Theory	3
ECO 607 Advanced Macroeconomic Theory	3
ECO 612 Econometrics	3
ECO 617 Financial Markets	3
ECO 690 Seminar in Economic Methodology and Research	3
BUS 622 Financial Management of Financial Institutions	3
BUS 623 Financial Management	3
BUS 635 Investments and Security Analysis	3
BUS 639 International Finance	3
	27
Approved Electives	6
	33

Approved Electives for the Nonthesis and Thesis Options in the Track in Financial Economics

- ECO 609 Advanced International Economics
- ECO 614 Mathematical Economics
- ECO 616 Advanced Public Finance
- BUS 625 Group Insurance and Pension Planning
- BUS 626 Risk Management
- BUS 654 Short-Term Financial Management
- BUS 758 Theory of Finance
- BUS 759 Portfolio Theory and Management

Master of Business Administration

The purpose of the Master of Business Administration programs at Virginia Commonwealth University is to prepare individuals for the responsibilities of management. As students at VCU, individuals will learn the functions and techniques of effective management. The student also will come to understand the environmental and economic factors that affect decision making in organizations. In short, the student will know what to do as future events unfold that affect his/her firm or organization.

An MBA from VCU benefits students at various points in their career. Individuals who have recently received their baccalaureate may choose to refine their business skills while their undergraduate training is fresh. Individuals with work experience often find that an MBA is the key to rapid promotion or a career change.

Finally, an MBA from VCU meets the needs of students who recognize that the best preparation for an uncertain future is continuous learning.

The School of Business students have diverse interests, backgrounds, and levels of business experience. Therefore, the school provides a choice of programs by which the students may obtain an MBA. The Classic MBA is designed for students who wish to attend school in the evening on either a full- or part-time basis. The Fast Track Executive MBA is designed for applicants with at least six years of business experience who are interested in attending class on the weekends.

The Classic MBA

The curriculum for the Classic MBA is flexible and is designed for students with diverse undergraduate backgrounds. The Classic MBA student may elect a general MBA or may prefer an MBA with a concentration or an MBA with a double concentration. Concentrations are available in nine areas: accounting, decision sciences, economics, finance, human resource management and industrial relations, information systems, marketing, real estate and urban land development, or risk management and insurance.

Most classes are held in the evening to accommodate working students' schedules. Classes typically meet one evening a week from 7-9:40 P.M. A limited number of classes meet twice a week, either in the morning from 7-8:15 A.M., or in the early evening from 5:30-6:45 P.M. Classic MBA courses are also offered at Innsbrook, an office park and residential area in the suburban west end of Richmond.

Students may choose to include international study or an exchange program in their course of study. In recent years, credit has been earned for programs in Italy, China, France, Germany, Hong Kong, Indonesia, and Mexico.

Admission Criteria

Admission criteria include undergraduate performance, Graduate Management Admissions Test (GMAT) scores, intellectual capacity, experience, and other indicators of the ability to pursue graduate study profitably. Applications should be completed at least eight weeks prior to the beginning of the semester or summer session desired.

A. Requirements for the General MBA:

- A course in calculus is a prerequisite for the general MBA program. This prerequisite may be waived for students who present satisfactory, equivalent preparation. Applicants who have not met this prerequisite may take the course after admission.
- The program consists of eight foundation courses, eight required advanced courses, and two electives. The foundation courses may be waived for students who have taken the equivalent material at the undergraduate level or may be taken after the student has been admitted. A minimum of 30 hours

of advanced graduate credit at the 600 level or higher will be required of all students.

Degree Requirements

Foundation Courses*	Credits
BUS 507 Fundamentals of Accounting	3
BUS 520 Financial Concepts of Management	3
BUS 524 Statistical Elements of Quantitative Management	3
BUS 530 Fundamentals of the Legal Environment of Business	3
BUS 540 Management Theory and Practice	3
BUS 560 Business Information Systems	3
BUS 570 Concepts and Issues in Marketing	3
ECO 500 Concepts in Economics	3
	24
Advanced Courses	
BUS 608 Managerial Accounting Concepts	3
BUS 621 Cases in Financial Management	3
BUS 641 Organizational Behavior	3
BUS 642 Business Policy	3
BUS 645 Operations Research	3
BUS 661 Management Information Systems	3
BUS 671 Marketing Management	3
ECO 610 Managerial Economics	3
Approved Business or Economics Electives	6
	30
	54

* These foundation courses may not be included in the 30 semester credits of advanced work required for the General MBA.

B. Requirements for the MBA with concentration:

- A course in calculus is a prerequisite for the MBA with a concentration program. Additionally, some concentrations (e.g., information systems, real estate and urban land development, and economics) have additional undergraduate prerequisites. Some or all of these prerequisite courses may be waived for students who present satisfactory, equivalent preparation or may be taken after admission.
- The program consists of eight foundation courses, eight required advanced courses, and four electives in the area of specialization. The foundation courses may be waived for students who have taken the equivalent material at the undergraduate level or may be taken after the student has been admitted. A minimum of 33 hours of advanced graduate credit at the 600-level or higher will be required of all students.

Degree Requirements

Foundation Courses*	Credits
BUS 507 Fundamentals of Accounting	3
BUS 520 Financial Concepts of Management	3
BUS 524 Statistical Elements of Quantitative Management	3
BUS 530 Fundamentals of the Legal Environment of Business	3
BUS 540 Management Theory and Practice	3
BUS 560 Business Information Systems	3
BUS 570 Concepts and Issues in Marketing	3
ECO 500 Concepts in Economics	3
	24
Advanced Courses	
BUS 608 Managerial Accounting Concepts	3
BUS 621 Cases in Financial Management	3
BUS 641 Organizational Behavior	3

BUS 642 Business Policy	3
BUS 645 Operations Research	3
BUS 661 Management Information Systems ^Δ	3
BUS 671 Marketing Management	3
ECO 610 Managerial Economics	3
Concentration Electives [†]	12
	36
	60

* These foundation courses may not be included in the 33 semester credits of advanced work required for an MBA with concentration.

^Δ Students pursuing a concentration in information systems will take BUS 668 Management and Decision Support in lieu of BUS 661.

[†] Students seeking two concentrations are required to take a minimum of four additional advanced courses (12 semester hours) plus any prerequisites usually required for the concentration.

Fast Track Master of Business Administration

The Fast Track Master of Business Administration program provides an opportunity for rising executives and professionals with six or more years of management-level work experience to obtain a Master's degree in Business Administration. Participants gain a wide range of new skills and knowledge by combining course work with day-to-day business activities.

The program is targeted to rising business executives, entrepreneurs, nonprofit managers and service professionals. The program differs from other Master of Business programs at VCU as a result of its unique modular curriculum which integrates components of communication, technology, service/quality, globalism and strategy. The modules include 1) organizational culture; 2) analysis and decisions; 3) team building and leadership; 4) global challenges; 5) productivity and innovation; and 6) strategic management.

The Fast Track MBA is a lockstep program that meets alternating weekends, Fridays 1:00 P.M. to 5:00 P.M. and Saturdays 8:00 A.M. to 5:00 P.M. The program can be completed in approximately 18 months. For more information, contact the Fast Track MBA Office at (804) 828-3939 or FAX (804) 828-8884.

Requirements for the Fast Track MBA

The program is designed for students with familiarity with calculus, statistics, economics, finance, and accounting. The student's adviser will review the student's educational and professional background to determine the extent to which the student has satisfied the prerequisites. Students with outstanding prerequisites will be required to attend one or more training sessions to remove any deficiencies.

The program consists of 13 courses which are divided into 6 integrated modules.

Degree Requirements	Credits
FTM 601 Organizational Culture and Foundations (Course 1)	3
FTM 602 Organizational Culture and Foundations (Course 2)	3
FTM 603 Analysis and Decisions (Course 1)	3
FTM 604 Analysis and Decisions (Course 2)	3
FTM 605 Analysis and Decisions (Course 3)	3
FTM 606 Teambuilding and Leadership (Course 1)	3
FTM 607 Teambuilding and Leadership (Course 2)	3

FTM 608 Global Challenges (Course 1)	3
FTM 609 Productivity and Innovation (Course 1)	3
FTM 610 Productivity and Innovation (Course 2)	3
FTM 611 Productivity and Innovation (Course 3)	3
FTM 612 Strategic Management (Course 1)	3
FTM 613 Strategic Management (Course 2)	3

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Master of Science in Business

The Master of Science program provides in depth-knowledge of one business discipline and allows students to develop and build technical skills in their specific areas of interest. It is frequently recommended for students with an undergraduate business degree.

Concentrations are available in six functional areas:

- Decision Sciences
- Finance
- Human Resources Management and Industrial Relations
- Information Systems
- Marketing
- Real Estate Valuation

Decision Sciences

This concentration provides students with both a conceptual understanding of quantitative methods used successfully in many business environments and also skills in applying them. In addition to statistics, operations research, and production/operations management courses, a restricted number of approved quantitative courses can be selected from the Department of Economics, Biostatistics, or Mathematical Sciences.

Finance

The finance concentration is designed to prepare students for financial decision-making positions in corporate, investment, financial, and governmental institutions. Courses offered in finance include advanced financial management, investments and security analysis, funds management in financial institutions, international finance, and derivatives.

Human Resources Management and Industrial Relations

The Master of Science with a human resources management and industrial relations concentration is designed to prepare students to deal with the ever changing personnel and industrial relations problems in various organizations. It allows flexibility for inclusion of courses in business, economics, psychology, or sociology, as well as other courses.

Information Systems

The concentration in information systems is designed to prepare students for specialized roles in information systems. The program is intended to provide a graduate level, technically-oriented curriculum that focuses on the design and development of information systems to

solve real-world problems. Graduates of the program are expected to be able to take significant roles in analyzing, creating and utilizing state-of-the-art technologies within organizations. Areas of specialization include advanced systems analysis and design, human-computer interaction, networking and client/server environments, management support systems, and enterprise information engineering.

Marketing

The marketing concentration is intended for those who wish to practice management with a strong emphasis on marketing. Specializations are available in consumer behavior, marketing research, and strategic marketing planning.

Real Estate Valuation

The real estate valuation concentration is one of only nine programs in the nation that satisfies the rigorous educational requirements of the Appraisal Institute's MAI designation. Students can satisfy most of the Appraisal Institute's education requirements by completing the concentration. This concentration emphasizes real estate valuation while providing comprehensive education in related disciplines so that graduates' analytical skills and abilities to communicate with other professionals are greatly enhanced. Whenever possible, students will be placed in internships with MAIs.

Admission Criteria

Admission criteria include undergraduate performance, GMAT scores, intellectual capacity, experience, and other indicators of the ability to pursue graduate study profitably. Applications should be completed at least eight weeks prior to the beginning of the semester or summer session desired.

Requirements for the Master of Science in Business

A course in college algebra is a prerequisite for some concentrations; a course in calculus is required for others. Additionally, some concentrations (e.g., information systems and real estate valuation) have additional undergraduate prerequisites. Some or all of these prerequisite courses may be waived for students who present satisfactory, equivalent preparation or may be taken after admission.

Each student in the program must complete a minimum of four 500-level foundation courses (12 credit hours) required for the MBA degree. Foundation courses may be waived for students who present satisfactory, equivalent preparation at either the undergraduate or graduate level. Students who are required to take foundation courses may do so after admission. The foundation courses required will vary depending upon the student's background, career interests, and the chosen area of specialization. Applicants should consult with the area coordinators or department chairs or the associate

dean for graduate studies in business to determine the foundation courses required for a particular area.

Each student in the program also must complete a minimum of 10 600-level advanced courses (30 credit hours), although up to two additional courses (six credit hours) may be required for some concentrations. A student, in consultation with a faculty adviser, selects a set of advanced courses to create a tailored and focused program of study. Applicants should consult with the area coordinators, department chairs, or the associate dean for graduate studies in business to determine the departmental guidelines controlling the required courses and electives for a particular concentration.

For additional information, visit the Web site at <http://www.vcu.edu/busweb/gisib/>.

Master of Taxation

The Master of Taxation program is designed 1) to offer an opportunity for existing tax professionals to update and expand existing tax knowledge; and 2) to prepare students for entry level positions in the field of taxation. The program includes a comprehensive study of tax laws and regulations, administrative practice and procedure, and tax research fundamentals. It is designed to develop both technical knowledge and conceptual understanding within the field of taxation. Ethical considerations are stressed within the framework of individual courses.

Admission Criteria

Applicants may be admitted under either a professional or an academic track. The professional track is designed for existing tax professionals who desire to enhance existing skills. Admission under the professional track requires a minimum undergraduate GPA of 3.0 (on a 4.0 scale), CPA, CMA, or JD designation, a minimum of two years relevant work experience which should include independent tax research and supervisory experience, letters of recommendation, and a personal interview. The academic track is designed primarily for students seeking entry into the tax field. Admission under the academic track is based on traditional academic indicators designed to reflect an individual's ability to complete graduate study, and include the undergraduate record, GMAT score, letters of recommendation, and a personal interview (preferred). Once admitted to the program, all students must satisfy the same requirements for award of the Master of Taxation degree.

Requirements for the Master of Taxation

Six semester hours of intermediate accounting, three semester hours of tax accounting, and a course in college algebra are prerequisites for the Master of Taxation. Prerequisites need not be completed prior to completing the application to the program.

The program consists of eight foundation courses, and 10 courses distributed over core courses, restricted electives, and individual electives. The foundation courses may be waived for students who have taken the equivalent

material at the undergraduate level or may be taken after the student has been admitted. A minimum of 30 hours of advanced graduate credit at the 600-level or higher will be required of all students.

Degree Requirements

Foundation Courses*	Credits
BUS 507 Fundamentals of Accounting	3
BUS 520 Financial Concepts of Management	3
BUS 524 Statistical Elements of Quantitative Management	3
BUS 530 Fundamentals of the Legal Environment of Business	3
BUS 540 Management Theory and Practice	3
BUS 560 Business Information Systems	3
BUS 570 Concepts and Issues in Marketing	3
ECO 500 Concepts in Economics	3
	<hr/>
	18

Advanced Courses

Core Area

BUS 680 Tax Research	3
BUS 681 Tax Administration	3
BUS 682 Corporate Taxation	3
BUS 685 Taxation of Property Transactions	3
BUS 688 Estate and Gift Taxation	3
	<hr/>
	15

Taxation Electives

Three courses selected from the following list:	9
BUS 609 State and Local Taxation	
BUS 679 International Taxation	
BUS 683 Taxation of Reorganizations	
BUS 684 Partnership Taxation	
BUS 686 Taxation of Pension/Deferred Compensation	
BUS 687 Fiduciary Income Taxation	
BUS 689 Estate Planning	

Approved Electives	6
	<hr/>
	30
	<hr/>
	48

* These foundation courses may not be included in the 30 semester credits of advanced work required for the Master of Taxation.

The approved electives may include:

- Any 600-level taxation course not selected in Part A or Part B (maximum of three credits)
- Any 600-level accounting course except BUS 608 and 678.
- Any approved 600-level advanced business or economics course.

PhD in Business

The PhD in Business program is designed specifically for individuals intending to fill positions at institutions that require a balance of scholarly training, teaching, and practical application of the appropriate field of study. With its small size, the program has less than 40 students allowing for extensive one-to-one interaction between students and faculty. Three areas of study are offered: accounting, information systems, and management.

A basic tenet of the PhD in Business Program is that the classic trilogy of teaching, research, and service typically invoked in the University mission statements is synergistic. The program strives to develop graduates who share this perspective and aspire to well-rounded individual roles within universities, colleges, and other learning organizations. For this reason, the program provides instruction in both teaching and research.

Enhancement of teaching skills is emphasized in the program. It provides students with mentoring and teaching experience. Formal instruction designed to augment student teaching skills is also required. Mentoring involves teaming a student with a faculty member with the goal of augmenting student self-awareness and self-confidence in the classroom. Classroom experience is required to insure that the PhD graduate enters the job market with certifiable teaching experience. The formal courses are designed to provide substantive instruction on teaching the adult learner.

Instruction in basic, and applied research is the cornerstone of the PhD in Business program. To fulfill the requirements for the degree, students must demonstrate successful completion of prerequisite and advanced courses, of comprehensive examinations in major and minor areas of study, and completion and defense of a dissertation. The advanced courses provide coverage in basic theories, methodologies, and techniques needed to conduct research. The dissertation demonstrates the student's competence in conducting independent research.

A third aspect of the PhD program is its emphasis on practical application in the area of study for students concentrating in accounting and information systems. In accounting, for example, emphasis is placed on projects based on real world experience, and students are encouraged to develop papers around topics that address practical application of accounting concepts. In information systems, students usually work on projects brought in to the Information Systems Research Institute (ISRI). These projects focus on user applications and emphasize solutions to specific requirements.

Admission

Admission will be restricted to those who are considered by the School of Business PhD Committee to possess academic and professional qualifications necessary to succeed in the program and to make a contribution to the profession. Criteria considered will include, among other things, performance at the bachelor's and graduate levels, GMAT scores, letters of recommendation, as well as both academic and business experience. Preference will be given to students who have fulfilled the general business prerequisites of the program. An interview is highly recommended. Applicants should contact the Graduate Studies in Business Office or the PhD area coordinator for the applicant's intended major to schedule an interview. Admission to the doctoral program is highly competitive; consequently, qualified applicants may be denied admission because of insufficient space and resources.

Prerequisite Courses

Students are required to have a broad and in-depth exposure to the business disciplines prior to beginning their doctoral studies. Therefore, students are required to have completed at least one course at the master's level in each of the following areas: accounting, information systems, organizational behavior, quantitative management, financial management, marketing, and economics.

This requirement may be waived by the associate dean for graduate studies in business for applicants possessing an MBA degree from an AACSB-accredited institution. It may also be waived for applicants possessing a Master's degree in a business discipline from an AACSB-accredited institution when the applicant has also completed the equivalent of the foundation courses required in VCU's MBA program and a course in business policy. Students with deficiencies in these areas may be admitted and may matriculate; however, any deficiencies must be completed before beginning courses required in the doctoral program.

Students are required to have completed a minimum of one course that covers intermediate algebra and calculus prior to beginning the doctoral program. In addition, students may be required to take additional courses to cover any other deficiencies. Qualifying exams will be used, when appropriate, to determine the extent of the student's competency. Applicants should discuss the extent to which their background is sufficient with the PhD area coordinator for the applicant's intended major.

Degree Requirements for the PhD

Each student must select a major in one of the following specialties:

1. Accounting
2. Information Systems
3. Management

Additionally, students must select one different minor from the specialties listed above or the following:

1. Decision Sciences
2. Economics
3. Finance
4. Human Resource Management and Industrial Relations
5. International Business
6. Marketing
7. An approved field outside the School of Business in a school or a department that offers a doctoral program. This option must have the approval of the PhD Committee and the associate dean for graduate studies in business.

The following courses beyond those required at the master's level will be required for the PhD degree.

	<i>Credits</i>
GRS 602 Seminar in College Teaching	1
Research tools determined by each area	12
Six or seven courses in the major area	18-21
Four courses (12 semester credits) in the minor area	12
BUS 898 Dissertation Research (minimum of 12 credits)	12
	<hr style="width: 100%; border: 0.5px solid black;"/>
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A minimum of 12 semester credits in the major area and six credits in each of the minor areas must be completed at VCU after entry into the PhD programs. Regular participation in a luncheon seminar series is also expected of PhD students.

Advising and Evaluation

Each student will be assigned an adviser. The student's original program and any subsequent changes must be approved by the adviser and the associate dean for graduate studies in business. A file will be maintained on all students in the Graduate Studies in Business Office where their progress will be monitored and coordinated. Each student is required to complete an approved program form and file it with the Office of the Associate Dean for Graduate Studies in Business no later than the end of the first semester in which the student is admitted. Failure to do so may result in dismissal from the program.

PhD in Business Handbook

The School of Business publishes a handbook which provides a comprehensive overview of the policies and procedures involved in obtaining a PhD in Business at Virginia Commonwealth University. All procedures associated with the PhD program are covered – from admission to graduation, with special emphasis placed on the dissertation process. Detailed information about financial support, comprehensive examinations, and dissertation proposals and defenses is included in the handbook.

General Requirements for the PhD

In addition to the general academic regulations stated in Part I of this *Bulletin* and the regulations listed earlier in this section for all students in graduate programs administered by the School of Business, PhD students in the School are subject to the following requirements:

1. Students who fall below a 3.0 GPA will have one semester to make up that deficiency.
2. Students must register each semester (summer sessions excluded) for continuation in the program. Students who fail to register each semester will be dropped automatically from the program and must reapply for reinstatement.
3. The maximum time to complete all the requirements for the degree is seven calendar years from the date of entry into the program. The maximum time to complete the course work, pass the comprehensive examination, and present an acceptable dissertation proposal is five years from the date of entry.
4. Doctoral study involves a devotion to independent study outside the classroom and interaction with the faculty and other students. During the period of advanced course work, students must complete at least nine credits each semester for a minimum of two consecutive semesters, one of which may be a summer session.
5. A maximum of nine semester credits may be transferred from another AACSB-accredited university and applied toward the PhD course requirements. All transfer work must be at the "A" or "B" grade level. Transfer credit shall not be older than seven years at the time the PhD degree is awarded. Transfer credit is given at the discretion of the associate dean for graduate studies in

business after consultation with appropriate departmental or faculty representatives.

Post-Baccalaureate Certificates

The School of Business at Virginia Commonwealth University offers five Post-Baccalaureate Certificates in five areas: accounting, human resource management, information systems, marketing and real estate and urban land development. The Post-Baccalaureate Certificate programs are designed for individuals who hold bachelor's degrees in other fields. By taking the courses required to major in the area at the undergraduate level, individuals are able to obtain an extensive knowledge of the subject.

Application Information

Students cannot be accepted into a program until they have completed all the requirements for their bachelor's degree and have achieved at least a 2.5 GPA in their undergraduate work. Applicants must submit an application and a nonrefundable fee of \$30.00. In addition, two official transcripts (bearing the University seal) from the institution granting the bachelor's degree should be sent directly to Graduate Studies in Business. The deadline for applications is eight weeks prior to the beginning of each semester.

Minimum requirements for admission and graduation are subject to change without notice. Refer to the *Undergraduate and Professional Programs Bulletin* for course descriptions.

1. Certificate recipients must have received an overall grade-point average of 2.5 ("C") on credit hours attempted for the certificate at VCU. The grades of "D" and "F" are counted in computing the overall grade-point average but carry no credit.
2. Students who fail to register for at least one course per semester in the program will be dropped automatically from the program and must reapply for admission to continue in the program. At that time some or all of the courses completed prior to the reapplication may not be accepted toward the certificate.

If unusual circumstances warrant it, a leave of absence for one semester may be obtained by requesting such a leave in writing from the associate dean for graduate studies in business as early as possible but no later than the end of the first week of registration of the semester in which the absence is expected to occur.

3. Grades of "A," "B," and "C" are passing grades; "D" is not a passing grade. Students who receive a grade of "D" or below on more than 20 percent of the credit hours attempted for the program will be dropped.
4. Courses in which students have earned a grade of "D" or "F" must be repeated if these courses are needed for the program. Courses for which a passing grade was received cannot be repeated without written permission of the adviser and the associate dean for graduate studies in business. The repeat course option in baccalaureate programs is not applicable to certificate programs.

5. Students who satisfy all the requirements except the 2.5 average may be allowed to take a maximum of six additional credit hours to raise the average. Students are required to get the approval of the adviser and the associate dean for graduate studies in business.
6. Full-time certificate status consists of a minimum of 12 and a maximum of 18 undergraduate credits per semester.
7. Students must continually demonstrate acceptable professional behavior to be retained in the program.
8. All requirements for the certificate must be completed within five years from the date of admission or taking the first course in the program. This time limitation applies to both full- and part-time students. A maximum of two one-year extensions may be granted if satisfactory progress is demonstrated on the part of students requesting extensions. For extensions, write to the associate dean for graduate studies in business.
9. The policies of the University regarding undergraduate degree programs will apply as the minimum when the certificate policy is not stated clearly in these policies. When in conflict, the stricter policy will apply in any case.
10. Students may not use the same course(s) for two certificates or the certificate and another program.
11. A maximum of six semester hours of acceptable undergraduate credit earned beyond the bachelor's degree (and not applied toward other completed degrees or certificates) may be transferred and applied toward the certificate program requirements. Such credits will be evaluated for acceptance upon written request from the student after completion of nine semester hours of work at Virginia Commonwealth University. No transfer credit can be given for courses completed prior to awarding the bachelor's degree regardless of whether the courses were taken beyond the minimum required for the bachelor's degree program, unless prior written permission was given by the associate dean for graduate studies in business.

Transfer credit is made at the discretion of the associate dean for graduate studies in business upon the recommendation of the student's adviser.

All transfer work must be at the "C" or higher grade level. Transfer credit must not be older than seven years at the time the certificate is awarded.

Credits to be earned at other institutions after acceptance in the program must be approved in advance, and approval is granted at the discretion of the associate dean for graduate studies in business. Such work is approved under very unusual circumstances such as a job transfer to a new location over 100 miles from Richmond.

12. CLEP examination credit is not given for the certificate programs.
13. All students admitted to a certificate program are assigned advisers. Students are required to work with their advisers to plan their certificate programs. Each student program or changes thereto must be approved by both the adviser and the

associate dean for graduate studies in business. Courses taken prior to approval are taken at the student's own risk. Each student is required to complete an approved program form and file it with the Office of the Associate Dean for Graduate Studies in Business no later than the end of the first semester in which the student is admitted. Failure to do so may result in dismissal from the program.

14. Students cannot be accepted in the certificate programs until they have completed all the requirements for their bachelor's degrees.
15. Students must apply to graduate using the Graduation Application Form. For deadlines, consult the University calendar.
16. Student appeals for exceptions to policies or academic standards may be made in writing to Virginia Commonwealth University, School of Business Graduate Studies Committee, Associate Dean for Graduate Studies in Business, Richmond, VA 23284-4000.

Post-Baccalaureate Certificate in Accounting

The post-baccalaureate certificate in accounting is designed for students who hold bachelor's degrees in fields other than accounting and desire to continue their education beyond the undergraduate level but who do not aspire to a master's degree. Candidates for the certificate are required to complete a total of 48 hours including the courses presented below, or other equivalents, and to meet other academic standards. Of these 48 hours, at least 30 must be taken beyond the bachelor's degree, and at least 24 must be taken at VCU. Up to 18 credit hours of the courses may be waived if equivalent courses have been completed. All transfer credits and course waivers must be approved by the Department of Accounting and the associate dean for graduate studies in business.

Successful completion of the program provides numerous employment opportunities within both business and government organizations. Additionally, graduates are well qualified to sit for the Uniform Certified Public Accountant (CPA) Examination in Virginia.

Degree Requirements for the PBC/ACC

Required Accounting Classes	<i>Credits</i>
BUS 205 Introductory Accounting Survey*	3
BUS 303 Financial Accounting I	3
BUS 304 Financial Accounting II	3
BUS 306 Cost Accounting	3
BUS 307 Accounting Systems	3
BUS 401 Governmental and Not-for-Profit Accounting	3
BUS 404 Advanced Accounting	3
BUS 405 Tax Accounting	3
BUS 406 Auditing	3
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Accounting Elective	3
One of the following classes	
BUS 407 Auditing Methods	
BUS 410 Advanced Tax Accounting	
BUS 411 Accounting Opinions and Standards	
	<hr/>
	3

Required Business Courses

ECO 210 Principles of Economics	3
BUS 301 Business Statistics	3
BUS 308 Introduction to Marketing	3
BUS 311 Financial Management	3
BUS 319 Organizational Behavior	3
BUS 481 or 482 Law for Accountants I and II	3
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	18

Total	<hr/>	48
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* BUS 203-204 may be taken in lieu of BUS 205.

Post-Baccalaureate Certificate in Human Resource Management

The Post-Baccalaureate Certificate in Human Resource Management (PBC/HRM) is designed to increase the knowledge and skills of human resource practitioners, to prepare individuals who are seeking employment in the field, and to educate persons who desire more knowledge about human resource management. The PBC/HRM program is designed to provide advanced knowledge of human resource management (HRM). Specifically, persons completing the program are expected to achieve competency in understanding HRM terminology, concepts, and principles; design and implement HRM policies that are consistent with the organizational strategic plan; and develop procedures to accomplish organizational goals by obtaining and maintaining effective employees. Persons completing the program should have enhanced opportunities for employment in the HRM field.

A minimum of 30 semester credit hours must be earned in satisfying this certificate requirement, with a minimum of 24 semester hours of study required at Virginia Commonwealth University.

Degree Requirements for the PBC/HRM

Required Courses	Credits
BUS 331 Human Resource Management	3
BUS 420 Seminar in Industrial Relations	3
BUS 427 Labor and Employment Relations Law	3
BUS 428 Employee Benefit Planning	3
BUS 433 Compensation Management	3
BUS 435 Strategic Human Resource Management	3
BUS 444 Occupational Safety, Health, and Security	3
	<hr/>
	21

Electives	9
Choose three of the following courses*	
BUS 446 International Human Resource Management	
BUS 447 Human Resource Information Systems	
ECO 431 Labor Economics	
PSY 310 Industrial Psychology	
	<hr/>
Total	30

* Any prerequisites must also be satisfied.

Post-Baccalaureate Certificate in Information Systems

The Post-Baccalaureate Certificate in Information Systems (PBC/IS) is designed for students who hold

bachelor's degrees in fields other than information systems and who desire to continue their education beyond the undergraduate level but do not aspire to a master's degree. Candidates for the certificate are required to complete a total of 30 hours beyond the bachelor's degree, including the courses listed below, or their equivalents, with a minimum of 24 credit hours of study in information systems to be taken at VCU and to meet other academic standards.

The PBC/IS program is designed to provide more than a basic knowledge of information systems. Specifically, persons completing the program are expected to achieve competency in understanding information systems terminology, concepts, and principles; computer program design, writing, and testing; systems analysis/design through proper application and knowledge of current hardware and software; and planning and carrying out system development and the management of information systems. Those acquiring these skills should be well received in terms of employment opportunities within the business community and with governmental organizations.

Degree Requirements for the PBC/IS

Required Courses	Credits
BUS 358 Structured and Object Programming	3
BUS 360 Business Information Systems	3
BUS 361 Systems Analysis and Design	3
BUS 362 Computer Hardware and Software	3
BUS 464 Data Base Systems	3
BUS 465 Projects in Information Systems	3
BUS 470 Local Area Networks	3
	<hr/>
	21
Approved Track	9
	<hr/>
	30

Students select one of the following approved tracks:

Client/Server	BUS 359, BUS 462, elective
Network Management	BUS 359, BUS 467, elective
Information Engineering*	BUS 461, BUS 463, BUS 468
Decision Support Technologies	BUS 469 and 6 credits from BUS 302, BUS 339, BUS 439, or BUS 440

* The Information Engineering Track is intended for students already working as IS professionals.

Approved Electives for the PBC/IS

BUS 205 Introductory Accounting Survey
BUS 359 Advanced Structured and Object Programming
BUS 363 COBOL Programming
BUS 366 Computerware Analysis
BUS 461 Information Systems Planning
BUS 462 Windows Programming in C++
BUS 463 Reengineering Technology in Organizations
BUS 466 Applications Programming
BUS 467 Distributed Data Processing and Telecommunications
BUS 468 Information Engineering
BUS 469 Information and Decision Systems in Organizations
BUS 491 Topics in Business
BUS 493 Internship

Post-Baccalaureate Certificate in Marketing

The Post-Baccalaureate Certificate in Marketing program is designed for persons who already have earned a baccalaureate degree in fields other than marketing, yet

desire an extensive and current knowledge of marketing. Graduates will recognize 1) the cross-functional nature of today's business environment, and 2) the growing importance of the customer orientation in all organizations, public and private, profit and nonprofit, domestic and global.

Candidates for the Certificate in Marketing must complete 30 credit hours, with a minimum of 24 hours to be completed at VCU. Eight specific 3-hour courses in marketing at the 300 and 400-level are required, and the student may select the six additional hours from a list of restricted electives. Prerequisites for all required and elective courses must be met.

Degree Requirements for the PBC/MKT

Required Courses	<i>Credits</i>
BUS 308 Introduction to Marketing	3
BUS 310 Information for Marketing Decisions	3
BUS 371 Integrated Marketing Communications	3
BUS 372 Project Development and Management	3
BUS 373 Buyer Behavior	3
BUS 378 International Marketing	3
BUS 475 Services Marketing	3
BUS 476 Marketing Management	3
	24
Electives	6
Students will select two of the following courses:	
ECO 210 Principles of Economics (micro)*	
BUS 301 Business Statistics	
BUS 376 Dynamics in Retail Management	
BUS 474 Personal Selling and Sales Management	
BUS 478 International Marketing Strategy	
BUS 491 Topics in Business (Marketing Topic)	
BUS 493 Internship in Marketing	
Total	30

* ECO 210 is required of students who transfer three hours of credit for an Introduction to Marketing or Principles of Marketing course from another institution where Principles of Economics is not a prerequisite to the introductory course.

Post-Baccalaureate Certificate in Real Estate and Urban Land Development

The Post-Baccalaureate Certificate in Real Estate and Urban Land Development is designed for persons who already have earned a baccalaureate degree in fields other than Real Estate and Urban Land Development, yet do not desire to work toward a graduate degree in this field. Aspiring real estate brokers are required to take four of the 10 courses to satisfy their broker educational requirements. By taking only another six additional courses, real estate agents will have the opportunity to increase their business and managerial proficiency through a cohesive program of study at the university level. The certificate program is popular for other professionals, such as appraisers or mortgage lenders, who desire to enter a coordinated real estate studies program.

A minimum of 30 semester credit hours must be earned in satisfying this certificate requirement, with a minimum of 24 semester hours of study required at Virginia Commonwealth University.

Required Courses	<i>Credits</i>
BUS 317 Real Property Management	3
BUS 318 Real Estate Negotiating	3
BUS 326 Real Estate Law	3
BUS 423 Real Estate Brokerage	3
BUS 425 Real Estate Appraisal	3
BUS 429 Real Estate Finance	3
	18
Electives	12
	30

Approved Electives

Select 12 credit hours from the following courses, being certain to have satisfied all prerequisites:

BUS 160 Introduction to Windows/DOS-Based Operating Systems	1
BUS 161 Introduction to Microcomputer-Based Word Processing Packages	1
BUS 162 Introduction to Microcomputer-Based Spreadsheet Processing Packages	1
BUS 205 Introductory Accounting Survey	3
BUS 311 Financial Management	3
BUS 324 Legal Aspects of the Management Process	3
BUS 371 Integrated Marketing Communications	3
BUS 421 Small Business Management	3
BUS 424 Property and Liability Insurance	3
BUS 431 Advanced Real Estate Appraisal	3
BUS 437 Funds Management in Financial Institutions	3
ENS 491 Topics in Environmental Studies	1-3
USP 525 Site Planning and Graphics	3

Graduate Courses in Business and Economics

The courses listed below are grouped into 13 categories: accounting, business law, decision sciences, economics, finance, human resource management, information systems, insurance, management, marketing, real estate, taxation, courses not tied to a specific business discipline, and Fast Track Master of Business Administration.

500-level courses may not be included in the 30 semester credits of advanced work required of any of the master's degrees offered by the School of Business.

Graduate Courses in Accounting (BUS)

BUS 507 Fundamentals of Accounting. Semester course; 3 lecture hours. 3 credits. Theoretical and technical facets of financial and managerial accounting for business. This is a graduate foundation course.

BUS 601 Financial Accounting Theory. Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 credits in accounting or permission of instructor, including BUS 304 or equivalent. The historical development of accounting thought and the way it has been influenced by social, political, and economic forces. Analysis of the structure and methodology emphasizes objectives, postulates, and principles. Income determination and asset equity valuation, in both theory and practice.

BUS 602 Managerial Accounting: Theory. Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 semester credits in accounting (or permission of instructor) including BUS 306 or equivalent. Advanced aspects of the use of accounting information in the management process. Cost-based decision making and control systems are related to short- and long-term objectives of the firm.

BUS 603 Environment of Accounting. Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 credits in accounting, (or permission of instructor). The organization of the profession and accounting standard-setting bodies. Areas covered will include FASB, AICPA, SEC, other governmental regulatory agencies and current and emerging accounting issues and pronouncements.

BUS 604 Auditing. Semester course;3 lecture hours. 3 credits. Prerequisite:21 semester credits in accounting (or permission of instructor) including BUS 406 or equivalent.Development of auditing theory, special disclosure issues, statistical sampling, ethical,legal,and social responsibilities of external and internal auditors. Emphasis on contemporary topics in auditing.

BUS 605 Governmental and Not-for-Profit Accounting. Semester course;3 lecture hours. 3 credits. Prerequisite:BUS 507.Budgeting, accounting, reporting, and related issues and pronouncements for governmental and not-for-profit organizations.

BUS 606 International Accounting. Semester course;3 lecture hours. 3 credits. Prerequisite:BUS 507. International dimensions of accounting;national differences in accounting thought and practice; problems and issues.

BUS 608 Managerial Accounting Concepts. Semester course;3 lecture hours. 3 credits. Prerequisite: BUS 507 or equivalent.The use of accounting information contained in reports to management.The functions of planning, decision making, and control are studied as accounting data are reported through the firm's information system and in special analyses.

BUS 613 Financial Reporting. Semester course;3 lecture hours. 3 credits. Course may not be taken for credit in the Master of Science in Accounting program.Prerequisites: BUS 203 and BUS 204,or BUS 205,or BUS 507. Expand understanding of issues involved in development of financial accounting information.Emphasis is on current issues confronting accountants and financial reporting and potential impact of these issues on business entities.

BUS 662 Accounting Systems. Semester course;3 lecture hours. 3 credits. Prerequisites:BUS 507 and either BUS 307,360, or 560 or equivalent.Study of accounting systems, concepts, and applications with reference to actual problems encountered in the analysis, design, implementation,use, audit,and evaluation of accounting systems in a computer environment.

BUS 678 Accounting Controls for Not-for-Profit Organizations. Semester course; 3 lecture hours. 3 credits. This course is for non-business students who have a need to understand and use accounting information in their professions. The basics of compiling and analyzing financial information for governmental and other not-for-profit entities will be reviewed. In addition, the use of accounting as a control method in these entities will be studied. Students will be required to investigate ways accounting relates to their particular areas of interest. May not be included in the 30 semester credits of advanced work required for any of the master's degrees offered by the School of Business.

BUS 791 PhD Seminar in Auditing. Semester course;3 lecture hours. 3 credits. Limited to doctoral students. A PhD seminar discussing current topics in auditing theory and research.

BUS 792 Financial Accounting Doctoral Seminar. Semester course;3 lecture hours. 3 credits. Prerequisite:Open only to PhD students in business. An advanced course in contemporary financial accounting research.

BUS 794 Research Methods in Accounting: Doctoral Seminar. Semester course; 3 lecture hours. 3 credits. Prerequisite:Open only to PhD students in business. An advanced course in accounting research methodology.

Graduate Courses in Business Law (BUS)

BUS 530 Fundamentals of the Legal Environment of Business. Semester course;3 lecture hours. 3 credits. The legal environment of business is examined in view of common law principles, statutory provisions and administrative regulations affecting various forms of business organizations and management obligations to the company, its owner, and the public. Role of ethics and key commercial law areas are examined including Uniform Commercial Code Provisions.

BUS 646 Advanced Labor and Employment Relations Law. Semester course;3 lecture hours. 3 credits. This course examines the laws concerning human resources in organizations. Equal Employment Opportunity, wage and hours laws, Equal Pay Act,the Employee Retirement Income Security Act,the Occupational Safety and Health Act,and employee personal rights laws are emphasized.

Graduate Courses in Decision Sciences (BUS)

BUS 500 Quantitative Foundation for Decision Making. Semester course;3 lecture hours. 3 credits. Prerequisite:A basic course in algebra.Students without an adequate background in algebra should take BUS 111.A review of basic algebra with emphasis on differential and integral calculus and their application in solving business problems. These topics also provide the necessary foundation for using and understanding more advanced quantitative procedures. May not be included in the 30 semester credits of advanced work required for any of the master's degrees offered by the School of Business.

BUS 524 Statistical Elements of Quantitative Management. Semester course;3 lecture hours. 3 credits. Prerequisite:BUS 500 or equivalent.Develops an ability to interpret and analyze business data in a managerial decision-making context. Managerial applications are stressed in a coverage of descriptive statistics, probability, sampling, estimation,hypothesis testing, and simple regression and correlation analysis. This is a foundation course.

BUS 632 Statistical Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisite:BUS 524 or equivalent.A business application-oriented coverage of statistical inference, analysis of variance, multiple regression and correlation, basic forecasting techniques, nonparametric tests, and other related procedures. Use of a computer statistical package will be included for most topics.

BUS 643 Applied Multivariate Methods. Semester course; 3 lecture hours. 3 credits. Prerequisite:BUS 632 or equivalent.Study of multivariate statistical methods frequently used in business and administrative problems including principal components, factor analysis, discriminant analysis, MANOVA,and cluster analysis. The focus is on applying these techniques through the use of a computer package.

BUS 645 Operations Research. Semester course; 3 lecture hours. 3 credits. Prerequisite:BUS 524 or equivalent. Business problems in production, inventory, finance, marketing, and transportation translated into mathematical models:strengths and weaknesses of such translations. Solution procedures and their limitations.

BUS 648 Managerial Decision Making. Semester course; 3 lecture hours. 3 credits. Prerequisite:BUS 524 or equivalent. Formal analytical techniques used by organizations in reaching decisions. The concepts of both classical and Bayesian decision methods will be examined. The emphasis is on the application of a decision-theoretic approach to solving problems in contemporary organizations.

BUS 669 Forecasting Methods for Business. Semester course;3 lecture hours. 3 credits. Prerequisite:BUS 524 or equivalent that includes simple regression.A presentation of forecasting methods and applications for managerial decision making in business and other organizations. Coverage includes selection of appropriate methods and issues involved in developing and implementing forecasting models. Techniques covered include smoothing, seasonal adjustment, time series (Box-Jenkins) and judgmental methods.

BUS 674 Cases in Operations Research. Semester course;3 lecture hours. 3 credits. Prerequisites:BUS 608, 645,and completion of foundation courses or equivalent.Integrates and applies prior instruction in operations research. Provides experience in the use of operations research techniques for solving organizational problems through the analyses of cases and management simulations. Use of computer packages will be emphasized.

BUS 675 Operations Management. Semester course;3 lecture hours. 3 credits. Prerequisites: BUS 540 and 645 or equivalent.A systematic investigation of the concepts and issues in designing, operating, and controlling productive systems in both manufacturing and services.

Emphasis is placed on modeling for problems in location and layout, scheduling, production and inventory control, quality control, work design, and maintenance.

BUS 677 Quality. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 524 or equivalent. Provides a foundation in current concepts of quality management and the tools/techniques used in a quality improvement process. Philosophies of quality management and statistical tools/techniques for continuous improvement are presented. Applications for manufacturing and service industries included.

BUS 745 Advanced Operations Research. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 645 or equivalent. Advanced discussion of topics in mathematical programming and network analysis as applied to organizational decision making. Includes network flows, integer, nonlinear, and dynamic programming, and multicriteria optimization. Emphasis on applications and the use of the computer for problem solving.

Graduate Courses in Economics (ECO)

ECO 500 Concepts in Economics. Semester course; 3 lecture hours. 3 credits. Essential economic concepts including the price system, price determination in imperfectly competitive markets, employment theory, and monetary theory. Not open to students who have completed ECO 210 and 211 or the equivalent. This is a foundation course.

ECO 601 Contemporary Economic Problems. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 210-211 or 500 or equivalent. Not open to economic majors. An analysis of current economic issues.

ECO 602 Comparative Economic Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: Nine semester hours of economics. Surveys the organization, operation, and performance of capitalism, socialism, and the centrally planned economy.

ECO 603 History of Economic Thought. Semester course; 3 lecture hours. 3 credits. Prerequisite: Six semester hours of intermediate micro and macroeconomics. A survey of the principal contributions to the development of economic theory by leading economists from medieval times to the present.

ECO 604 Advanced Microeconomic Theory. Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate course in intermediate microeconomic theory or theory of the firm. Theory of prices and markets; value and distribution. Partial and general equilibrium analysis.

ECO 605 Economic Development. Semester course; 3 lecture hours. 3 credits. Prerequisite: 12 semester hours of economics. Examination of problems of poverty and economic policies in developing countries. Areas considered are Southeast Asia, Middle East, Africa, and Latin America.

ECO 606 Urban Economic Problems. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 500 or equivalent. A study of the location of economic activity, zoning, blight and unemployment, urban renewal, and redevelopment programs.

ECO 607 Advanced Macroeconomic Theory. Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate course in macroeconomic theory. National income analysis, monetary and fiscal theory and policy, and general equilibrium analysis.

ECO 609 Advanced International Economics. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 500 or equivalent. An advanced-level examination of why trade occurs, balance of payments concept and adjustment, international equilibrium, forward exchange, markets, international investment, and international organizations.

ECO 610 Managerial Economics. Semester course; 3 lecture hours. 3 credits. Prerequisites: ECO 500 or equivalent. Analysis of business decisions, applying tools of economic theory. Decisions on demand, production, cost, prices, profits, and investments.

ECO 612 Econometrics. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 401 or equivalent or permission of instructor. Provides empirical content to the theoretical concepts of the economics by formulating and estimating models. Introduction to simultaneous equation problems in economics and the studies of production, demand, and consumption functions.

ECO 614 Mathematical Economics. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 403 or equivalent or permission of instructor. Economic analysis utilizing simple mathematical methods. Includes derivation and exposition of theories and the application of tools to widen the scope and increase the usefulness of economics.

ECO 616 Advanced Public Finance. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 500 or equivalent or permission of instructor. Theory and application of public finance, including taxation, expenditures, and budgeting. Special attention to cost-benefit analysis and to intergovernmental relations in federal system.

ECO 617 Financial Markets. Semester course; 3 lecture hours. 3 credits. Prerequisites: Money and banking or intermediate macroeconomics. Theories of markets for loanable funds are related to empirical findings and institutional structures. Yields of financial assets, kinds of debt instruments, financial institutions, public policy, financial models, and the role of money and credit in economic growth are considered.

ECO 620 The Economics of Industry. Semester course; 3 lecture hours. 3 credits. Prerequisites: ECO 301, 303, or 610, or the equivalent. The application of economic analysis to the structure, conduct, and performance of industry; public regulation and policies to promote workable competition.

ECO 621 Topics in Economics. Semester course; 3 lecture hours. 3 credits. Prerequisites: ECO 500 or equivalent and permission of instructor. Study of specialized topic(s) in economics.

ECO 624/HAD 624 Health Economics. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 500 or equivalent. Develops an understanding of (1) economics as a managerial tool in making choices or decisions that will provide for an optimum allocation of limited health care resources, and (2) economics as a way of thinking about and approaching issues of public policy in financing and organizing health and medical services. Individual research on crucial or controversial economic issues in the health field.

ECO 631 Labor Market Theory and Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 600 or one year undergraduate principles of economics. The study of theories and applications designed to analyze wage rate, wage structure, and employment patterns. Studies exploring specific labor markets and problems will be examined.

ECO 682 An Economic Approach to Environmental Issues. Semester course; 3 lecture hours. 3 credits. Prerequisite: ECO 500 or equivalent. The effect of externalities in terms of efficiency and equity considerations. The role and problems of benefit-cost analysis in decision making is developed. The interrelationship of air, water, and land quality issues is analyzed. The use rate of natural resources, energy consumption, and the steady-state economy and their impacts are evaluated.

ECO 690 Seminar in Economic Methodology and Research. Semester course; 3 lecture hours. 3 credits. Prerequisites: ECO 604, 607, and 612. Familiarizes students with various research methodologies and research techniques, and provides in an elected field of economics, research experience and a survey of the literature.

ECO 798-799 Thesis in Economics. Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis. Prior to enrollment, approval of the proposed work is required by the graduate adviser and the proposed thesis adviser.

Graduate Courses in Finance (BUS)

BUS 520 Financial Concepts of Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 507 or equivalent. A study of

the essential concepts of financial management including working capital management, capital budgeting, capital structure planning, and dividend policy. Not open to students who have completed BUS 311 or the equivalent. This is a foundation course.

BUS 621 Cases in Financial Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 520 or equivalent. Analysis of financial problems and policies of nonfinancial firms, including capital management, capital rationing and cost of capital, and capital structure.

BUS 622 Financial Management of Financial Institutions. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 520 or equivalent. Understanding and application of concepts relevant to the financial management of financial institutions.

BUS 623 Financial Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 520 or equivalent. Analyzes the theory and practice of corporate finance. Detailed investigation of the investment and financing decision of the firm in an environment of uncertainty.

BUS 635 Investments and Security Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 520 and 524 or equivalent. The process of investing in stocks and bonds, from the analysis of individual securities to portfolio formation and evaluation.

BUS 639 International Finance. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 520 or equivalent. A study of financial management of multinational enterprises, banks, firms with foreign subsidiaries, exporters, and service industries. Additionally, financing trade and investments, international money and capital markets, foreign exchange risks, and governmental policies will be covered.

BUS 650 Derivatives. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 520 or equivalent. Analysis of derivatives contracts: forwards, futures, swaps, and options. Study of valuation and pricing, and how to use derivatives to manage financial price risk.

BUS 654 Short Term Financial Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 520 or equivalent. Techniques of short term financial management (or working capital management) for business firms, including efficient cash management of accounts receivable, management of inventory, management of accounts payable, and short-term borrowing from banks and other suppliers of short-term credit.

BUS 657 Current Issues in Investments and Markets. 3 lecture hours. 3 credits. Prerequisite: BUS 635. Advanced study of selected topics in investments and securities markets. Topics selected by the instructor. Readings from recent journals, cases, and/or software may be used. Possible topics may include: fixed income mathematics; portfolio management; advanced investments theory; factors explaining security price movements; advanced security analysis; using information to make investment decisions; and security market microstructure.

BUS 664 Current Issues in Corporate Finance. 3 lecture hours. 3 credits. Prerequisites: BUS 621 and BUS 623. Advanced study of selected topics in corporate finance and financial management. Topics selected by the instructor. Readings from recent journals, cases, and/or software may be used. Possible topics include: theory and evidence concerning major corporate financial policy decisions, bankruptcy costs and agency costs that relate to capital structure and dividend policy, issues in corporate control, alternative methods of issuing and retiring securities mergers and acquisitions, advanced valuation theory, advanced financial analysis, advanced capital budgeting, using information to make financial decisions.

BUS 758 Theory of Finance. Semester course; 3 lecture hours. 3 credits. Prerequisites: All foundation courses, 12 hours of graduate business courses, and two advanced finance courses including BUS 623 or permission of chair. Advanced discussion of the theoretical underpinnings of modern financial theory as applied to choice under uncertainty and efficient capital markets. Includes a detailed analysis of state-preference theory, mean-variance uncertainty and market equilibrium. In depth investigation of the seminal empirical findings as pertains to capital structure and dividend policy.

BUS 759 Portfolio Theory and Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 524 and 635 or equivalent. A study of current theory of valuation and performance of portfolios, focusing on models to express the risk/return characteristics of the portfolio. Includes models for portfolio selection and for evaluation of managed portfolios.

Graduate Courses in Human Resource Management (BUS)

BUS 631 Advanced Labor Law and Legislation. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 323 or permission of instructor. Not open to students who have completed BUS 427. Advanced labor law and legislation with pertinent causal factors; administrative and judicial determination to date.

BUS 633 Issues in Labor Relations. Semester course; 3 lecture hours. 3 credits. The conceptual framework of labor relations; the interconnection between labor-management relations and the sociopolitical environment.

BUS 634 Collective Bargaining and Labor Arbitration. Semester course; 3 lecture hours. 3 credits. The negotiation and administration of collective bargaining contracts; the handling of grievances.

BUS 637 Advanced Human Resource Management. Semester course; 3 lecture hours. 3 credits. A critical analysis of the functions and problem areas related to human resource management in a large organization; philosophy of human resource management; employee recruiting, testing, and wage and salary administration and supplemental compensation systems; manpower, training, and development; employee services; the legal environment of human resource management.

BUS 649 Compensation Policy and Administration. Semester course; 3 lecture hours. 3 credits. Analysis of the concepts and processes involved in compensation systems. Includes evaluation of the internal and external dimensions of compensation, policy issues involved, concepts, and forms of compensation, administration of compensation systems, and current and future issues.

Graduate Courses in Information Systems (BUS)

BUS 560 Business Information Systems. Semester course; 3 lecture hours. 3 credits. Not open to students who have completed BUS 360 or the equivalent. (This is a foundation course.) Introduces computer organization, programming, computers in management decision making, and systems analysis and design.

BUS 612 Intelligent Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 560 or equivalent. Designed to acquaint students with the principles and practice of intelligent systems design and analysis. Specific topics to be addressed are artificial intelligence, knowledge engineering, discovery systems, next-generation system facilities, and robotics concepts.

BUS 617 Computer Supported Collaborative Systems. Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Investigates how technology is used to support group communication, collaboration and decision making and will be organized around the traditional and innovative ways groups work together to accomplish their tasks. Explores current and future collaborative technologies.

BUS 618 Advanced Interactive Systems Development. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 659. Presents advanced concepts in developing interactive systems within graphical user environments. Covers systems development within a windows-based environment that incorporates a user-centered design methodology. Requires students to work in teams to produce prototype interactive systems. Designs and develops systems for both stand-alone PC's and distributed environments, such as the Internet.

BUS 619 Computer Assisted Simulation. Semester course; 3 lecture hours. 3 credits. Prerequisite: Knowledge of computer programming and BUS 624 or equivalent. Investigates the concepts and applications of different types of computer-assisted simulation modeling approaches. Includes experimental design, systems modeling, programming in a simulation language, and model validation. Emphasis will be on discrete simulation techniques in a business environment.

BUS 636 Analysis and Design of Database Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 464 or equivalent. Designed to prepare students for the development of information systems using databases and database management techniques.

BUS 653 Decision and Control Systems. Prerequisite: BUS 665 or equivalent. Designed to familiarize students with the state-of-the-art system configurations, including intelligent, real-time, distributed, and command-control systems.

BUS 659 Human-Machine Interface Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 560 or equivalent. Analyzes factors important in designing information systems from an end-user perspective. Discusses theoretical issues in the human-machine interface design process; analyzes man/machine capabilities, and applied interface design concepts to the system development life cycle.

BUS 661 Management Information Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: Computer literacy (the equivalence of BUS 560, or BUS 161, 162, and 163). Not open to those concentrating in information systems. Provides an understanding of the importance and place of computer-based information systems in the success of data management, management support systems, information systems, and resource management.

BUS 663 Direction and Control of Information Systems Organizations. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 540 and BUS 560 or equivalents. A study of management concepts, tools, and techniques as applied to information systems personnel and organizations. Emphasis will be placed on techniques and tools for efficient control and utilization of data processing resources to include use of feasibility studies, standards, cost/benefit analyses, and acquisition methods for both hardware and software systems.

BUS 665 Advanced Systems Analysis and Design. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 362, 363, 365, and 645 or 648 or equivalent. A required course for those concentrating in information systems.

BUS 666 Systems Performance Evaluation. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 665 and either BUS 632 or 645. Methodology and use of hardware and software tools for the evaluation of computer-based information systems including people and machine productivity.

BUS 667 Distributed and Teleprocessing Systems. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 661 or equivalent. Computer network design, communication line control, and communication hardware and software.

BUS 668 Management and Decision Support Systems. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 365 and 645 or equivalent. Familiarity with programming languages. Use of computers in modeling and solution of managerial decision-making problems.

BUS 764-765 Doctoral Seminar in Information Technology. Year course; 3 lecture hours. 6 credits. Prerequisites: BUS 636, 665, 667, and 668 or equivalent. Usually offered in the spring semester and the following fall semester. An overview of current information technology concepts and issues within a framework of structured research activities. The objective of this course is to provide an intellectual and procedural foundation for the doctoral dissertation. Course activities will be organized around advanced topic areas in analysis and design, database theory and practice, data communications and networking concepts, decision support systems, and others. Candidates are expected to develop a significant understanding of specific information systems issues in two different topic areas over two successive semesters, which should result in publishable research papers.

BUS 767 Information Systems Network Design. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 467 or BUS 667. Introduction to the concepts of data communication network design. Wide area, local, and distributed networks are studied together with their interrelationship to business information systems. Case study orientation throughout.

Graduate Courses in Insurance (BUS)

BUS 533 Insurance Education Institute for High School Teachers. 3 credits. This is a summer course designed for high school teachers in such fields as business, marketing, economics, mathematics, social sciences, history, life skills, home economics, or other disciplines in which the subject of risk and insurance can be incorporated into the curriculum. Teachers will learn about risk management, life, health, auto, homeowners insurance and financial planning. They will receive instructional materials and guidance to develop lesson plans for their use in teaching the subject to their students.

BUS 625* Group Insurance and Pension Planning. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 520 and BUS 530 or equivalents. Analysis of major elements of employee benefit plans including: life, health and disability benefits, pension, and profit-sharing plans. Design principles, financing, legal, and tax considerations are examined. Major issues and new developments.

BUS 626* Risk Management. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 520, BUS 530, and BUS 524 or equivalent. Property and liability risks faced by businesses and public institutions are studied. Insurance and alternative methods of controlling and financing these risks are analyzed and compared.

* Courses directly related to risk, insurance and employee benefits are approved for Virginia Insurance Continuing Education 42 credits for insurance agents. Contact the director of insurance studies for further information.

Graduate Courses in Management (BUS)

BUS 540 Management Theory and Practice. Semester course; 3 lecture hours. 3 credits. Theories, principles, and fundamentals applicable to contemporary management thought and productive activities. This is a foundation course.

BUS 641 Organizational Behavior. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 540 or equivalent, or permission of instructor. An advanced course in management, involving theories and models aimed at developing the managerial competencies needed to analyze, understand, predict, and guide individual, group, and organizational behavior.

BUS 642 Business Policy. Semester course; 3 lecture hours. 3 credits. Must be taken after completion of all foundation courses plus 15 credits of advanced courses. Integration of principles and policies of business management from the fields of accounting, economics, marketing, finance, statistics, and management in the solution of broad company problems and in the establishment of company policy. Emphasis on interaction of disciplines in efficient administration of a business. Course employs case analysis approach.

BUS 644 International Business Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: Completion of foundation courses. Survey course for students interested in international and multinational management. Review of historical, governmental, monetary, and cultural issues affecting the transfer of resources and management knowledge across national boundaries; multinational business and management strategies; study of management practices in selected countries.

BUS 651 Organizational Communication. Semester course; 3 lecture hours. 3 credits. Study of theoretical constructs of the communication process in organizations. Application of communication principles to managerial functions, training, telecommunications, and other organizational situations.

BUS 652 Advanced Business Communication. Semester course; 3 lecture hours. 3 credits. Development of skill in planning and writing business reports and other shorter written communications, conducting business research, delivering oral presentation, and using business communication media.

BUS 655 Entrepreneurship. Semester course; 3 lecture hours. 3 credits. Individual and corporate entrepreneurship in high and low technology enterprises. Develops an understanding of the role of entrepreneurship in management theories and practices. Students will develop comprehensive venture analysis plans for presentation.

BUS 743 Organization Theory. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 540 and 641 or equivalent, or permission of instructor. Uses the organization and its major subunits as primary units of analyses. Involves description, design and analysis of contemporary organizational structures, systems, and processes.

BUS 749 History of Management Thought. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 540. Traces the history of management from its beginnings to current approaches and theories.

BUS 750 Theories and Research in Motivation and Leadership. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 641 or equivalent. Critical examination of significant research and application of motivation and leadership concepts in the organization context.

BUS 757 Corporate Strategy and Long-Range Planning. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 642 or equivalent. Analysis and evaluation of current methods and research in the areas of corporate strategy and long-range planning.

Graduate Courses in Marketing (BUS)

BUS 570 Concepts and Issues in Marketing. Semester course; 3 lecture hours. 3 credits. Designed for graduate students with little or no undergraduate education in marketing. A study of the philosophy, environment, and practice of contemporary marketing. This is a foundation course.

BUS 656 International Marketing. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 570 or equivalent. Orientation to the international market place. Formulation of international marketing strategies for firms participating in global trade. Emphasis on international environment, multinational economic blocs, international competition, and development of international marketing strategies.

BUS 671 Marketing Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 570 or equivalent. Detailed study of concepts and procedural alternatives in the delineation of the market target, the development and implementation of the marketing mix, and the control and analysis of the total marketing effort.

BUS 672 Concepts in Consumer Behavior. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 570 or equivalent. A study of the pertinent psychological, sociological, and anthropological variables that influence consumer activity and motivation.

BUS 673 Marketing Research. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 524 and 570 or equivalents. A discussion of the techniques of marketing research. Special emphasis will be given to marketing problem definition, determination of information needs, and current methods of analysis of marketing data.

BUS 674 Service Quality Management. Semester course; 3 lecture hours. 3 credits. Prerequisite: Student in good standing in VCU master's program. This course enables marketing students to develop a better understanding of service offerings from both a theoretical and practical perspective. Learning will focus on both private and public-sector service organizations. Students will learn how to analyze the design of service offerings, including operations, environment, and people, and make recommendations for improving the offerings. The importance of internal and external customer feedback and continually measuring customer satisfaction/dissatisfaction will be highlighted as an integral part of managing service quality.

BUS 676 Marketing Strategy. Semester course; 3 lecture hours. 3 credits. Prerequisites: All foundation courses, BUS 671 and 673 or equivalent. Application of marketing concepts and techniques to real-world situations. Development of a marketing plan designed to effectively market a new or existing product or service.

Graduate Courses in Real Estate (BUS)

BUS 627 Urban Land Development. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. A study of the development process; considering planning, financing, management, and marketing of real property.

BUS 628 Cases in Real Estate Valuation. Semester course; 3 lecture hours. 3 credits. Prerequisites: BUS 425 and BUS 431 or equivalent. Emphasizes real estate analysis through preparation of a valuation report, case studies, problem solving, and Internet research.

BUS 629 Real Estate Investment Analysis. Semester course; 3 lecture hours. 3 credits. Housing demand forecasting, commercial site selection, and real estate investment analysis.

BUS 638 Real Property Investment Law. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 323 or equivalent, or permission of instructor. Covers legal aspects of real property development from acquisition through disposition; emphasizes selection of appropriate ownership form, financing, operation, and tax considerations.

BUS 658 Commercial Mortgage Lending. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 431 or permission of instructor. Emphasizes financial decision-making mathematics, underwriting criteria, financing methods, project feasibility and value, and loan processing and administration.

Graduate Courses in Taxation (BUS)

BUS 609 State and Local Taxation. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 405 or equivalent. Examination of the tax problems and planning opportunities inherent in state and local taxation, with emphasis on the problems of interstate business operations.

BUS 679 International Taxation. Semester course; 3 lecture hours. 3 credits. Prerequisite: 24 semester credits in accounting (or permission of instructor) including BUS 682 or equivalent. Problems of international taxation and business tax planning approaches. Tax implications of exporting and manufacturing abroad, foreign losses, and repatriation of earnings.

BUS 680 Tax Research. Semester course; 3 lecture hours. 3 credits. Prerequisite: 21 semester credits in accounting (or permission of instructor) including BUS 405 or equivalent. Tax research methodology; the sources of tax law and their relationship to tax research.

BUS 681 Tax Administration. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 405 or equivalent. The Internal Revenue Service and the practices and procedures involved and/or available for the settlement of tax controversies and common elections of accounting methods.

BUS 682 Corporate Taxation. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 405 or equivalent. Corporate tax laws as related to the corporations involved and to individual shareholders; tax aspects of the creation, operation, reorganization, and partial liquidation of corporations; corporate distributions.

BUS 683 Taxation of Reorganizations. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 682. Continuation of the study of corporate taxation, with emphasis on corporate liquidations and reorganizations as well as collapsible corporations.

BUS 684 Partnership Taxation. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 405 or equivalent. Tax problems related to organization, operation, and liquidation of a partnership. Also, tax problems of Subchapter S corporations, tax-exempt organizations, private foundations and other special corporate forms.

BUS 685 Taxation of Property Transactions. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 405. Tax problems and elections relating to acquisition, holding, and disposition of property. Tax planning in relation to comparisons of sales and exchanges as methods of acquiring and disposing of property; study of Section 1245, 1250, and 1231.

BUS 686 Taxation of Pensions/Deferred Compensation. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 682. Tax law as related to pensions, profit-sharing, and deferred compensation plans, and the tax consequences related thereto for individuals and businesses.

BUS 687 Fiduciary Income Taxation. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 405 or equivalent. Tax laws relating to estates and to inter vivos and testamentary trusts. Tax planning will be stressed.

BUS 688 Estate and Gift Taxation. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 405 or equivalent. Concepts of gross estate, marital deduction, powers of appointment, gross gifts, exclusions, deductions, and credits; tax aspects of estate planning.

BUS 689 Estate Planning. Semester course; 3 lecture hours. 3 credits. Prerequisite: BUS 688. Estate planning as it encompasses the acquisition, protection, and disposition of property; the role of the accountant in estate planning.

Graduate Courses in Business (BUS)

BUS 690 Business Research Seminar. Semester course; 3 lecture hours. 3 credits. This course is designed to provide research experience for candidates not following the BUS 798-799 program. (Approval of proposed work is required by the associate dean for graduate studies in business.)

BUS 691 Topics in Business. Semester course; 1-3 lecture hours. 1, 2, or 3 credits. Study of current topics. Topics may vary from semester to semester.

BUS 693 Field Project. Semester course; 3 lecture hours. 3 credits. Approval of proposed work is required by the associate dean for graduate studies in business. Students will work under the supervision of a faculty adviser in planning and carrying out a practical research project. A written report of the investigations is required. To be taken at the end of the program.

BUS 697 Guided Study in Business. Semester course; 3 lecture hours. 1, 2, or 3 credits. Approval of proposed work is required by the associate dean for graduate studies in business. Graduate students wishing to do research on problems in business administration or business education will submit a detailed outline of their problem. They will be assigned reading and will prepare a written report on the problem. To be taken at the end of the program.

BUS 700 Principles of Scientific Inquiry in Business. 3 lecture hours. 3 credits. A seminar on the philosophical and epistemological foundations of scientific inquiry as they relate to research in business and its allied disciplines. The focus will be on the underlying logic, ele-

ments, reach and limits of alternative frameworks such as positivism, empiricism, and Bayesian analysis and the conditions under which each is the preferred method of inquiry.

BUS 701 Research Methods in Business. Semester course; 3 lecture hours. 3 credits. Prerequisite: Acceptance in the doctoral program. Study of the scientific method as currently applied in business and organizational research, with emphasis on philosophy, design, execution, and presentation of empirically based knowledge.

BUS 798-799 Thesis. Year course; 6 credits. Graduate students will work under supervision in outlining a graduate thesis and in carrying out the thesis.

BUS 898 Dissertation Research. 1-12 credits. Limited to PhD in business candidates.

Fast Track Master of Business Administration (FTM)

FTM 601-602 (Module 1): Organizational Culture. 6 credits. Presents how organizations develop and operate. Meanings and management of culture and protocol; design and transformation of technologies, structures, behaviors, and careers with organizational environments are developed and integrated across disciplines.

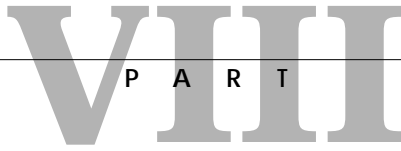
FTM 603-605 (Module 2): Analysis and Decisions. 9 credits. Presents how organizations define and choose. Concepts and tools of problem solving for administrative decisions; concepts and tools of measurement, planning, and control; management of conflict, cooperation, negotiation, and implementation are developed and integrated across disciplines.

FTM 606-607 (Module 3): Teambuilding and Leadership. 6 credits. Presents how organizations steer members toward what needs doing. Design, functions, and creation of teams, engaging leadership and motivation processes to set and achieve organizational goals; management of emerging communication and evaluation processes; interacting with boards and with customers are developed across disciplines.

FTM 608 (Module 4): Global Challenges/Specialization. 3 credits. Presents an educational tour for direct experience of influences and perspectives: France, Great Britain, Indonesia, or Mexico.

FTM 609-611 (Module 5): Productivity and Innovation. 9 credits. Presents how organizations change and improve. Management of creativity, critical thinking, and rewards; development of resources; implementing concepts of quality, effectiveness, and change are developed across disciplines.

FTM 612-613 (Module 6): Strategic Management. 6 credits. Presents how organizations define, plan, and accomplish missions. Comprehensive integration of business functions and processes; systems thinking, managing shareholder value; anticipating and interacting with changing internal and external environments; formulation and implementation of strategy and integrated across disciplines.



School of Education

John S. Oehler Jr., EdD
Dean

Diane J. Simon, PhD
Associate Dean

John T. Seyfarth, EdD
Head, Division of Educational Studies

Thomas A. Hephner, PhD
*Director, Office of Continuing Education
and Field Services*

Alan M. McLeod, EdD
Head, Division of Teacher Education

Jack H. Schiltz, EdD
*Head, Division of Health, Physical
Education, and Recreation*

Michael D. Davis, PhD
Director, Graduate Studies in Education

The School of Education was established officially in 1964 as a part of the Richmond Professional Institute. In 1968, by action of the state legislature, the School of Education became a part of the newly formed Virginia Commonwealth University. In November 1975, the school moved to its present location in Oliver Hall on the Academic Campus of VCU.

Since the creation of VCU, the central focus of the School of Education has been on services to prospective and experienced educational personnel, including those interested in Adult Education and Human Resource Development. The School of Education has a commitment to providing excellent educational programs in urban, suburban, and rural areas.

Accreditation

The School of Education is accredited by the Virginia Department of Education, the Southern Association of Schools and Colleges, and the National Council for Accreditation of Teacher Education. The Recreation, Parks, and Tourism curriculum is accredited by the National Council on Accreditation. The school also holds membership in the American and Virginia Association of Colleges of Teacher Education and in the Holmes Partnership.

Mission

The School of Education is committed to excellence in the initial preparation and continuing development of professionals for leadership, teaching, service, and scholarly inquiry in culturally diverse settings across the life span. The school emphasizes early childhood through secondary education and lifelong learning; scholarship that extends knowledge and improves practice; and collaboration that connects the School of Education to the

field of practice and supports schools and relevant educational and human service agencies.

The School of Education, as an integral part of a major urban research university, subscribes to and promotes the following values.

- The school as an example of the highest quality teaching and learning.
- The school as a diverse community of learners and scholars who, guided by democratic principles of participation, demonstrate a commitment to:
 - high professional standards and sustained faculty development;
 - a collaborative approach to teaching, scholarship, and service both within and across disciplines;
 - inquiry that results in the scholarship of application, integration, and teaching, as well as the scholarship of discovery; and
 - nurturing national and international relationships.
- The school as a leader providing quality education for students with individual and diverse needs. The school's graduates:
 - demonstrate a body of knowledge from a foundational core appropriate to their specialization(s); and
 - exhibit values and behaviors appropriate for effective professional practice in a democratic society.
- The school as a partner with public and school communities in addressing today's educational challenges.

Organization

The chief administrative office for the School of Education is the Office of the Dean. The school is

organized for the management of instruction and degree programs into three divisions:

Educational Studies. Programs in administration and supervision, adult education and human resource development, and counselor education.

Health, Physical Education, and Recreation. Programs in physical education and recreation.

Teacher Education. Programs in early, middle, secondary, and special education; curriculum and instruction, including library/media and instructional technology; and reading.

The divisions are led by division heads with faculty assuming responsibility for curriculum and advisement by program cores. Each program core has a faculty member coordinator. See division sections in this *Bulletin* for details regarding each division.

Degree Programs

The School of Education offers degree programs leading to the following:

Master of Teaching

Early Education
Middle Education
Secondary Education
English
Foreign Languages
French
German
Spanish
History
History and Social Studies
Mathematics
Sciences
Biology
Chemistry
Interdisciplinary Science
Physics
Special Education
Dual Endorsement in Emotional Disturbance and Mental Retardation

Master of Education

Administration and Supervision
Educational Administration (Principalship)
Educational Administration (Optional Track)
Supervision of Instruction
Dual Major-Administration and Supervision
Adult Education and Human Resource Development
Counselor Education
Guidance and Counseling
Dual Certification in Counselor Education and Visiting Teacher
Curriculum and Instruction
Early Education
Gifted and Talented
Instructional Technology
Library/Media
Middle Education
Secondary Education
English

Foreign Languages
French
German
Spanish
Mathematics
Sciences
Biology
Chemistry
Interdisciplinary Science
Physics

Reading
Special Education
Early Childhood Special Education
Emotional Disturbance
Learning Disabilities
Mental Retardation
Severe Disabilities

Master of Science

Physical Education
Recreation, Parks, and Tourism

PhD in Urban Services

Adult Education and Human Resource Development
Educational Leadership
Administrative Leadership
Instructional Leadership
Research and Evaluation
Urban Services Leadership

Post-Baccalaureate Certificates

Human Resource Development
Teaching
Early Education*
Middle Education*
Secondary Education
English*
Foreign Languages
French*
German
Spanish
History/Social Studies
Mathematics
Sciences
Biology
Chemistry
Interdisciplinary Science
Physics

Post-Master's Certificates

Principalship
Reading Specialist

* Admission suspended

Extended Teacher Preparation Program

Any undergraduate student admitted to the University who declares a major in the College of Humanities and Sciences is also eligible to designate a specialization in early, middle, secondary or special education. Once the student has completed 90 credit hours,

he or she applies to the School of Graduate Studies to begin graduate study in the School of Education. Upon successful completion of the program, the student receives a Baccalaureate degree and a Master of Teaching degree. See the Division of Teacher Education section in this *Bulletin* for program details.

Licensure for Education Personnel

Licensure and endorsement are based in part on the successful completion of an approved program developed in response to nationally recognized standards. All degree programs offered by the School of Education are approved by the Virginia Department of Education and the National Council for the Accreditation of Teacher Education (NCATE). The Commonwealth of Virginia is a member of the National Association of State Directors of Teacher Education and Certification (NASDTEC), which has a national reciprocity agreement for teacher licensure. Therefore, all graduate programs in the School of Education have approved program status and are a part of the NASDTEC Certification Reciprocity Agreement.

Graduate Programs Leading to Initial Teacher Licensure

Individuals often decide to pursue a teaching career after they have completed a baccalaureate degree. Virginia Commonwealth University serves qualified individuals through approved programs leading to a Master of Teaching, Master of Education (special education) or, in selected shortage areas, a Post-Baccalaureate Certificate in Teaching. Upon completion of a degree program, graduates are eligible for both Virginia licensure and/or endorsement in the specific degree area.

Students seeking initial licensure in Virginia must have earned a liberal arts degree (or its equivalent) and pursue professional studies focusing on a specific area of preparation or licensure. Those without initial licensure who enter a program should expect to take some additional course work prior to awarding of a degree.

Those planning to teach at the secondary level must possess a major or its equivalent in the discipline in which they wish to teach and for which VCU offers the approved program teaching specialty.

Individuals who wish to obtain licensure in art education, music education, or theater education should consult the School of the Arts section of this *Bulletin*.

The Master of Teaching Program integrates undergraduate course work for a bachelor's degree in a liberal arts or science major with course work and graduate study leading to a Master of Teaching in a program area.

Facilities

The School of Education is housed primarily in Oliver Hall, where classroom, laboratory and activity centers, and faculty and administrative offices can be found. The Division of Health, Physical Education, and Recreation is located in the Franklin Street Gymnasium, which provides teaching facilities, as well as faculty and administrative offices for the division.

Support/Resource Offices

Various resource offices have been developed in the School of Education to provide support services for students, faculty, and programs. These support units include the Office of Academic Services, the Office of Graduate Studies in Education, the Office of Continuing Education and Field Services, and the Instructional Technology Center, which includes the Teacher's Resource Workshop, two computer laboratories, and the Word Processing Center.

Office of Academic Services

Program and Test Information. The Office of Academic Services provides basic information regarding the programs offered by the School of Education. Students may obtain various program forms in this office. Information regarding the PRAXIS series, Graduate Record Examination (GRE), and the Miller's Analogies Test (MAT) also can be obtained in this office.

Placements. Placements for students in practica, internships and externships are coordinated through the Office of Academic Services. These placements are primarily in school systems and other educational facilities located in the City of Richmond and the Counties of Chesterfield, Hanover, and Henrico.

Financial Aid. Information and applications for certain scholarships that are available to School of Education students can be obtained in the Office of Academic Services. All require that applicants be fully admitted to a graduate program in order to be eligible. Information on financial aid administered by the University can be found in Part I of this *Bulletin*.

Licensure and Endorsement. The Office of Academic Services serves as the center for information, materials and applications for those students seeking licensure and/or endorsement for educational personnel in Virginia.

Career Files. The Office of Academic Services maintains career-placement files for graduates with licensure. For further information on this service, contact the office.

Office of Graduate Studies in Education

Admission, Program and Test Information. The Office of Graduate Studies in Education provides basic information regarding admission to programs offered in the School of Education and processes all applications for admission. Students may also obtain various administrative forms and information about the GRE and the MAT in this office.

Financial Aid. The School of Education offers a small number of fellowships, assistantships, and scholarships each academic year. The Office of Graduate Studies in Education coordinates School of Education awards including applications and the distribution of funds. Applicants must be fully admitted to graduate degree programs within the School of Education in order to be eligible.

In addition to School of Education awards, each division may have grant funded, student worker positions

available. For information on these opportunities, contact the appropriate division head. Information on financial aid administered by the University can be found in Part I of this *Bulletin*.

PhD in Urban Services Program. The Office of Graduate Studies in Education is responsible for the administration of the PhD in Urban Services program. Refer to the PhD in Urban Services section of this *Bulletin*.

Office of Continuing Education and Field Services

The Office of Continuing Education and Field Services coordinates all offerings in the area of continuing education for the school. Off-campus offerings and in-service training opportunities include day-long staff development events, a series of structured workshops designed for certificate renewal or graduate credit, credit or non-credit courses, degree programs, and field studies and evaluation projects.

Instructional Technology Center

The Instructional Technology Center (ITC) provides educational technology and media support to students, faculty, and staff in the School of Education. Within the ITC are five components, each serving the school in unique ways.

The Teachers Resource Workshop is a self-service center that maintains the equipment and supplies necessary to create instructional materials. The Computer Teaching Lab is a state-of-the-art computer facility where faculty help prospective teachers learn how to use computer technology in classrooms. The Open Computer Lab is available for student use approximately 14 hours each day.

DIGIT is a computer based initiative that specializes in placing credit and non-credit course work on the Internet. The fifth component, Computing Services, supports the EDUNET system and has the responsibility for maintaining all of the computers and related equipment in the School of Education.

Centers and Institutes

Programs, resources, and scholarly and service endeavors of the school are extended by a number of academies, centers, institutions, and projects directed by the faculty. These include:

- Behavioral Intervention Program
- Capital Writing Project
- Career Connections Techlink
- Center for Distance Learning
- Center for School-Community Collaboration
- Centers for Professional Development
- Central Virginia Leadership Academy
- Metropolitan Educational Research Consortium
- Professional Development Schools
- Rehabilitation Research and Training Center
- Responsive Education Institute
- Virginia Adult Basic Education and Literacy Resource Center

Virginia Institute for Developmental Disabilities
 Early Childhood Special Education
 Special Education Training and Technical Assistance Center
 Virginia Institute for Law and Citizenship Studies

Other funded projects provide in-service training and personnel preparation training in the teaching of writing, special education and science projects.

Admission Procedures for Graduate Study

Application Procedures

Applicants for admission to graduate study in the School of Education should follow the application procedures as stated in Part I of this *Bulletin*. Note that applications cannot be processed until they are complete (including test scores). Admission information specific to each program can be found in the division section of this *Bulletin*.

Test Scores

Either the GRE, General Aptitude portion, or the MAT is required for the Master of Teaching, the Master of Education, the Master of Science, and the Post-Baccalaureate Certificate in Teaching. The PhD program requires the GRE, General Aptitude portion.

The Praxis Series (PRAXIS), although not required for graduate admission purposes, is required for placement in certain practica, internships, and externships, as well as for licensure in Virginia. Students should contact the Office of Academic Services or their advisers for the appropriate time to register for the PRAXIS.

Information about the tests may be obtained in the Office of Academic Services and the Office of Graduate Studies in Education.

Application Deadlines

The following application deadlines have been established for the Master of Education, the Master of Science, the Master of Teaching and the Post-Baccalaureate Certificate in Teaching.

March 15	Summer session term of entry
May 15	Fall semester term of entry
November 15	Spring semester term of entry

The PhD in Urban Services has the following application deadline:

March 15	Fall or summer session term of entry
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Students who are unable to enroll for the semester for which they are accepted may request a deferment.

General Admission Requirements

The admission decision will be made on an overall analysis of the following for each degree program. See each division section for any additional information.

Master of Teaching, Master of Education, Master of Science, and Post-Baccalaureate Certificate in Teaching

- A minimum GPA of 2.8 on a 4.0 scale on the last 60 semester hours of study.
Applicants whose GPA during the last 60 semester hours of course work falls between 2.4 and 2.79 for the Master of Education and Master of Science, or 2.6 and 2.79 for the Master of Teaching and Post-Baccalaureate Certificate in Teaching on a 4.0 scale would be considered for provisional admission. See Part I of this *Bulletin* for further information on provisional admission.
- Scores on the GRE or the MAT.
- An interview with the applicant may be required by the faculty of the core to which the applicant is seeking admission.

PhD in Urban Services

Refer to the PhD in Urban Services Program section of this *Bulletin* for admission requirements.

Advising and Student Program Planning

All students admitted to the School of Education are assigned advisers. Students are expected to work with their adviser to plan their programs of study. Each graduate program agreement or changes thereto must be approved by both the adviser and the appropriate division head, or the director of graduate studies for the PhD in Urban Services Program. Courses taken without approval are taken at the student's risk. Each student is required to complete and file a program plan with the division before the completion of the 6th credit hour.

Steps to Completing MEd and MS Degrees

Step	When	Where
1. Admission	0-6 Hours	Office of Graduate Studies in Education
2. Program of Studies	0-6 Hours	With adviser, approved by division head
3. Candidacy	12-18 Hours	Application approved by adviser, core coordinator, division head
4. Comprehensive Examination	30 Hours	Application to division office
5. Externship or internship	Usually the last semester of course work	Application from Office of Academic Services
6. Graduation	Last semester of course work. See current <i>Bulletin</i> for deadline.	Application from registrar (approved by adviser, division head, dean's office and returned to registrar)

The chart outlines the general steps to completing the Master of Education and the Master of Science degrees. Master of Teaching, Post-Baccalaureate Certificate in Teaching, and PhD in Urban Services students should refer to the appropriate division section of this *Bulletin* for information specific to these programs.

Admission to Candidacy

Admission to graduate study in the Master of Education or Master of Science program does not constitute candidacy for a degree. Rather, students who have been admitted to graduate study are advanced to degree candidacy upon the recommendation of the adviser, core faculty, and division in which the degree is sought.

Advancement to degree candidacy requires that students must have completed at least 12 but no more than 18 semester hours of graduate study with a minimum grade-point average of 3.0; must have demonstrated clearly the aptitude and ability to pursue graduate study, including independent study; must have exhibited a commitment to education as a profession; and must have demonstrated promise for a successful career in the field selected in terms of temperament and personality. Specific courses may be required prior to application for candidacy. Admission to degree candidacy is not an automatic process. Students must file an approved Application for Candidacy with their divisions. Only students who have been admitted to candidacy may pursue additional work toward the degree.

Comprehensive Examination

- All students in a Master of Education or Master of Science program must take a three-hour written comprehensive examination. Students must be registered for graduate course work in the semester in which they take the comprehensive examination.
- Written examinations will be given on the **first Saturday in November, the fourth Saturday in March, and the second Saturday in July**. Students must notify the department in writing of the intention to take the examination at least 30 days prior to the published date. All comprehensive examinations must be taken on dates indicated except for religious or health reasons. Any exceptions must be approved in advance by the division head.
- A minimum of three faculty members, designated by the core faculty, will evaluate each examination independently. Satisfactory performance on the comprehensive examination requires approval of two of the three evaluators.
- Any student failing the comprehensive examination must have a joint conference with at least two core faculty members, one of whom is the student's adviser, before taking the comprehensive examination again.
 - During the conference, the core faculty members may recommend additional academic preparation and/or competencies which must be met by the student prior to retaking the comprehensive examination.
 - The student will be notified by letter of the recommendations made by the core faculty in the conference.
- The student will have only two opportunities to take the comprehensive examination. Failure to pass the comprehensive examination the second

time will result in the student being dropped from the degree program.

Transfer Credit

A maximum of six credit hours of acceptable graduate credit may be transferred into a graduate degree program. Course work taken prior to being admitted to a program in the School of Education and not applied to another degree may be applied for transfer. This includes course work taken at VCU.

Course work submitted for transfer is evaluated by the student's adviser and the division head. See the PhD in Urban Services Program section of this *Bulletin* for further information regarding transfer credit for this program.

As a general rule, continuing education courses taken at institutions other than VCU will not be transferred.

Students seeking to earn credit at other institutions after acceptance to a graduate program in the School of Education must receive prior approval from their advisers and the division head, or the director of graduate studies for the PhD program. See Part I of this *Bulletin* for further information regarding transfer credit.

Division of Educational Studies

- Bailey, James W. *Professor Emeritus* MEd, University of Chicago; human development and learning.
- Beale, Andrew V. *Professor* EdD, University of Virginia; counseling, career development, and parent education.
- Bost, William A. *Professor Emeritus* EdD, George Peabody College; managerial communications, educational improvement strategies.
- Cauley, Kathleen M. *Associate Professor* PhD, University of Delaware; cognitive development, educational psychology.
- Craver, Samuel M. *Professor* PhD, University of North Carolina; history and philosophy of education.
- Dilworth, Robert L. *Assistant Professor* EdD, Teachers College Columbia University; adult education.
- Duncan, Jack A. *Professor Emeritus* EdD, University of Georgia; group procedures, communications.
- Ely, Vivien K. *Professor Emerita* EdD, North Carolina State University; curriculum and instruction in occupational education.
- Gerber, Paul J. *Professor* PhD, University of Michigan; special education, learning disabilities, effective teaching.
- Hepfner, Thomas A. *Associate Professor* PhD, Ohio State University; vocational education and curriculum and instruction.
- Keesee, C. Gordon, Jr. *Professor Emeritus* EdD, University of Virginia; counselor education, educational measurement.
- Lambie, Rosemary A. *Associate Professor* EdD, University of Kansas Medical Center; special education-emotional disturbance, educational administration.
- Leone, Susan D. *Assistant Professor* EdD, University of Virginia; counseling, ethics and professionalism, group work.
- Linder, Fredric I. *Assistant Professor* PhD, State University of New York at Buffalo; human development and learning, educational psychology.
- Londoner, Carroll A. *Professor* PhD, Indiana University; adult learning, human resource development, program development.
- McMillan, James H. *Professor* PhD, Northwestern University; research methods, educational psychology.
- Ozmon, Howard A. *Professor Emeritus* EdD, Columbia University; philosophy of education, educational futures.
- Phillipsen, Maike *Assistant Professor* PhD, University of North Carolina; foundations of education.
- Sandkam, Sherry T. *Assistant Professor and Associate Dean, School of Graduate Studies* PhD, Virginia Commonwealth University; urban services.
- Schumacher, Sally A. *Associate Professor* PhD, Washington University; educational and evaluation research methods and design, curriculum, and program evaluation.

- Seyfarth, John T. *Professor and Division Head* EdD, University of Tennessee; developmental aspects of teachers' beliefs about their work, personnel management in schools.
- Sharman, Charles C. *Associate Professor Emeritus* EdD, University of Virginia; public school finance, public school administration.
- Sherron, Ronald H. *Professor Emeritus* PhD, University of North Carolina; adult learning, program evaluation, program planning, human resource development.
- Strandberg, Warren D. *Professor* PhD, Northwestern University; philosophical and social foundations of education.
- Vacca, Richard S. *Professor* EdD, Duke University; educational law.
- Wergin, Jon F. *Professor* PhD, University of Nebraska; educational psychology, educational research and evaluation, adult education.
- Whitlock, A. Gaynelle *Associate Professor Emerita and Director of the Center for School-Community Collaboration* EdD, University of Virginia; counselor education.

The Division of Educational Studies houses three degree-granting programs: 1) The MEd in Adult Education and Human Resource Development; 2) the MEd in Counselor Education; and 3) the MEd in Educational Administration and Supervision. In addition, the division hosts degree tracks in Educational Leadership and Adult Education and Human Resource Development in the PhD in Urban Services Program. The division also provides foundational courses in philosophy, sociology, and history of education, educational psychology, and research methods to degree-granting programs in the School of Education and across the University.

In addition to these education programs, the division manages the Center for Distance Learning, Center for School-Community Collaboration (SCC), Centers for Professional Development (CPD), Central Virginia Leadership Academy (CVLA), Metropolitan Educational Research Consortium (MERC), School Renewal Institute (SRI), and the Virginia Adult Basic Education and Literacy Resource Center. Division faculty are involved in a wide range of research and public service activities through these program centers.

Division Mission and Values

The Division's mission is to: 1) prepare graduates to perform effectively as leaders, counselors, and instructional or human resource development specialists in multicultural settings in the public and private sectors; 2) improve professional practice by informing students about best practices and conducting research intended to improve practice in human service agencies; and 3) provide foundational studies to prepare graduates who will be guided in their work as professionals by the thought of classical and contemporary scholars.

The faculty subscribe to the following values:

- The faculty are committed to providing quality programs and supportive professional relationships for all students.
- The faculty seek to foster a learning community of diverse people who enjoy one another and stimulate one another's best work.
- The faculty actively work to improve their teaching and advising both individually and collectively.
- The faculty value active engagement in research and regular participation in programs and activities of appropriate professional groups.

- The faculty promote partnerships with colleagues, practitioners and lay people for the purpose of improving their own and others' professional competencies.

Awards

The **William C. Boshier, Jr. Scholarship** is awarded annually to an outstanding student in the Educational Administration Program. The scholarship is supported by the School of Education.

The **MERC Research Fellowship Awards** are designed to prepare individuals for leadership and research positions at the school, division, state, and federal levels and/or teaching, research, and consulting positions in higher education. MERC Fellows are sponsored by Virginia Commonwealth University. They support the work of the Metropolitan Educational Research Consortium (MERC), which is composed of Virginia Commonwealth University and regional metropolitan school divisions.

The **Educational Foundations Award** is presented by the faculty to an outstanding student in the foundations of education. The award is supported by the Foundations faculty and the division.

MEd Program in Administration and Supervision

The MEd and certification programs in Administration and Supervision are designed to prepare individuals for leadership roles in the schools. The curriculum emphasizes the policy context of administration, leadership, and instructional and operational management. These emphases orient students toward the broad spectrum of management and leadership problems, functions, and opportunities likely to be encountered in educational organizations. The program is accredited by the National Association of Colleges of Teacher Education and was awarded approved program status by the Virginia Department of Education.

MEd Programs. Students have four options in receiving the Master of Education in Administration and Supervision:

- Educational Administration (Principalship)
- Educational Administration (Optional Track)
- Supervision of Instruction
- Dual Major-Administration and Supervision

Students already holding a master's degree who desire only certification as a principal or supervisor of instruction should apply to the Certificate Program in the Principalship or to the Certification Seekers Program. Descriptions of these program options follow.

Educational Administration (Principalship)

The MEd in Administration (Principalship) is a 36-hour program designed for individuals who aspire to leadership positions in schools. Applicants are expected to have had at least two years successful teaching experience at the level at which they hope to be a principal. Students who wish to receive endorsement as a principal also will need to complete ASE 604, EDU 672, and the Principals Assessment Center.

Credits
21

Core Clusters
 Educational Governance and the Policy Environment (6 credits)
 ASE 600 Public School Administration
 ASE 611 School Law
 Leading Individuals/Groups/Organizations (9 credits) (select 3 courses)
 EDU 604 Adult Development
 ASE 605 Educational Administration and Organizational Behavior
 ASE 606 Development and Change in Educational Organizations
 ASE 607 Principles of Educational Leadership
 Context of Schooling (6 credits)
 EDU 660 Research Methods in Education
 EDU 673 Seminar on Educational Issues, Ethics, and Policy

Specialization Clusters 15
 Instructional Leadership in Education (9 credits) (select 3 courses)
 EDU 609 Learning Theories in Education
 EDU 615 Curriculum Development
 ASE 601 Processes of Instructional Leadership
 ASE 620 Improving School Programs and Performance
 Managing School Resources/Operations (6 credits)
 ASE 621 Management of School Operations and Support Programs
 ASE 641 School Personnel Administration

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Educational Administration (Optional Track)

The MEd in Administration and Supervision (Optional Track) is a 36-hour program designed for individuals who aspire to leadership or policy positions in educational settings other than schools. This program will not lead to certification as a school principal.

All students must take the core clusters (21 credits). All students, with the approval of their advisers, develop a specialization cluster of 15 credits to achieve their career goals (i.e., Higher Education Administrator, Special Education Administrator, Vocational Education Administrator, Personnel Administrator, Business/Finance Administrator).

Credits
21

Core Clusters
 Educational Governance and the Policy Environment (6 credits)
 ASE 600 Public School Administration
 ASE 611 School Law
 Leading Individuals/Groups/Organizations (9 credits) (select 3 courses)
 EDU 604 Adult Development
 ASE 605 Educational Administration and Organizational Behavior
 ASE 606 Development and Change in Educational Organizations
 ASE 607 Principles of Educational Leadership
 The Context of Schooling (6 credits)
 EDU 673 Seminar on Educational Issues, Ethics and Policy
 EDU 660 Research Methods in Education

Specialization Clusters 15
 Selected with adviser

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Supervision of Instruction

The MEd in Supervision prepares future leaders in curriculum and instruction. The MEd program in supervision leads to state certification in that specialty. Applicants should have a minimum of two years successful teaching experience.

	<i>Credits</i>
Foundations Core	9
EDU 660 Methods in Education Research	
EDU 609 Learning Theories in Education	
EDU 673 Seminar on Educational Issues, Ethics and Policy	
Program Core	18
ASE 600 Public School Administration	
ASE 601 Processes of Instructional Leadership	
ASE 606 Development and Change in Educational Organizations	
ASE 620 Improving School Programs and Performance	
EDU 615 Curriculum Development	
EDU 672 Internship:Supervision	
Electives	12
Select 4 courses with adviser's approval	
	39

Dual Major-Administration and Supervision

Some students may wish to complete the course requirements for a dual major in administration and supervision. Those who choose the dual major must complete all required course work for both the administration and supervision majors, a total of 42 hours.

Certification Programs

The Division of Educational Studies offers certification programs for individuals who aspire to become school principals or supervisors of instruction. Applicants for a certification program must have completed a master's degree at an accredited university. Upon satisfactory completion of an approved plan of study, the individual will be recommended to the Virginia Department of Education for certification in the appropriate specialization.

Post-Master's Certificate in Principalship

Individuals who have completed the MEd in Principalship or equivalent may qualify for endorsement as a school principal by completing the Post-Master's Certificate in Principalship. Applicants must have had two or more years teaching experience and must have earned a master's degree in education. All requirements for admission to the graduate school apply to applicants for the Post-Master's Certificate in the Principalship.

Students are required to complete a minimum of 21 hours beyond the master's, including 15 credits in required courses and six credits in selective courses. Equivalent courses taken within the last five years may transfer; advisers tailor the selective courses based upon students' experiences and goals.

Required Courses	<i>Credits</i>
ASE 600 Public School Administration	15
ASE 604 Principalship Seminar	
ASE 605 Educational Administration and Organizational Behavior	
ASE 611 School Law	
EDU 672/700 Internship/Externship	
Restricted Selectives (with approval of adviser)	6
ASE 601 Processes of Instructional Leadership	
ASE 606 Development and Change in Educational Organizations	
ASE 607 Principles of Educational Leadership	
ASE 620 Improving School Programs and Performance	
ASE 621 Management of School Operations and Support Programs	
ASE 641 School Personnel Administration	
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Supervisor's Certification

Completion of the MEd in Supervision of Instruction automatically qualifies the degree holder for certification as a school supervisor. Individuals who hold a master's degree in another field and who wish to become certified in supervision must submit a program proposal for approval by the faculty. Required courses are listed under the MEd in Supervision program. Appropriate work experience may be substituted for up to six credit hours of course work with approval of the faculty.

MEd Program in Adult Education and Human Resource Development

The MEd in Adult Education and Human Resource Development program is designed to provide professional growth experiences that will increase the skills and understanding needed to plan, implement, manage, and evaluate educational programs for adults. Opportunities exist to design programs of study with emphasis in numerous areas. Portfolio assessment, real problem solving and action learning are incorporated in the curriculum.

Foundations Core	<i>Credits</i>
	9
Human Development and Learning (one of the following)	
EDU 604 Adult Development	
EDU/PSY 607 Advanced Educational Psychology	
Cultural, Historical, and Philosophical (one of the following)	
EDU 601 Philosophy of Education	
EDU 608 History of Western Education	
EDU 610 Social Foundations of Education	
EDU 612 Education and the World's Future	
EDU 614 Contemporary Educational Thought	
EDU 673 Seminar on Educational Issues, Ethics, and Policy	
Research (one choice)	
EDU 660 Research Methods in Education	
Program Core (taken sequentially)	15
ADE 600 Adult Education Perspective	
ADE 601 The Adult Learner	
ADE 602 Adult Program Planning, Management, and Evaluation	
ADE 603 Instructional Strategies for Adults	
ADE 604 Adult Education Seminar	

Externship*	(3)
EDU 700 Externship	
Electives	15
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* Students who have not had Adult Education or Human Resource Development experiences or who would like to broaden their backgrounds may elect an externship for one or two semesters' duration.

Electives

The purpose of the electives is to complement the student's major area and to support the student's professional goals. Thus, the suggested electives are grouped by topic. A content specialty is possible if all electives are taken in a specific topic area (12 to 15 hours); however, it is not necessary to take all electives from one specific topic area. Electives should be decided in conjunction with the student's adviser. If the student's content specialty interest is in another school or department (i.e., Business, Psychology, Allied Health Professions, etc.), it is possible to take electives in that area.

	<i>Credits</i>
Administration-Public Systems	15
ASE 601 Processes of Instructional Leadership	
BUS 540 Management Theory and Practice	
BUS 570 Concepts and Issues in Marketing	
BUS 641 Organizational Behavior	
BUS 651 Organization Communication	
Adult Literacy Training	18
EDU 566 Diagnosis and Remediation in Reading	
EDU 615 Curriculum Development	
EDU 620 Designing Modular Instructional Packages	
EMO 603 Interactive Strategies in Teaching Students with Special Needs	
COE 606 Assessment Techniques for Counselors	
REA 602 Teaching Reading to Adults	
Correctional Education	12
PSY 616 Psychopathology	
SOC 612 Seminar in the Sociology of Deviant Behavior	
SOC/CRJ 620 Seminar in Criminology	
CRJ 501 Criminal Justice Assessment	
Counseling	12
ASE 642 Organization and Administration of Guidance Services	
COE 601 Theories of Counseling	
COE 605 Career Information and Exploration	
COE 606 Assessment Techniques for Counselors	
Educational Gerontology	15
GTY 501 Physiological Aging	
GTY 601 Biological and Physiological Aging	
GTY 604 Problems, Issues, and Trends in Gerontology	
GTY 605 Social Gerontology	
GTY 606 Aging and Human Values	
Educational Research	15
EDU 556 Computer Applications in Education	
EDU 660 Research Methods in Education	
EDU 661 Educational Evaluation:Models and Designs	
EDU 662 Educational Measurement and Evaluation	
EDU 710 Educational Research Design	
Human Resource Development	15
ADE 620 Human Resource Development Overview	
ADE 621 Skills Development for Human Resource Development	

ADE 622 Human Resource Development Strategies and Interventions	
ADE 704 Groups, Teams, and Organizational Learning	
ADE 705 Global Human Resource Development	

Elective (other options)	
ADE 700 Management of Adult Education and Human Resource Development Programs	
ADE 701 Advanced Program Planning in Adult Education and Human Resource Development	
ADE 702 Seminar in Adult Learning Theories	
ADE 703 The Adult Education and Human Resource Development Consultant	
BUS 540 Management Theory and Practice	
PSY 604 Social Psychology of Business and Industry	

Health Services	12
AHP 573 Teaching in Health Professional Schools	
HAD 602 Health Care Organization and Services	
HAD 609 Health Systems Analysis and Evaluation	
HAD 615 Health Care Politics and Policy	

Special Education	15
EDU 558 Educating Students with Multiple Disabilities	
EDU 566 Diagnosis and Remediation in Reading	
EDU 573 Introduction to Learning Disabilities	
MRT 556 Introduction to Mental Retardation	
MRT 610 Teaching Strategies for Students with Severe Disabilities	

Human Resource Development Certification Program

An 18 semester hour program is offered in Human Resource Development for those wishing to pursue career interests in this field. Students may elect to earn the degree as well after completing the certification program. Students must have a minimum of four "A's" in the certification program and no grade lower than "B" in the remainder, to gain certification. A certificate and a customized letter citing student capabilities are issued upon program completion. The six required courses are:

ADE 601 The Adult Learner	
ADE 620 Human Resource Development Overview	
ADE 621 Skills Development for Human Resource Development	
ADE 622 Human Resource Development Strategies and Interventions	
ADE 704 Groups, Teams, and Organizational Learning	
ADE 705 Global Human Resource Development	

MEd in Counselor Education

The MEd in Counselor Education program is designed primarily to prepare counselors for elementary, middle, and high schools in the Commonwealth of Virginia and the nation, and secondarily to prepare counselors for higher education and community agencies. The program leads to school counseling licensure and preparation for advanced graduate work at the post-master's level. While licensure as a teacher and teaching experience may be required for employment as a school counselor, applicants for the MEd in Counselor Education program do not have to meet such criteria.

The faculty make every effort to assist students in individualizing a graduate program to their professional needs and interests. However, the mature student will recognize that individualization takes place in an environment of legitimate constraints revolving around institutional and license requirements. Faculty view

each program as more than simply an aggregate of courses, and students should plan all program work with their faculty advisers.

A joint program with the School of Social Work provides a dual certification for both counselor and visiting teacher. Also available through the School of Social Work is a cooperative certification program in school social work.

For students who already have a master's degree in education, the 30 credits of program core courses in guidance and counseling will lead also to recommendation for licensure as a school counselor. Students wishing this licensure must meet with the core coordinator and file a plan of study. Although students holding master's degrees do not apply for admission to the graduate program, they must file the appropriate plan of study in order to qualify for the VCU approved program of study.

Guidance and Counseling	<i>Credits</i>
Foundations	9
Human Development and Learning (one of the following) EDU 602 Adolescent Growth and Development EDU 603 Seminar in Child Growth and Development EDU 604 Adult Development EDU/PSY 607 Advanced Educational Psychology EDU 609 Learning Theories in Education	
Cultural, Historical, and Philosophical (one of the following) EDU 601 Philosophy of Education EDU 608 History of Western Education EDU 610 Social Foundations of Education EDU 612 Education and the World's Future EDU 614 Contemporary Educational Thought EDU 673 Seminar on Educational Issues, Ethics, and Policy	
Research EDU 660 Research Methods in Education	
Program Core	30
COE 600 Introduction to Guidance COE 601 Theories of Counseling COE 602 Practicum: Techniques of Counseling COE 603 Group Procedures in Counseling COE 604 Practicum: Group Procedures in Counseling COE 605 Career Information and Exploration COE 606 Assessment Techniques for Counselors	
Restricted Elective COE 610 Guidance in Elementary and Middle Schools COE 621 Secondary School Guidance Seminar EDU 700 Externship (6 credits) 300 clock hours of actual work in an appropriate setting. Students wanting placement in elementary, middle, or high schools may not fulfill this requirement during the summer.	
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Dual Certification in Counselor and Visiting Teacher

Students seeking dual certification must complete the above MEd in Counselor Education program, plus the Visiting Teacher program described below.

Visiting Teacher	<i>Credits</i>
MEd in Guidance and Counseling Program	39
Program Core LDS 600 Characteristics of Persons with Learning Disabilities SLW 601 Human Behavior in the Social Environment I SLW 606 Social Welfare Policy, Community Planning and Organizational Practice II SLW 717 Social Work Practice in the School Settings	12
Restricted Elective to be selected	3
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Division of Health, Physical Education, and Recreation

Ballinger, Debra *Assistant Professor* PhD, Arizona State University; adaptive physical education and sport psychology.
Cain, Richard E. *Assistant Professor* PhD, Pennsylvania State University; health education.
Davis, Robert G. *Professor* PhD, University of Maryland; elementary physical education.
Dintiman, George B. *Professor* EdD, Columbia University; research methods, health education.
Gayle, Richard *Associate Professor* EdD, University of Tennessee; exercise physiology.
Getty, Deborah *Assistant Professor* PhD, University of California at Berkeley; sports psychology, moral development.
Groves, Barney R. *Professor* PhD, Florida State University; fitness, tests and measurement.
Long, Veronica H. *Assistant Professor* PhD, University of Waterloo; international travel and tourism.
Mills, Allan S. *Associate Professor* PhD, University of Minnesota; travel and tourism, outdoor recreation, leisure behavior.
Pratt, LeEtta *Associate Professor* EdD, Oregon State University; health education.
Ready, Keith F. *Associate Professor* PhD, Michigan State University; leisure behavior, park planning and outdoor recreation.
Reynolds, Ronald P. *Professor* PhD, University of Illinois; therapeutic recreation and social/psychological determinants of leisure.
Schiltz, Jack H. *Associate Professor and Division Head* EdD, Columbia University; motor learning, aquatics.
Smith, Robin *Assistant Professor* EdD, Indiana University; therapeutic recreation, leadership and program development.
Wise, Michael S. *Associate Professor* EdD, University of Georgia; management of leisure delivery systems and administration.

MS Program in Physical Education

The Master of Science in Physical Education and the Master of Science in Recreation, Parks, and Tourism are designed to provide advanced educational preparation for practitioners and students pursuing careers in public school health and physical education, exercise science, and diverse leisure settings and agencies. All programs focus on the exploration of theoretical foundations and the development and application of specialized professional knowledge, skills, and abilities.

The recreation, parks, and tourism degree requires a minimum of 36 semester hours of graduate study while the physical education degree requires 33 semester hours. Students in the recreation, parks, and tourism program are expected to complete a research requirement, while it is optional for students in Health and Physical Education.

Students have the option of selecting course work oriented toward one of two options: teacher education or

exercise science. Applicants planning to enter the teaching profession should hold a valid teaching endorsement.

Teacher Education Track	<i>Credits</i>
Foundations	9
Human Development and Learning (one of the following) EDU 602 Adolescent Growth and Development EDU 603 Seminar in Child Growth and Development EDU 604 Adult Development EDU 605 Theory and Practice of Educating Individuals with Special Needs EDU/PSY 607 Advanced Educational Psychology EDU 609 Learning Theories in Education	
Cultural, Historical, and Philosophical (one of the following) EDU 601 Philosophy of Education EDU 608 History of Western Education EDU 610 Social Foundations of Education EDU 612 Education and the World's Future EDU 614 Contemporary Educational Thought EDU 673 Seminar on Educational Issues, Ethics, and Policy	
Research EDU 660 Research Methods in Education	
Core Courses	15
PHE 600 Seminar in Motor Learning Performance PHE 601 Movement Physiology PHE 602 Development of Research Techniques in Physical Education PHE 603 Applied Fitness and Nutrition for Health and Physical Education Professionals and Coaches PHE 605 Critical Issues in Health Education PHE 611 Mechanical Analysis of Human Motion	
Electives (chosen with approval of adviser)	9
PHE 500 Motor Development of Young Children PHE 514 Physical Education for Special Populations PHE 521 Athletic Care and Training PHE 600 Seminar in Motor Learning Performance PHE 603 Applied Fitness and Nutrition for Health and Physical Education Professionals and Coaches PHE 604 Sports Nutrition PHE 606 Psychosocial Aspects of Sports PHE 613 General Motor Ability Evaluation PHE 614 Motor Assessment for Special Populations EDU 641 Independent Study EDU 681 Investigations and Trends in Teaching REC 797 Research Project EDU 798 Thesis	

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Exercise Science Track	<i>Credits</i>
Research Core (both courses required) PHE 602 Development of Research Techniques in Physical Education (3) EDU 660 Methods in Research (3)	6
Professional Core (all six courses required) PHE 600 Seminar in Motor Learning Performance (3) PHE 604 Sports Nutrition (3) PHE 601 Movement Physiology (3) PHE 605 Critical Issues in Health Education (3) PHE 603 Applied Fitness and Nutrition for Health and Physical Education Professionals and Coaches (3) PHE 611 Mechanical Analysis of Human Motion (3)	18

Research Application
(Select option based on area of interest)* 3-6
EDU 641 Directed Independent Study (3)
OR EDU 798 Thesis (6)

* (Thesis required for students choosing Exercise Physiology emphasis)

Directed Electives 3-9

Clinical Exercise Science (9 credits)
Designed for students entering clinical fields.
PHE 701 Clinical Exercise Physiology (3)
EDU 700 Externship (6)
[Research Application: EDU 641]

Exercise Physiology (3 credits)
Designed for students seeking advanced degrees or research settings.
PHE 701 Clinical Exercise Physiology (3)
[Research Application: EDU 798]

Movement Assessment (6 credits)
Designed for students interested in motor assessment in exercise science.
PHE 613 General Motor Ability Evaluation (3)
PHE 614 Motor Assessment of Special Populations (3)
[Research Application: EDU 641 or EDU 798]

Community Wellness (6 credits)
Designed for students seeking practical applications of exercise science.
PHE 521 Athletic Care and Training (3)
REC 609 Program Development and Management (3)
[Research Application: EDU 641 or EDU 798]

Special Populations (9 credits)
Designed for students interested in exercise science as it relates to specific populations.
Choose 3 of the following courses
EDU 604 Adult Development (3)
GTY 501 Physiological Aging (3)
GTY 606 Aging and Human Values (3)
PHE 606 Psychosocial Aspects of Sport (3)
[Research Application: EDU 641]

All students are expected to pass a comprehensive examination.

MS Program in Recreation, Parks, and Tourism

Students are expected to select one of three specialty areas: leisure service management, therapeutic recreation, or travel and tourism.

Leisure Service Management. This area is designed for students who wish to expand their professional preparation for general administration and leadership in public or private leisure service organizations.

Therapeutic Recreation. This area of specialization is for students who wish to undertake advanced study in preparation for careers in leadership and supervision of recreation programs for disabled persons in clinical, residential, or community settings.

Travel and Tourism. The emphasis of this option is on advanced study for students who are interested in travel and tourism.

	Credits
Core	15
REC 601 Conceptual Foundations of Recreation, Parks, and Tourism	
EDU 660 Research Methods in Education	
REC 604 Research Practicum	
REC 690 Seminar	
The research requirement can be met by one of the following options	
REC 604 Research Practicum and REC 797 Research Project, or	
REC 604 Research Practicum and REC 798 Thesis, or	
REC 604 Research Practicum and an elective course approved by the adviser	
Specialty	6
Leisure Service Management	
REC 602 Organization and Administration of Recreation and Parks Systems (3)	
REC 609 Program Development and Management (3)	
Therapeutic Recreation	
REC 506 Contemporary Issues in Therapeutic Recreation (3)	
REC 605 Program Development in Therapeutic Recreation (3)	
Travel and Tourism	
REC 510 Tourism Policy (3)	
REC 608 Analysis and Planning for Travel and Tourism (3)	
Electives	15
Fifteen hours of elective course work, a minimum of 9 hours in related disciplines, will be selected with the consent of the student's academic adviser.	

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Second Undergraduate Degree – Therapeutic Recreation Specialization

For individuals who are seeking certification in therapeutic recreation, the second undergraduate degree program may be preferable to obtaining a master's degree in this field. VCU requires a minimum of 30 credits for the second undergraduate degree. An individualized program is developed around the eligibility requirements as established by the National Council on Therapeutic Recreation Certification, using appropriate department and support course offerings. For further details, see Recreation, Parks and Tourism section in the *Undergraduate and Professional Programs Bulletin*.

Division of Teacher Education

Alder, Nora I. *Assistant Professor* EdD, University of Nevada-Las Vegas; curriculum, diversity, classroom management, qualitative research.

Boraks, Nancy *Associate Professor* PhD, University of Colorado; peer impact on learning, ethnographic study of adult learning.

Boyle, Joseph R. *Assistant Professor* PhD, University of Kansas; learning disabilities, academic interventions/strategies, inclusion.

Brittain, Mary M. *Associate Professor Emerita* PhD, University of Miami.

Christenbury, Leila *Professor* EdD, Virginia Polytechnic Institute and State University; teaching methods, adolescent literature, issues in American education.

Davis, Michael D. *Professor and Director, Graduate Studies in Education* PhD, University of Illinois; school change, issues in teacher education.

Duncan, Patricia H. *Professor* EdD, University of Georgia; research in written composition in the elementary grades, perceptual factors and reading.

Fallen, Nancy H. *Professor Emerita* EdD, University of Maryland.

Fox, Jill E. *Assistant Professor* PhD, University of North Texas; early education, human development, family studies.

Garner, Howard G. *Professor* PhD, University of Florida; special education, emotional disturbance.

Gerber, Paul J. *Professor* PhD, University of Michigan; special education, learning disabilities, consultation.

Giacobbe, George A. *Associate Professor* PhD, University of Georgia; special education, mental retardation, emotional disturbance.

Gross, Ena *Associate Professor* PhD, Georgia State University; the use of hand-held calculators in learning mathematics in grades three-eight, the teaching and evaluating of mathematical problem solving.

Harvey, Jaye *Assistant Professor* EdD, Memphis State University; early childhood special education, behavior, parent counseling.

Heubach, Kathleen *Assistant Professor* PhD, University of Georgia; reading and language arts.

Hill, Ada D. *Associate Professor Emerita* EdD, American University.

Hodges, James O. *Associate Professor Emeritus* PhD, University of Colorado.

Hootstein, Edward *Assistant Professor* PhD, University of Oregon; social studies, diversity, classroom management.

Judd, William J. *Associate Professor* PhD, Syracuse University; instructional technology.

Kregel, John *Professor* EdD, University of Georgia; severe disabilities, vocational education for students with disabilities.

Lambie, Rosemary A. *Associate Professor* EdD, University of Kansas Medical Center; special education-emotional disturbance, educational administration.

Lohr, Michael C. *Associate Professor* EdD, University of Virginia; activities in the teaching of secondary mathematics, learning theory in the teaching of mathematics.

McLeod, Alan M. *Professor and Division Head* EdD, University of Virginia; adolescent literature (teaching literature), teaching writing.

Oehler, John S. *Associate Professor and Dean, School of Education* EdD, University of North Carolina; staff development, curriculum and instruction.

Orellove, Fred P. *Associate Professor and Executive Director, Virginia Institute for Developmental Disabilities* PhD, University of Illinois; severely and profoundly handicapped.

Pieper, Alice M. *Associate Professor Emerita* PhD, University of Maryland.

Reed, Daisy F. *Professor* EdD, Teachers College, Columbia University; classroom management, mainstreaming.

Rezba, Richard J. *Professor* PhD, Indiana University; reading in the content areas of math and science, consequence evaluation measures.

Richardson, Judy S. *Professor* PhD, University of North Carolina; reading in content areas, remedial and beginning secondary and adult readers.

Rossi, John A. *Assistant Professor* PhD, University of Wisconsin-Madison; history, social studies, curriculum.

Savitt, Charles M. *Assistant Professor* PhD, Arizona State University; integration of technology into instruction, newer technologies, Internet for educators.

Simon, Diane J. *Associate Professor and Associate Dean, School of Education* PhD, New York University; special education, deaf education.

Sparks, Howard L. *Professor Emeritus* EdD, Teachers College, Columbia University.

Tarter, Martin A. *Associate Professor Emeritus* EdD, University of Virginia.

Van de Walle, John *Professor* PhD, Ohio State University; concept development in early childhood mathematics, instructional strategies for elementary school mathematics.

Welhman, Paul *Professor and Executive Director, Rehabilitation Research and Training Center* PhD, University of Wisconsin; severe disabilities, vocational-career education.

Welch, Rizpah *Professor Emerita* EdD, Indiana University.

White, Doris *Associate Professor* EdD, University of Illinois; cognition and learning styles of young children, formation of values and attitudes among young minority children.

Wood, Judy W. *Professor* PhD, University of Southern Mississippi; mainstreaming, mental retardation.

Zaret, Esther *Professor Emerita* PhD, University of Wisconsin.

Division Mission

The Division of Teacher Education is committed to excelling in the initial and continuing preparation of teachers for the Commonwealth, with particular emphasis on early childhood through secondary education in diverse settings; to collaborating with colleagues in educational agencies; to applying research about learning in classrooms; to undertaking scholarly endeavors that examine learning and teaching processes; and to providing technical assistance to special populations and service to school divisions and agencies.

We value:

- providing the highest quality teaching and opportunities for learning;
- integrating academic disciplines, professional studies, and clinical experiences as program components for student learning;
- collaborating in the preparation of teachers and in the continuing development of faculty both within the University and in public and private educational settings;
- enabling teachers and intending teachers to work effectively with students from diverse populations and those with special needs;
- helping intending teachers become effective decision makers and practicing teachers refine their decision-making skills in the roles for which they are preparing;
- effectively modeling the use of technology to enhance and foster learning;
- incorporating, among others, developmental, cognitive, and functional approaches and content areas in the preparation of personnel in early, middle, secondary, and special education programs;
- serving the University through faculty participation in institutional committees and task forces, programs, and supportive research and service institutes and centers within the University; and
- serving the community through technical assistance, workshops, consulting education activities, Professional Development Schools, and other partnerships.

The Division of Teacher Education houses six degree and certificate granting programs.

Master of Education in Curriculum and Instruction
 Master of Education in Reading
 Master of Education in Special Education
 Master of Teaching
 Post-Baccalaureate Certificate in Teaching
 Post-Master's Certificate: Reading Specialist

Applicants for the Master of Education (MEd) degree who do not already hold a valid professional teaching license should expect to complete additional course work and other experiences prior to the granting of the degree. Students should plan carefully with their adviser to determine what additional undergraduate or graduate course work and experiences must be completed so that both degree and licensure requirements are met prior to awarding of the Master of Education degree.

The Division of Teacher Education offers the Master of Teaching degree (MT) in an Extended Teacher Preparation Program which integrates undergraduate and graduate work and leads to the awarding of a baccalaureate degree from the College of Humanities and Sciences and the MT degree from the School of Education (see the *Undergraduate and Professional Programs Bulletin*).

The Post-Baccalaureate Certificate in Teaching is designed for students with a bachelor's degree in areas other than education, an advanced degree in some other field, and who wish to become teachers in a shortage area but do not seek a master's degree. Students complete a minimum of 24 hours beyond the bachelor's level in a program area. Interested individuals should consult the Post-Baccalaureate Certificate section elsewhere in the School of Education part of this *Bulletin* for information and currently recognized shortage areas.

The Post-Master's Certificate for Reading Specialist is designed for holders of master's degrees who are already licensed as teachers and have at least three years of teaching experience. Students complete a minimum of 21 graduate credits beyond their master's degree. Interested individuals should consult the Post-Master's Certificate section later in the Teacher Education description of programs.

Professional Development Schools

VCU works with a number of school divisions in the Richmond Metropolitan Area. Agreements have been developed with particular schools where the faculty as a whole care about working with future teachers, participating in staff development and welcoming University faculty seeking faculty development, and exploring research on questions of interest to the school. Such schools are designated Professional Development Schools (PDS). For 1997-98, formal agreements were with Beaverdam Elementary (Hanover County), Mary Munford Elementary and Whitcomb Model Elementary (Richmond), Manchester Middle (Chesterfield County), Mt. Vernon Middle (Henrico County), and the Governor's School for Government and International Studies (Richmond, serving more than a dozen area school divisions).

Teacher as Decision Maker

The guiding theme of programs in the Division of Teacher Education is "teacher as decision maker." Courses and experiences provide opportunities for individuals to consider means of building on appropriate knowledge to make instructional and classroom decisions. (See section on this subject in the *Undergraduate and Professional Programs Bulletin* for the Division of Teacher Education.)

Awards

The **Virginia Arnold Scholarship** is awarded annually to one or more outstanding students who demonstrate financial need and who are enrolled in either the early or middle education teacher preparation program.

It is supported by an endowment created by Dr. Arnold, a former VCU faculty member.

The **Pearl Burford Scholarship** was established by her former students at Richmond Professional Institute. It is awarded to students planning to become elementary teachers.

The **Arnold P. Fleshood Scholarship** is awarded annually to a graduate student in the School of Education in reading/language education or a related field with an interest in reading/language arts.

The **N. Thelma Jones Scholarship** is awarded annually to an outstanding fifth-year student in the Master of Teaching program (secondary education). The scholarship is supported by an endowment honoring this former teacher by her brother.

The **Ann Elizabeth Marston Scholarship** is awarded annually to a student planning a career in elementary or secondary education and who demonstrates both leadership qualities and a need for financial assistance. The award is supported by an endowment established by Dr. and Mrs. Robert A. Wilson in memory of his aunt who helped finance his education.

The **S. Virginia and Berta M. Newell Endowed Scholarship** is awarded annually to an outstanding student, in a teacher preparation program in either early or middle education, who demonstrates financial need. It is supported by an endowment from their brother honoring his sisters who graduated from Richmond Professional Institute.

The **Division of Teacher Education Scholarship** was established by faculty for an academically talented major pursuing a teaching career working with children and youth who come from traditionally underserved populations or who demonstrates a commitment to teaching students who present special challenges.

MEd Program in Curriculum and Instruction

The Master of Education program in Curriculum and Instruction is designed to provide professional and cognate experiences for professionals wishing to become more effective teachers. Individuals may select to concentrate in early education, middle education, secondary education, gifted education, or instructional technology, which includes library/media. Content courses within the program may be selected with a discipline focus.

Foundations	<i>Credits</i> 9
Human Development and Learning (one of the following)	
EDU 602 Adolescent Growth and Development	
EDU 603 Seminar in Child Growth and Development	
EDU 604 Adult Development	
EDU/PSY 607 Advanced Educational Psychology	
EDU 609 Learning Theories in Education	
Cultural, Historical, and Philosophical (one of the following)	
EDU 601 Philosophy of Education	
EDU 608 History of Western Education	
EDU 610 Social Foundations of Education	
EDU 612 Education and the World's Future	
EDU 614 Contemporary Educational Thought	
EDU 673 Seminar on Educational Issues, Ethics, and Policy	

Research	
EDU 660 Research Methods in Education	
Process Level	6
EDU 615 Curriculum Development	
EDU 617 Instructional Models	
Content Level or Area of Focus	15
Elective	3
EDU 700 Externship	3
	36

Externships require a well-developed proposal submitted the semester prior to the experience. Guidelines may be obtained from the division office.

MEd Program in Reading

The Master of Education program in Reading is designed to provide prospective reading specialists with a program of sequential and integrated experiences in areas of the reading curriculum ranging from preschool to adult levels. Students will gain an understanding of the developmental and diagnostic processes involved in teaching, reading and the language arts and will become familiar with the resource and supervisory functions which are part of the specialist role. The MEd in Reading is an approved program (K-12) for students who meet Virginia State Department of Education requirements.

A cooperative agreement has been established with Virginia State University to permit selected, qualified students to complete the MEd in Reading. Up to 12 semester hours from an approved list may be transferred from the cooperating institution. Interested students should contact the Division of Teacher Education.

Foundations	<i>Credits</i> 9
Human Development and Learning (one of the following)	
EDU 602 Adolescent Growth and Development	
EDU 603 Seminar in Child Growth and Development	
EDU 604 Adult Development	
EDU/PSY 607 Advanced Educational Psychology	
EDU 609 Learning Theories in Education	
Cultural, Historical, and Philosophical (one of the following)	
EDU 601 Philosophy of Education	
EDU 608 History of Western Education	
EDU 610 Social Foundations of Education	
EDU 612 Education and the World's Future	
EDU 614 Contemporary Educational Thought	
EDU 673 Seminar on Educational Issues, Ethics, and Policy	
Research	
EDU 660 Research Methods in Education	
Program	18
EDU 561 Reading Foundations: Sociological/Psychological Perspectives	
EDU 562 Reading Instruction in the Content Areas	
EDU 672 Internship (in Reading)	
REA 600 Analysis and Correction of Reading Problems	
REA 605 Organizing and Implementing Reading Programs	

Restricted Elective
 EDU 525 Teaching Language Arts
 EDU 549 Developmental Reading in the Secondary School
 EDU 552/ENG 552 Teaching English as a Second Language
 REA 601 Psycholinguistics and Language Arts Curriculum
 REA 602 Teaching Reading to Adults

Electives	9
	36

Program candidates shall have completed at the graduate or undergraduate level 12 semester hours selected from the following areas.

- Measurement and Evaluation
- Child/Adolescent Psychology
- Psychology of Personality, Cognition or Learning
- Child/Adolescent Literature
- Language Arts Instruction
- Learning Disabilities
- Study of Contemporary Issues and Trends in the Teaching of Reading

MEd Program in Special Education

The Master of Education program in Special Education prepares graduates for work in one of five areas: Early Childhood Special Education, Emotional Disturbance, Learning Disabilities, Mental Retardation, or Severe Disabilities. Applicants who do not already hold a teaching license must meet both licensure and degree requirements prior to the awarding of the Master of Education degree unless exempted as a professional from another discipline. Students should plan carefully with their adviser to ensure that the appropriate courses and experiences are completed. Successful completion of one of the degree programs leads to endorsement in Early Childhood Special Education, Emotional Disturbance, Learning Disabilities, Mental Retardation, or Severe Disabilities.

Early Childhood Special Education

The Master of Education program in Early Childhood Special Education is a sequentially planned series of courses and clinical experiences designed to prepare individuals to work with young children, ages birth through five, with developmental disabilities and their families. Successful completion of the degree program qualifies students for teacher licensure with endorsement in Early Childhood Special Education by the Virginia Department of Education. Students are prepared to intervene with infants and young children representing a wide range of abilities; those considered at risk to those with severe disabilities. As a result of training, students will be prepared to fill a variety of early intervention roles. The program can be completed in five semesters of full-time study or six semesters of part-time study.

Credits
9

Foundations

Human Development and Learning
 EDU 603 Seminar in Child Growth and Development

Cultural, Historical, and Philosophical (one of the following)
 EDU 601 Philosophy of Education
 EDU 608 History of Western Education
 EDU 610 Social Foundations of Education
 EDU 612 Education and the World's Future
 EDU 614 Contemporary Educational Thought
 EDU 673 Seminar on Educational Issues, Ethics, and Policy

Research
 EDU 660 Research Methods in Education

Program Core	15
ECH 601 Assessment of Infants and Young Children with Disabilities	3
ECH 602 Instructional Programming for Infants and Young Children with Disabilities	3
ECH 603 Program Management, Collaboration, and Service Coordination in Early Childhood Special Education	3
EDU 700 Externship (2 semesters; 3 credits each)	6

Program Track 18-21

With Thesis	
EDU 798 Thesis	6
Selectives (from following list)	15

Without Thesis	
Selectives (from following list)	15

Electives (from following list)	3
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42-45

Selectives

- EDU 541 Infants and Young Children With Special Needs*
- EDU 542 Family/Professional Partnerships
- EDU 630 Trends in Special Education*
- EDU 558 Educating Students with Multiple Disabilities
- EDU 631 Behavior Management of Students with Disabilities
- MRT 500 Language/Communication Intervention for Young Children and Individuals with Severe Disabilities

* Students may not take both EDU 541 and EDU 630.

- Electives (3-6 credits as determined by adviser)
- EDU 625 Young Child and the Curriculum
- EDU 651 Special Topics in Education: Current Issues in Early Childhood Education
- IDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities
- SLW 711 Strategies for Social Work Planning and Administrative Practice
- ASE 632 Administration and Supervision of Special Education
- EDU 672 Internship

Emotional Disturbance

The Master of Education program in Emotional Disturbance provides teachers the professional knowledge and skills needed to work in a variety of settings: general education classrooms (where children with special needs are being included), resource rooms, self-contained classrooms, and residential programs. In developing teacher competencies the master's program focuses on specific skills and strategies for diagnosing and remedying behavior and learning problems of students with emotional disturbance. The educational and therapeutic interventions taught in the program are based on a number of theoretical models including behavioral, psychodynamic, ecological, and psychoeducational. An emphasis of the program is on collaboration with parents, with professionals from other disciplines, and with other community agencies and programs.

Program course work builds on a strong foundation of knowledge in psychology, child development, research, and education. Students receive in-depth training in how to identify students with emotional disturbances, how to diagnose individual needs, and how to plan and

deliver individualized programs in a team setting. Special training is provided in the teaching of reading, behavior management, and the use of interactive strategies teaching positive social skills. Graduates are prepared to work with students in completing a variety of transitions, such as from special education to the general education classroom or from high school to employment and independent living.

A program strength is the variety of placement opportunities for practica and externship experiences. These include a range of public and private schools and mental health programs in the Richmond area which allow graduate students to select field experiences that are consistent with their professional goals. Previous teaching experience is valued, but not required. Students without previous teaching experience must complete a practicum in addition to the externship. When students complete the program, they are eligible for licensure by the Virginia Department of Education with an endorsement to teach students with emotional disturbance in grades NK-12. Students are offered the option of taking full-time externship for one semester (either in the fall or spring), half-time externship for each of two semesters (fall and spring), or an on-the-job externship for one academic year duration following one year of successful teaching in that setting.

A personal interview with program faculty is required as a part of the admission process.

Foundations	<i>Credits</i> 9
Human Development and Learning (one of the following) EDU 602 Adolescent Growth and Development EDU 603 Seminar in Child Growth and Development EDU 604 Adult Development EDU/PSY 607 Advanced Educational Psychology EDU 609 Learning Theories in Education	
Cultural, Historical, and Philosophical (one of the following) EDU 601 Philosophy of Education EDU 608 History of Western Education EDU 610 Social Foundations of Education EDU 612 Education and the World's Future EDU 614 Contemporary Educational Thought EDU 673 Seminar on Educational Issues, Ethics, and Policy	
Research EDU 660 Research Methods in Education	
Special Education Core (six of the following) ASE 632 Administration and Supervision of Special Education EDU 630 Trends in Special Education EDU 631 Behavior Management of Students with Disabilities EDU 632 Secondary Programming for Students with Disabilities EDU 633 Educational Assessment of Individuals with Exceptionalities LDS 530 Language Disabilities: Assessment and Teaching EDU 566 Diagnosis and Remediation in Reading	18
Specialization Core EDU 566 Diagnosis and Remediation in Reading (3) EMO 500 Characteristics of Students with Emotional Disturbance (3) EMO 501 Teaching Students with Emotional Disturbance (3) EMO 603 Interactive Strategies in Teaching Students with Special Needs (3)	15

EDU 700 Externship (6)	
EDU 798 Thesis (Optional)	(6)
	42

Learning Disabilities

The Master of Education program in Learning Disabilities develops and refines the competencies needed for work with persons with learning disabilities in resource and self-contained settings at all levels and in a variety of cultural environments. Students enrolling in the program who do not have at least two years of appropriate work experience in an educational setting will be required to complete two semesters of externship during the regular academic year and may be required to complete additional fieldwork activities and/or credits. Students in bachelor's degree or extended programs who are planning to enroll are encouraged to consult with program faculty for assistance in selecting elective courses that provide a sound foundation and may reduce the number of additional courses necessary for certification.

Program course work encompasses broad concepts of education, research, development, related disciplines, and special education to build a foundation of professional knowledge and understanding. Specialized courses develop the intensive diagnostic/remedial/decision-making/consultative skills and understandings required of a professional in learning disabilities, including the ability to recognize educational and social problems, to formulate effective individualized instructional interventions using a variety of methodologies and modifications, to incorporate accommodations and transitions into program plans, and to consult productively with appropriate personnel in the development of maximum educational opportunities for students with learning disabilities.

Applicants for the MEd program in Learning Disabilities who hold a valid teaching license are encouraged to complete two years of successful teaching prior to admission. Applicants who hold a bachelor's degree in non-education or non-special education majors must complete a review process with program faculty as part of the admission process.

Foundations	<i>Credits</i> 9
Human Development and Learning (one of the following) EDU 602 Adolescent Growth and Development EDU 603 Seminar in Child Growth and Development EDU/PSY 607 Advanced Educational Psychology EDU 609 Learning Theories in Education	
Cultural, Historical, and Philosophical (one of the following) EDU 601 Philosophy of Education EDU 608 History of Western Education EDU 610 Social Foundations of Education EDU 614 Contemporary Educational Thought	
Research EDU 660 Research Methods in Education	
Special Education Core EDU 630 Trends in Special Education and the Mainstream EDU 631 Behavior Management of Students with Disabilities EDU 633 Educational Assessment of Individuals with Exceptionalities LDS 530 Language Disabilities: Assessment and Teaching	18

Academic Remediation Elective (select one)	
EDU 566 Remedial Reading	
EDU 569 Diagnosis and Remediation in Mathematics	
Career/Vocational Elective (select one)	
EDU 503 Guidance for Exceptional Children	
REH 611 Individual Counseling Approaches in Rehabilitation	
REH 623 Occupational Information, Analysis, and Placement	
Specialization Core	15
LDS 600 Characteristics of Persons with Learning Disabilities	
LDS 601 Methods of Clinical Teaching	
LDS 620 Advanced Educational Diagnosis of Developmental Processes OR LDS 621 Advanced Educational Diagnosis of Academic Problems	
EDU 700 Externship (Optional)	(6)
	42

Research	
EDU 660 Research Methods in Education	
Special Education Core	18
ASE 632 Administration and Supervision of Special Education	
EDU 630 Trends in Special Education	
EDU 632 Secondary Programming for Students with Disabilities	
EDU 633 Educational Assessment of Individuals with Exceptionalities	
LDS 530 Language Disabilities: Assessment and Teaching Elective	
Specialization Core	15
MRT 556 Introduction to Mental Retardation (3)	
MRT 560 Curriculum Design for Students with Mental Retardation (3)	
EDU 566 Diagnosis and Remediation in Reading (3)	
EDU 700 Externship (6)	
	42

Mental Retardation

Graduates of the Master of Education in Special Education–Mental Retardation program may fill roles as resource room, modified resource room, or self-contained classroom teachers in varied urban, suburban, or rural areas. Some graduates are employed in residential programs for individuals with mental retardation or in programs in community or state department settings. The Commonwealth of Virginia licenses their employment in public or private settings serving students from kindergarten through secondary school age.

The course of study includes a minimum of 42 credits designed around three components: foundations, special education core, and specialization in mental retardation. The foundations component is comprised of nine semester hours that focus on three distinct content areas: human development and learning; cultural, philosophical, and historical foundations; and research and evaluation methods. The special education core of 18 semester hours focuses on curriculum that is rooted in special education for individuals with mental retardation as well as other disabilities. The specialization in mental retardation is comprised of 15 semester hours that focus on the development of specific advanced competencies for filling the varying roles of professionals in mental retardation. With previous licensure in mental retardation, the program will require approximately one year of full-time study for completion. Students seeking initial licensure should consider the Master of Teaching which is designed for initial licensure seekers.

Foundations	<i>Credits</i> 9
Human Development and Learning (one of the following)	
EDU 602 Adolescent Growth and Development	
EDU 603 Seminar in Child Growth and Development	
EDU 604 Adult Development	
EDU/PSY 607 Advanced Educational Psychology	
EDU 609 Learning Theories in Education	
Cultural, Historical, and Philosophical (one of the following)	
EDU 601 Philosophy of Education	
EDU 608 History of Western Education	
EDU 610 Social Foundations of Education	
EDU 612 Education and the World's Future	
EDU 614 Contemporary Educational Thought	
EDU 673 Seminar on Educational Issues, Ethics, and Policy	

Severe Disabilities

Severe disabilities is designed to prepare teachers to work with students ages five to 21 in public school settings. Throughout the program, emphasis is placed on person-centered planning, school and community integration/inclusion, transdisciplinary teamwork, and the role of the family. Courses address physical and medical management issues, functional assessment strategies, longitudinal curriculum planning, systematic instruction, augmentative and alternative communication systems, assistive technology, transition from school to adulthood, positive behavioral supports, and the special needs of students with additional physical, sensory, and health-related disabilities.

Students enrolled in the program complete a field-based externship in their school (if they currently serve students with severe disabilities) or in one of the many public schools in the Richmond area. The externship is designed to meet the student's needs for professional development and is generally completed toward the end of the master's program.

Successful completion of the 42 credit hour program results in Virginia endorsement in Severe Disabilities, in addition to the Master of Education degree.

Foundations	<i>Credits</i> 9
Human Development and Learning (one of the following)	
EDU 602 Adolescent Growth and Development	
EDU 603 Seminar in Child Growth and Development	
EDU/PSY 607 Advanced Educational Psychology	
EDU 609 Learning Theories in Education	
Cultural, Historical, and Philosophical (one of the following)	
EDU 601 Philosophy of Education	
EDU 608 History of Western Education	
EDU 610 Social Foundations of Education	
EDU 612 Education and the World's Future	
EDU 614 Contemporary Educational Thought	
EDU 673 Seminar on Educational Issues, Ethics, and Policy	
Research	
EDU 660 Research Methods in Education	

Special Education Core	18
ASE 632 Administration and Supervision of Special Education	
EDU 542 Family/Professional Partnerships	
EDU 631 Behavior Management of Students with Disabilities	
EDU 632 Secondary Programming for Students with Disabilities	
EDU 633 Educational Assessment of Individuals with Exceptionalities	
Restricted Elective (select one)	
IDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities	
MRT 602 Curriculum for Students with Severe Disabilities	
Specialization Core	15
EDU 558 Educating Students with Multiple Disabilities	3
EDU 700 Externship	6
MRT 500 Language/Communication Intervention for Young Children and Individuals with Severe Disabilities	3
MRT 610 Teaching Strategies for Students with Severe Disabilities	3
	42

Master of Teaching

The Master of Teaching programs are designed to incorporate eligibility for initial teaching licensure in Virginia in early, middle, secondary (biology, chemistry, English, French, German, history, history and the social studies, mathematics, physics, science, Spanish), or special education (dual endorsement in emotional disturbance and mental retardation). [NOTE: Individuals seeking initial licensure in early childhood special education, learning disabilities, or severe disabilities should refer to the preceding Master of Education in Special Education listing.]

The approved programs include undergraduate qualifying courses as well. Individuals pursuing the Extended Program are awarded undergraduate and graduate degrees simultaneously; baccalaureate degree recipients who meet the admission criteria may also pursue the Master of Teaching degree program, including the qualifying courses. Admission criteria, including "Admission to Teacher Preparation," are the same as for the Extended Program described below.

Additionally, individuals pursuing licensure must have a liberal arts degree, as defined by Virginia Commonwealth University, germane to what they propose to teach: for secondary, a major in the subject to be taught; for middle, a major in one of the subjects traditionally taught in middle grades (English, mathematics, history and social studies, or a science); for early or special education, any major offered by the College of Humanities and Sciences is appropriate. Individuals who do not hold such a degree may satisfy it as follows: for middle or secondary education, the required, and as appropriate cognate, courses in the pertinent academic major; for early and special education, a liberal arts equivalency totaling at least 70 arts and sciences semester credits and consisting of no less than six hours in English (including composition), six hours in mathematics, seven hours in science (including one laboratory credit), three hours in human behavior and institutions, 12 hours in humanities, and 36 other credits from courses in literature, history, art or music history, foreign languages,

religious studies, philosophy, African-American studies, anthropology, economics, geography, international studies, political science, psychology, sociology, women's studies, or classical studies.

Extended Teacher Preparation Program

Any undergraduate student admitted to the University who declares a major in the College of Humanities and Sciences is also eligible to designate a specialization in early, middle, secondary or special education. Students in the Extended Program earn a baccalaureate degree in the College of Humanities and Sciences and a Master of Teaching degree in the School of Education. The baccalaureate is earned for prospective secondary teachers in the discipline they will teach (English, one of the foreign languages, a science, mathematics, history or one of the social studies). For prospective middle grade teachers, the majors most often pursued are English, history, one of the social studies, mathematics, or one of the sciences. For prospective early or special education teachers, any humanities or sciences major is appropriate. See the *Undergraduate and Professional Programs Bulletin* for detailed information on the requirements of the various baccalaureate degrees in the College of Humanities and Sciences.

Since the extended program integrates liberal arts and education content, as well as undergraduate and graduate courses, students begin taking the 300- and 400-level qualifying courses in education during their fourth or fifth semester. Courses numbered 500 or above generally apply to the master's degree component and, therefore, cannot be taken before formal application to graduate study is made. Admission to graduate studies is required before courses at the 600 and 700 levels can be taken. Important steps toward completing the extended program are detailed in a chart in this section.

Students in art, music, or theater education should consult the School of the Arts section of this *Bulletin*.

Note that completion of PRAXIS I is a prerequisite for enrollment in all clinical courses, including EDU 310. Students are also cautioned to apply for admission to graduate study prior to taking 600/700 level courses, since a maximum of six credit hours of graduate level course work can be transferred after admission.

Upon completion of the Extended Teacher Preparation Program, graduates are awarded both a bachelor's degree in a liberal arts/sciences discipline and a Master of Teaching degree.

The programs in early education and middle education are being changed respectively from nursery/kindergarten through grade 4 (NK-4) to nursery/kindergarten through grade 5 (NK-5) emphasis, and grades 4 through 8 (4-8) to grades 6 through 8 (6-8) emphasis. These changes affect students admitted to the extended program as freshmen for Fall 1998; for transfer, change of major, and degree-holders, the changes will be phased in later. Pre-teaching distribution of general education credits, including more in mathematics and the sciences, is being developed in collaboration with the College of Humanities and Sciences (see the *Undergraduate and Professional Programs Bulletin*).

Early Education, NK-4

(to be phased out by 2001)

Qualifying Courses

- EDU 300 Foundations of Education
- EDU 301 Human Development and Learning
- EDU 310 Practicum (student must take 2 semesters/1 credit then 2 credits)
- EDU 351/ENG 351 Children's Literature I
- EDU 414 Curriculum and Methods for Young Children
- EDU 426 Teaching Reading and Other Language Arts
- PHE 390 Physical Education for Elementary Teachers

Foundation Courses

- EDU 607/PSY 607 Advanced Educational Psychology
- EDU 673 Seminar on Educational Issues, Ethics, and Policy

Concentration Courses

- EDU 517 Science Education in the Elementary School
- EDU 522 Teaching Mathematics for Elementary Education
- EDU 566 Diagnosis and Remediation in Reading
- EDU 591 Social Studies Education in the Elementary School
- EDU 624 Early Childhood Education Programs and Policies
- EDU 626 Home-School Communication and Collaboration

Clinical Experience
EDU 672 Internship

9

Credits

21

54*

* At least 33 credit hours must be taken at the graduate level.

Early/Elementary Education, NK-5

This program is currently being phased in and cannot be completed before Fall 2000. Consult with the appropriate professional studies adviser, for in addition to changes in professional studies there are changes in liberal arts requirements. (Refer to the *Undergraduate and Professional Programs Bulletin*.)

Professional Studies Requirements (60 credits)

Undergraduate

- EDU 300 Foundations of Education
- PSY 301 Child Psychology
- EDU/PSY 305 Educational Psychology
- EDU 310 Practicum I (with EDU 414 and EDU 426)

Credits

3
3
3
2

Steps to Complete the Extended Program

Step	Requirement	Procedures
Admission to the University	<ol style="list-style-type: none"> 1 Scores from Scholastic Aptitude Test (SAT) or American College Test (ACT) 2 Minimum 2.0 GPA from high school or previous college 	<ol style="list-style-type: none"> 1 Declare an undergraduate major in the College of Humanities and Sciences 2 Declare a second Education graduate major: Early Education, Middle Education, Secondary Education, or Special Education.
Admission to Teacher Preparation (Upon completion of 60 hours of liberal arts course work and prior to the completion of 90 hours of course work) Note: Students must be admitted to Teacher Preparation in order to be eligible for Practicum placement	<ol style="list-style-type: none"> 1 2.5 GPA 2 Completion of: 6 hours English, 3 hours Math, 4 hours Laboratory Sciences, and 6 hours Social Studies 3 Completion of the PRAXIS Series (PRAXIS) General Knowledge and Communication Skills Subtests 4 Confirmation of Education major (if undecided) 	<ol style="list-style-type: none"> 1 Complete Admission to Teacher Preparation Form available in the Office of Academic Services 2 Complete required interview with education program faculty (Special Education requires interview with program faculty)
Advancing to graduate study (Upon completion of at least 90 credit hours of undergraduate course work) Note: Students must be admitted to graduate studies in order to be eligible to enroll in 600- and 700-level courses.	<ol style="list-style-type: none"> 1 2.8 GPA (students with 2.6-2.79 may be considered for provisional admission) 2 Completion of EDU 300 	<ol style="list-style-type: none"> 1 Apply for graduate study. See Admission Procedures for graduate study. <p>Note: The Personal Statement should address reasons for seeking graduate education, including career goals; experience working with the age group to be taught; reasons for entering teaching; successes in organizing, planning, and implementing work with other individuals.</p>
Admission to Internship (All programs require a graduate-level internship during the fifth year)	<ol style="list-style-type: none"> 1 2.8 GPA (3.0 on graduate courses) 2 Admission to Teacher Preparation and Advancing to graduate study 3 Completed application and transcripts submitted by established deadline 	<ol style="list-style-type: none"> 1 Obtain application form from the Office of Academic Services. 2 Obtain approval signatures of professional studies adviser and copies of transcripts 3 Submit completed application to the Office of Academic Services by: October 1 for Spring Semester Internship March 1 for Fall Semester Internship
Admission to the Profession (During the Final Semester of Enrollment)	<ol style="list-style-type: none"> 1 Complete all degree requirements 2 Acceptable scores on the PRAXIS Series (PRAXIS) Specialty Area and Professional Subtests 3 Apply for state licensure 	<ol style="list-style-type: none"> 1 Complete graduation applications for undergraduate degree in College of Humanities and Sciences and graduate degree in the School of Education 2 Complete PRAXIS tests through ETS offerings 3 Obtain application forms from Academic Services, complete and return the forms and the state fee

EDU 310 Practicum II (with EDU 589)*	2
EDU 351/ENG 351 Children's Literature I	3
PHE 390 Physical Education for Elementary Teacher	3
EDU 414 Curriculum and Methods for Young Children	4
EDU 426 Teaching Reading and Other Language Arts	3
	<hr/>
	26

Graduate	
EDU 517 Science Education in the Elementary School	3
EDU 522 Teaching Mathematics for Elementary Education	3
EDU 566 Diagnosis and Remediation in Reading	3
EDU 589 Integrating the Elementary Curriculum**	1
EDU 591 Social Studies Education in the Elementary School	3
EDU 605 Theory and Practice of Educating Individuals with Special Needs	3
EDU 607/PSY 607 Advanced Educational Psychology	3
EDU 626 Home-School Communication and Collaboration	3
EDU 672 Internship I + II (K and grades 1-5 placements)	9
EDU 673 Seminar on Educational Issues, Ethics, and Policy	3
	<hr/>
	34

- * All 500-level methods courses (EDU 517, 522,566, and 591) must have already been completed or taken concurrently with EDU 310,Practicum II.
- ** EDU 589 must be taken concurrently with EDU 310, Practicum II.

Middle Education, 4-8

(to be phased out by Spring 2000)

Qualifying Courses	<i>Credits</i>
EDU 300 Foundations of Education	18
EDU 301 Human Development and Learning	
EDU 310 Practicum (student must take 2 semesters/1 credit then 2 credits)	

Restricted Elective (select one)	
EDU 351/ENG 351 Children's Literature I	
EDU 433/ENG 433 Literature for Adolescents	
EDU 426 Teaching Reading and Other Language Arts	
PHE 390 Physical Education for the Elementary Teacher	

Foundation Courses	6
EDU 607/PSY 607 Advanced Educational Psychology	
EDU 673 Seminar on Educational Issues, Ethics, and Policy	

Concentration Courses	15
EDU 517 Science Education in the Elementary School	
EDU 521 Teaching Mathematics for Middle Education	
EDU 544 Introduction to the Middle School	
EDU 566 Diagnosis and Remediation in Reading	
EDU 591 Social Studies Education in the Elementary School	

Electives	3
Graduate electives in education and academic areas.	
EDU 660 Research Methods in Education (encouraged)	

Clinical Experience	9
EDU 672 Internship	
	<hr/>
	51*

* At least 33 credit hours must be taken at the graduate level.

Middle Education, 6-8

This program is currently being phased in and cannot be completed before Fall 2000. Consult with the appropriate professional studies adviser, for in addition to changes in professional studies there are changes in liberal arts requirements. (Refer to the *Undergraduate and Professional Programs Bulletin.*)

Professional Studies Requirements (45 credits)	
Undergraduate	
EDU 300 Foundations of Education	<i>Credits</i> 3
EDU 301 Human Development and Learning	3
EDU 310 Practicum A (concurrent with EDU 544)	1
EDU 310 Practicum B (concurrent with EDU 521 or 540)	1
EDU 310 Practicum C (concurrent with EDU 550 or the course not taken with B)	1
EDU 407 Educational Media: Utilization	3
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	12

Graduate	
Choose two of the following	
EDU 521 Teaching Mathematics for Middle Education	3
EDU 540 Teaching Middle and High School Science	3
EDU 550 Teaching Interdisciplinary Language Arts and Social Studies in the Middle School	3
Complete each of these courses	
EDU 544 Introduction to the Middle School	3
EDU 562 Reading Instruction in the Content Areas	3
EDU 607/PSY 607 Advanced Educational Psychology	3
EDU 672 Internship I + II	9
EDU 673 Seminar on Educational Issues, Ethics, and Policy	3
EDU 681 Investigations and Trends in Teaching*	3

Graduate selective chosen from the following	
EDU 554/CSC 554 Applications of Computers in the Teaching of Mathematics I	3
EDU 556 Computer Applications in Education	
EDU 600 Organizing for Effective Classroom Instruction	
EDU 605 Theory and Practice of Educating Individuals with Special Needs	
EDU 626 Home-School Communication and Collaboration	
EDU 660 Methods of Research	
ENE 601/ENG 601 Young Adult Literature	
	<hr/>
	33

* Pertinent subject section (e.g.,English, mathematics, science, or social studies)

Secondary Education, 8-12

Qualifying Courses	<i>Credits</i> 9
EDU 300 Foundations of Education	
EDU 301 Human Development and Learning	
EDU 310 Practicum (2 credits with EDU 537, 1 credit with EDU 540,543,545, 547,or 548)	

Foundation Courses	6
EDU 607/PSY 607 Advanced Educational Psychology	
EDU 673 Seminar on Educational Issues, Ethics, and Policy	

Concentration	9
EDU 537 Secondary School Curriculum	
Restricted Elective (choose discipline for licensure/endorsement sought)	
EDU 540 Teaching Middle and High School Sciences	
EDU 543 Teaching Secondary School Foreign Languages	
EDU 545 Teaching Secondary School Mathematics	
EDU 547 Teaching Secondary School Social Studies	
EDU 548 Teaching Secondary School English	
EDU 681 Investigations and Trends in Teaching	

Electives	9
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Graduate selectives are to be chosen from the following 1. 3 credits from:
Technology:
EDU 556 Computer Applications in Education
EDU 554/CSC 554 Applications of Computers in the Teaching of Mathematics I (required in mathematics)

Reading:
 EDU 562 Reading Instruction in the Content Areas
 Classroom Management:
 EDU 600 Organizing for Effective Classroom Instruction
 EDU 631 Behavior Management of Students with Disabilities
 Special Education:
 EDU 605 Theory and Practice of Educating Individuals with Special Needs
 LDS 600 Characteristics of Persons with Learning Disabilities

2. 6 credits from other courses in 1 above, from the academic major, or from courses such as these
 EDU 521 Teaching Mathematics for Middle Education (required in math)
 EDU 626 Home-School Communication and Collaboration
 EDU 660 Research Methods in Education
 ENE 601/ENG 601 Young Adult Literature

All selectives should be chosen in consultation with the professional studies adviser.

Note: a minimum of 21 credits, including EDU 300,301, 310,537,one of (EDU 540,543,545,547,or 548),EDU 607 or 673 and the required selective (see 1 below),must be completed prior to the internship.

Clinical Experience	9
EDU 672 Internship	
	42*

* At least 33 credit hours must be taken at the graduate level.

Special Education, K-12

The Master of Teaching program in Special Education leads to dual endorsement in emotional disturbance and mental retardation. The professional sequence in the Special Education Program is designed to develop competencies needed to work with children and youth in the areas of emotional disturbance and mental retardation.

	<i>Credits</i>
Qualifying Courses	25
EDU 300 Foundations of Education	
Restricted Elective (select one)	
EDU 301 Human Development and Learning	
EDU 305/PSY 305 Educational Psychology	
EDU 310 Practicum:Emotional Disturbance (2)	
EDU 310 Practicum:Mental Disturbance (2)	
EDU 330 Survey of Special Education	
EDU 331 Human Interaction in Teaching	
Restricted Elective (select one)	
EDU 522 Teaching Mathematics for Elementary Education	
EDU 521 Teaching Mathematics for Middle Education	
EDU 426 Teaching Reading and Other Language Arts	
EDU 468 Educational Diagnosis of Exceptional Individuals	
Foundation Courses	6
Graduate-level courses selected in consultation with adviser.	
Concentration Courses	21
EMO 500 Characteristics of Students with Emotional Disturbance	
EMO 501 Teaching Students with Emotional Disturbance	
MRT 556 Introduction to Mental Retardation	
MRT 560 Curriculum Design for Students with Mental Retardation	
Restricted Elective (select one)	
LDS 530 Language Disabilities:Assessment and Teaching	
MRT 500 Language/Communication Intervention for Young Children and Individuals with Severe Disabilities	
EDU 631 Behavior Management of Students with Disabilities	

EDU 632 Secondary Programming for Students with Disabilities	
Electives	3
Graduate electives in education and academic areas.	
EDU 660 Research Methods in Education (encouraged)	
Clinical Experience	12
EDU 672 Internship:Emotional Disturbance	
EDU 672 Internship:Mental Retardation	
	67*

* At least 33 credit hours must be taken at the graduate level.

Post-Baccalaureate Certificate Program in Teaching

The Post-Baccalaureate Certificate in Teaching program is designed for students who have earned bachelors degrees in fields other than education, who wish to become teachers in one or more grades, kindergarten through 12, in which there is a shortage, and for whom a master's degree is not a priority (applicants already may have earned a master's degree or wish to earn a master's degree in a specialized area of education later). Applicants are expected to have earned a liberal arts degree or its equivalent; those planning to teach at the secondary level must have a major or its equivalent in the subject they wish to teach.

Students are required to complete a minimum of 24 hours beyond the bachelor's level, including the courses below. The minimum number of hours, including some at the undergraduate level, varies by track, with fewer hours (30 credit hours) required for secondary education, as high school teachers most frequently teach a single subject, than for elementary (44 credit hours), since teachers in elementary schools most often teach an array of subjects. Equivalent courses taken within the past five years may transfer; however, a minimum of 24 hours, including clinical experiences, must be taken at VCU after admission to the program.

Persons completing the program are expected, among other attributes, to have an understanding of human development and learning theory appropriate to the age group they will teach, to demonstrate knowledge of the subjects they will teach, to develop an understanding of purposes for education and a defensible philosophical approach toward teaching, to acquire awareness of the diversity of the school-age population in cultural background and styles of learning, to demonstrate an ability to plan and implement effective teaching, and to measure student learning in ways that lead to sustained development and learning.

Secondary Education, 8-12

(Admissions only in a Science, Mathematics, German or Spanish)

	<i>Credits</i>
Qualifying Courses	6
EDU 300 Foundations of Education	
EDU 310 Practicum (2 credits/semesters)	
Foundation Courses	6
Restricted Elective (select one)	
EDU 602 Adolescent Growth and Development	

EDU/PSY 607 Advanced Educational Psychology	
EDU 673 Seminar on Education Issues, Ethics, and Policy	
Concentration Courses	9
EDU 537 Secondary School Curriculum	
Restricted Elective (choose discipline for which certification sought)	
EDU 540 Teaching Middle and High School Sciences	
EDU 543 Teaching Secondary School Foreign Languages	
EDU 545 Teaching Secondary School Mathematics	
EDU 547 Teaching Secondary School Social Studies	
EDU 548 Teaching Secondary School English	
EDU 681 Investigation and Trends in Teaching	
Clinical Experience	9
EDU 672 Internship	
	30

EDU 552/ENG 552 Teaching English as a Second Language	3
REA 602 Teaching Reading to Adults	3
REA 601 Psycholinguistics and the Language Arts Curriculum	3
EDU 681 Investigations and Trends in Teaching and ENG 651 Topics in Teaching Composition:Capital Writing Project	6
Clinical	
EDU 672 Internship	3

Note: Students shall have completed 12 hours of graduate or undergraduate work in any of the following areas:
 Measurement
 Advanced Psychology of Learning or Personality
 Child/Adolescent Literature
 Learning Disabilities
 Technology
 Methods of Research

Post-Master’s Certificate for Reading Specialist

The certificate program is offered for individuals who aspire to become Reading Specialists. Applicants for the certificate program must hold a master’s degree in any area related to education.

The Certificate program is designed for students who wish to gain state licensure as a reading specialist in kindergarten through grade 12 settings. Applicants are to have at least three years’ teaching experience in a reading-related field setting if they want to be recommended to the Department of Education for endorsement as a Reading Specialist in Virginia.

All requirements for admission to graduate school apply to applicants for the Post-Master’s Certificate for Reading Specialist. All state department requirements for reading specialist (specifically the 12 hours of graduate or undergraduate work in selected areas) must be met.

Students are required to earn a minimum of 21 graduate hours beyond their current master’s degree, including the required and selective courses listed. Advisers will recommend selective courses based upon student experience and goals.

Persons completing the program are expected to demonstrate:

- an understanding of the reading language learning process;
- the ability to critique, adapt and model use of a variety of reading instructional strategies, methods and programs;
- expertise in developing and providing for continuous assessment of an individual and groups;
- ability to implement school-wide developmental, creative and intervention reading/language arts programs; and
- ability to understand and apply theory to practice within a variety of cultural contexts.

Required Content Courses	<i>Credits</i>
EDU 561 Reading Foundations:Sociological/Psychological Perspectives	3
EDU 562 Reading Introduction in the Content Areas	3
REA 600 Analysis and Correction of Reading Problems	3
REA 605 Organizing and Implementing Reading Programs	3
Approved Literacy Selective(select one 3 credit class)	
EDU 525 Teaching Language Arts	3
EDU 528/ENG 528 Children’s Literature II	3
EDU 549 Developmental Reading in the Secondary School	3

PhD in Urban Services Program

Michael D. Davis
Program Director

John Kregel
Track Coordinator, Urban Services Leadership

Robert L. Dilworth
Track Coordinator, Adult Education and Human Resource Development

Daisy F. Reed
Track Coordinator, Instructional Leadership

John Seyfarth
Track Coordinator, Educational Leadership

James McMillan
Track Coordinator, Research and Evaluation

The PhD in Urban Services program is interdisciplinary in curriculum, design, and management and serves a variety of special audiences. The program is organized into the following tracks.

Educational Leadership Track. Designed primarily for line administrative personnel in urban school units. Emphasis is placed on providing leadership training for superintendents, building principals, and assistant principals.

Instructional Leadership Track. Designed primarily for staff administrative personnel in urban school units. Emphasis is placed on providing leadership training for curriculum specialty coordinators and elementary, secondary, and post-secondary school department heads and supervisors.

Adult Education and Human Resource Development Track. Designed primarily for personnel who will be responsible for the design and management of adult education and training functions in environments such as business and industry, county, state and federal agencies, and volunteer organizations. Emphasis is placed on leadership training for planning, developing, managing and evaluating training in adult and continuing education programs. The program of studies is highly individualized and is based on the student’s professional goals, previous graduate courses and work experiences.

Urban Services Leadership Track. Designed primarily for persons employed in leadership positions in the urban community requiring less traditionally delineated academic preparation, emphasis in this track is placed on providing leadership training for administrators of community agencies and community organizations.

Research and Evaluation Track. Designed primarily for individuals with responsibility for conducting research and evaluation projects in and for agencies and educational organizations, emphasis in this track is placed on developing proficiency in both quantitative and qualitative methods of inquiry, providing students with a breadth of methods to study varied educational and social research questions. Students may select a concentration in either research or evaluation.

Admission Requirements

Applicants must have earned a master's degree in an appropriate profession or discipline related to a specific curriculum track in this program. Preference will be given to applicants who occupy positions of organizational leadership and have responsibility (or demonstrate potential) for planning, administering, conducting, and evaluating service programs.

The entrance requirements, described in the Admission Packet and Entrance Requirements section to follow, reflect the aims of the program to provide continued academic growth for practitioners. The entrance requirements consist of a series of indicators which serve to predict an applicant's potential for successfully completing doctoral work. No indicator stands alone, and the program takes into account many facets beyond those traditionally considered. The program's philosophy is one of seeking excellence through an admission process which realizes that many applicants are practicing professionals whose experience and achievements must be recognized.

Admission is highly competitive. Preference is given to qualified applicants who demonstrate serious purpose, scholastic excellence, superior preparation, and appropriate experience for the program.

Application Process

Admission decisions rest with a faculty admissions committee and are made only on the basis of a complete application packet. There is one admission period each year. To begin course work in the summer session or fall semester, the application packet must be completed by March 15th. It is possible to delay enrollment, but application packets will be reviewed only during the March admission period.

The Admissions Committee reviews all completed admission packets. After the initial review of the packets, applicants are interviewed by the appropriate faculty. Applicants also must provide a writing sample on a date scheduled by the Admissions Committee. After the interviews and writing samples are completed and evaluated, all applicants are notified by mail of the admissions decision. An applicant usually will have attained a cumulative grade-point average of at least 3.4 on all graduate work attempted and above average scores on

the Aptitude Section of the GRE. However, no one facet of data automatically determines an admission decision.

Admission Packet and Entrance Requirements

Applicants for admission to this program must complete an admission packet, which includes the Virginia Commonwealth University Application for Graduate Study, as well as supplementary essay materials. Admission packets are available from:

School of Graduate Studies
Virginia Commonwealth University
901 West Franklin Street, Room B-1
Richmond, VA 23284-3051
(804) 828-6916

Office of Graduate Studies in Education
Virginia Commonwealth University
P.O. Box 842020
Richmond, VA 23284-2020
(804) 828-6530

The entrance requirements fall into the three following categories:

Academic Criteria

- A completed VCU School of Graduate Studies Application form.
- Two official and up-to-date copies of all transcripts of the applicant's undergraduate and graduate record indicating that the applicant has earned a master's degree from an accredited college or university.
- Official and current scores (within the past five years) for the General Test of the GRE. Advanced test scores are not required but may be submitted. If applicants have taken the examination more than five years prior to the year of expected admission, they must retake the examination. Older scores may be submitted also; the Admission Committee will consider the time elapsed since last formal schooling, occupational success, and leadership ability.

External Criteria

- A professional résumé indicating an applicant's educational and career experience, as well as evidence of leadership potential. This experience may come from professional, civic, religious, fraternal, or advocacy organizations. The applicant must present evidence of sustained experience in planning, leading, administering, or evaluating programs and personnel in varied positions that are related directly to a program track. The evidence might include dates of positions, job responsibilities, supervisor's evaluations, publications, and important knowledge that came from the position. Other appropriate evidence may include letters of recognition, awards, and professional memberships.
- Completed forms from three references. The applicant must submit names, addresses, and telephone numbers of three persons qualified and willing to rate the applicant's intellectual and

leadership ability. If the applicant has attended school within the last three years, at least one of the references should be academic. Each of these persons completes a form rating the applicant in a number of personal and academic areas.

Submission of these names constitutes permission to contact these persons by telephone anytime during the admission decision process.

In addition to these three names, **the applicant should submit the name, address, and telephone number of his or her current job supervisor.** This person may be contacted by a representative of the Admissions Committee and informed of the full scope and requirements of the doctoral program. The supervisor is expected to support the applicant's educational goals and be willing to provide released time for externship and other program-related activities.

Self-Expression

The applicant is required to submit three written statements:

- Personal Statement in which the applicant discusses his or her personal career goals and the manner in which this doctoral program enhances these goals, as well as what the applicant expects to contribute to this program.
- Educational Goals Statement in which the applicant states his or her educational goals and the manner in which this doctoral program will help the applicant achieve these goals.
- Work Experience Statement in which the applicant discusses his or her work experience, and previous and current leadership roles.

The applicant should treat these statements as a summary of goals and talents which go beyond, and do not duplicate, the other submitted materials.

The applicant is encouraged to check, in advance of the deadline date, the status of his or her application packet to insure that all components are in the packet by the deadline date. Inquiries should be made to the Office of Graduate Studies in Education. **Incomplete packets will not be reviewed by the Admissions Committee.** The Admissions Committee will review all complete application packets after the deadline date.

Delayed Admission

Anyone admitted for a particular year may request a delay of one year for entrance to the program. Normally this request will be granted. Individuals requiring a further delay will be required to reapply for admission. The request for delayed admission must be transmitted in writing to the director of the Office of Graduate Studies in Education and must state the reasons for the request and the date that the individual plans to begin the program.

Transfer Credit

PhD in Urban Services students may transfer up to nine credit hours to the program, including courses taken at VCU prior to being admitted to the program. Note that credits earned for one degree cannot be

applied to another degree. The rules for transferring credit to this program are:

- Transfer credit requests will be considered only after the student has been awarded Continuing Doctoral Status.
- There are no substitutes for the foundation courses, externship, or dissertation.
- Each request for transfer credit must stipulate the program component to which it applies with attendant reasoning. Requests for transfer and substitution for a specific research or concentration course must include course syllabus, reading list, instructor's name, and any other pertinent material. Each request for transfer credit must be approved by the director of graduate studies in education and must be judged appropriate for the development of the student's concentration or cognate area.
- To be valid for application to the program, transfer credit must have been taken no more than seven years prior to completion of all program requirements for awarding the degree, including successful defense of the dissertation.

Students wishing exceptions to these transfer rules must petition the director of graduate studies in education through their advisers. Their recommendations may be reviewed by the PhD in Urban Services Policy Board for final action.

See Part I of this *Bulletin* for further policies governing transfer credit.

Curriculum

There are six components of the program leading to the PhD in Urban Services:

- **Foundations Component** (nine hours minimum). This component emphasizes theoretical and social issues in urban institutional development and changes that all leaders in urban service institutions must understand and respond to within their leadership positions.
- **Research Component** (12 hours minimum). This component emphasizes the prerequisite skills essential to designing, conducting, and interpreting research. It also provides the research, statistical, and computer tools and resources necessary to produce research beneficial to the urban leader. Students are required to demonstrate competency in areas of research methodology and statistics appropriate to doctoral level study prior to enrolling for courses in this component.

An applicant's level of research competence is considered prior to admission. Research related prerequisites and/or corequisites may be established for individuals based on past academic and/or work experience.

- **Concentration Component** (15 hours minimum). This component is designed to allow the student to pursue a series of courses that provide a specific focus and serve as the student's primary discipline. These courses are expected to develop the in-depth knowledge and skills in an identifiable area that is congruent with the student's current or

projected career field. It is at this point in the program that the student pursues study in one of the following tracks:

- Educational Leadership
- Instructional Leadership
- Adult Education and Human Resource Development
- Urban Services Leadership
- Research and Evaluation

Students admitted to the Adult Education and Training track without prior course work in adult education may be required to take one or two pre-requisite courses: ADE 601 The Adult Learner and ADE 603 Adult Education: Program Planning Management and Evaluation.

- **Cognate Component** (nine hours minimum). This component is designed to allow the student to pursue, through course work outside the primary discipline, a secondary field of study that complements the student's concentration component.
- **Externship Component** (three hours minimum). The term externship refers to a minimum of 150 hours of on-site work experience designed to enhance the student's program, career goals, and professional development. The externship site is outside the setting in which the student is employed currently and ideally in a different, but related, career area in which the student has had no or limited prior work experience. It is expected that the student will develop an appreciation for the network of service delivery systems in the urban setting and acquire additional leadership skills to function more effectively within that network.
 Externships are developed jointly by the student and the student's adviser and approved by the director of graduate studies. Students may begin the externship experience only after being awarded Continuing Doctoral Status. The required 150 clock hours of the externship may be extended over two consecutive semesters, if appropriate.
- **Dissertation Component** (nine hours minimum). This component consists of EDU 890 Dissertation Seminar, three hours, and EDU 899 Dissertation Research, six hours. EDU 890 Dissertation Seminar is designed to aid the student in identifying the resources and refining the skills required to initiate, develop, and complete a scholarly prospectus and dissertation. The remaining credit hours of EDU 899 Dissertation Research are assigned to the scholarly pursuit and completion of the dissertation.
- **Restricted Elective** (three hours minimum). To be taken in either the Concentration, Cognate, or Dissertation Component.

Credits

Foundation Component	9
EDU 701 Urban Education	
SOC 650 Theories of Social and Institutional Change	
PHI 713/PPA 713 Ethics and Public Policy OR	
PHI 635 Philosophy of the Social Sciences	

Research Component	12
STA/SOC 608 Statistics for Social Research	
EDU 710 Educational Research Design	
EDU 711 Qualitative Methods and Analysis	
Three credit selective	

Concentration Component	15
Educational Leadership Track (recommended sequence)	
EDU 617 Instructional Models	
ASE 701 Development and Implementation of Administrative Policies in Education	
ASE 704 School Business Administration	
ASE 705 Planning Educational Facilities	
ASE 707 Advanced Educational Law	

Instructional Leadership Track (required sequence)	
EDU 617 Instructional Models	
ASE 701 Development and Implementation of Administrative Policies in Education	
EDU 730 Educational Staff Development	
EDU 731 Instructional Theories and Strategies	
Elective	

Adult Education and Human Resource Development Track (select five of the following courses)	
ADE 700 Management of Adult Education and Human Resource Development Programs	
ADE 701 Advanced Program Planning in Adult Education and Human Resource Development	
ADE 702 Seminar in Adult Learning Theories	
ADE 703 The Adult Education and Human Resource Development Training Consultant	
ADE 704 Groups, Teams, and Organizational Learning	
ADE 705 Global Human Resource Development	

Urban Services Leadership Track
 Courses in career-relevant skills within an urban context with approval of adviser.

Research and Evaluation Track
 (select five courses from the appropriate concentration)

Research Concentration	
SOC 623 Causal Analysis	
SOC 605/PAD 605 Survey Research Methods	
EDU 651 Topics in Education: Educational Research and Evaluation	
NUR 772 Advanced Qualitative Research Methods	
BUS 732 Applied Multivariate Methods	
PPA 721 Survey of Applied Research Methods in Public Policy and Administration	
PPA 711 Seminar in Public Policy and Administration I	

Evaluation Concentration	
EDU 661 Educational Evaluation: Models and Designs	
EDU 662 Educational Measurement and Evaluation	
EDU 651 Topics in Education: Educational Research and Evaluation	
PPA 627 Workshop in Policy Analysis and Evaluation	
SOC 605/PAD 605 Survey Research Methods	

Cognate Component	9
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Educational Leadership Track
 The Concentration and Cognate Components combined must include at least 9 credit hours outside of the School of Education.

Instructional Leadership Track
 The Cognate Component must be developed outside of the School of Education.

Adult Education and Human Resource Development Track
 The Cognate Component must be developed outside of the School of Education.

Urban Services Leadership Track
Either the Concentration Component or the Cognate Component, but not both, must be developed in the School of Education.

Research and Evaluation Track
Students who choose the Research Concentration are required to complete an Evaluation Cognate. Students who choose the Evaluation Concentration must complete a Research Cognate. The Concentration and Cognate components combined must include at least 9 credit hours outside of the School of Education.

Externship Component	3
Dissertation Component	9
EDU 890 Dissertation Seminar	
EDU 899 Dissertation Research	
Restricted Elective	3
	60

Other PhD in Urban Services Program Requirements

Residency Requirement. PhD in Urban Services students are required to complete a minimum of 12 credit hours each calendar year, commencing with the first semester in which the student enrolls for course work.

Continuing Doctoral Status. At the completion of 15 credit hours (excluding prerequisite courses), PhD in Urban Services students are evaluated for Continuing Doctoral Status by the director of graduate studies in education. To attain Continuing Doctoral Status, the student must have attained a minimum cumulative GPA of 3.3.

Program Planning. PhD in Urban Services students are required to submit a final plan of program study before the completion of the 27th credit hour of study.

Comprehensive Examination. PhD in Urban Services students are required to pass a comprehensive examination at the completion of all course work (excluding the dissertation component). The examination is scheduled once each semester over a two-day period.

Graduate Courses in Education (EDU)

EDU 500 Workshop in Education. Semester course; 1-3 credits. Repeatable to 6 credits. Designed to focus on a single topic within a curriculum area, the workshop offers graduate students exposure to new information strategies and materials in the context of a flexible instructional framework. Activities emphasize a hands-on approach with direct application to the educational setting.

EDU 501 Working with the Student Teacher. 1-3 credits. A focus on the role of the cooperating teacher during the student teaching experience. Overview of techniques for working with student teachers and evaluating student teacher performance.

EDU 503 Guidance for Exceptional Children. Semester course; 3 lecture hours. 3 credits. An introduction to guidance strategies for assisting exceptional children. Special attention is given to the interrelationships of home, school, and community resources.

EDU 504 Film as a Teaching Resource. Semester course; 3 lecture hours. 3 credits. Exploring the film as a teaching resource. The course is designed to familiarize the students with thought provoking films. Over 50 films will be presented. Especially helpful for the English teacher

will be the exploration of the relationship between film and fiction. The humanities teacher will find a repertory of films on topics relating to historical and social questions useful.

EDU 507 Survey of Educational Media. Semester course; 3 lecture hours. 3 credits. Introduces the role of educational media and technology in the instructional process. Emphasizes the systematic design of instruction and the selection, evaluation, and utilization of media. Basic production skills and equipment operation are developed within a framework of designing appropriate learning activities.

EDU 509 TV in the Classroom. Semester course; 3 lecture hours. 3-6 credits. Video taped teaching-learning materials for specified learner outcomes will be designed and produced. Educational broadcasting and the use of commercial broadcast programs will be examined.

EDU 514 Parent-Child Relations. Semester course; 3 lecture hours. 3 credits. A methods course in parent-child communications and problem solving. Designed to enable parents and professionals to understand and relate more effectively with children.

EDU 517 Science Education in the Elementary School. Semester course; 3 lecture hours. 3 credits. A course designed to renew and/or expand teachers' knowledge and skills in the teaching of science in the classroom and the community. New materials and methodologies will be examined in the light of current trends, research findings, and professional recommendations.

EDU 521 Teaching Mathematics for Middle Education. Semester course; 3 lecture hours. 3 credits. Emphasis on current instructional strategies, learning theories, and manipulative materials appropriate for teaching mathematics to children. The content focuses on middle grades, but the developmental approach includes some topics from the primary grades.

EDU 522 Teaching Mathematics for Elementary Education. Semester course; 3 lecture hours. 3 credits. Emphasis on current instructional strategies, learning theories, and manipulative materials appropriate for teaching mathematics to children. The content focus is on the primary and elementary grades.

EDU 523 Implementing and Administering Programs for Young Children. Semester course; 3 lecture hours. 3 credits. Provides the student with fundamental knowledge and skills in the implementation, supervision, and administration of educational programs in schools, centers, and homes for infants and young children. A problems approach will be utilized with emphasis on creative management and evaluative processes.

EDU 524 Cross Cultural Perspectives in Child Rearing and Early Education. Semester course; 3 lecture hours. 3 credits. Analysis of the impact of linguistic patterns, child rearing techniques, and socialization processes on the education of young children in various cultural settings.

EDU 525 Teaching Language Arts. Semester course; 3 lecture hours. 3 credits. Teaching techniques and materials for the developmental teaching of communication skills. Students will explore significant research and current literature related to content, organization, and instruction in language arts for the elementary and middle schools.

EDU 528/ENG 528 Children's Literature II. Semester course; 3 lecture hours. 3 credits. A study of classic and current children's books from a variety of literary genre. Magazines and media related reference resources and journals are reviewed. The creative use of literature, its sociocultural functions, and its contribution to the development of the oral and written expression of children from nursery to grade eight are explored. A focus on children with special problems is included.

EDU 531 Creative Teaching in the Elementary School. Semester course; 3 lecture hours. 3 credits. Designed for early childhood and elementary teachers and administrators. Diversified experiences drawn from various curriculum areas including the arts. Focus on the creative process and the role of the teacher in fostering creativity.

EDU 534 Photography in Instruction. Semester course;3 lecture hours. 3 credits. Skills with cameras, films, papers, and other photographic equipment and materials. The use of these materials as tools for teaching and the skills for preparation of instructional resources will be discussed and practiced.

EDU 535 Problems of Social Studies Instruction. Semester course; 3-6 credits. Prerequisite: Permission of instructor and appropriate teaching experience. An in-depth investigation into the nature of and alternatives to problems encountered by students while teaching. Developing and evaluating instructional alternatives will be stressed.

EDU 537 Secondary School Curriculum. Semester course;3 lecture hours. 3 credits. Studies the background and objectives of the contemporary secondary school;basic issues, current trends and practices in curriculum construction and instructional planning are examined.

EDU 538 Orientation to Speech and Language Disorders. Semester course;3 lecture hours. 3 credits. An introduction to the history, scope, and trends in the field of speech pathology to include terminology, systems of classification, and concepts of etiology, diagnosis, and therapy.

EDU 540 Teaching Middle and High School Sciences. Semester course;3 lecture hours. 3 credits. Examines the teaching strategies, materials and objectives of the sciences in middle and high schools. Emphasizes the nature of science in science instruction,teaching of experimental design,and translating science education research into teaching practices.

EDU 541 Infants and Young Children with Special Needs. Semester course;3 lecture hours. 3 credits. An overview of the characteristics of infants and preschool-aged children at risk for or with disabilities. Examines various disabilities, the rationale for early intervention,and available resources.

EDU 542 Family/Professional Partnerships. Semester course; 3 lecture hours. 3 credits. Theory and practice relevant to working with families of children with disabilities. Family-centered services and cultural sensitivity are emphasized. Provides an overview of family processes and reactions to having a child with a disability, strategies for helping family members support and work with their children, available community resources, and legal rights of families and children with disabilities.

EDU 543 Teaching Secondary School Foreign Languages. Semester course; 3 lecture hours. 3 credits. Examines objectives, materials, effective instructional strategies, and assessment procedures in the teaching of modern foreign languages. Focuses on a thorough understanding of current developments in foreign language pedagogy and their application to teaching and listening, speaking, reading, and writing skills. Provides theoretical and practical experiences for planning and implementing effective instruction designed to facilitate student acquisition of communicative proficiencies.

EDU 544 Introduction to the Middle School. Semester course; 3 lecture hours. 3 credits. An examination of the nature and capabilities of the middle school student,the school environment,teacher characteristics, instructional modes, the curriculum,and the future of the middle school movement.

EDU 545 Teaching Secondary School Mathematics. Semester course;3 lecture hours. 3 credits. Prerequisite: Upper-division mathematical sciences major. Examines materials, resources, innovations, procedures, methods, equipment, and learning principles appropriate for decision-making related to the teaching of secondary mathematics.

EDU 547 Teaching Secondary School Social Studies. Semester course;3 lecture hours. 3 credits. Examines demands involved in secondary social studies instruction;preparatory approaches to using academic and professional insights in confronting the demands;formulating and implementing appropriate methodological approaches.

EDU 548 Teaching Secondary School English. Semester course; 3 lecture hours. 3 credits. Studies teaching strategies, materials and objectives for literature, language, and composition; developing and organizing

English instruction; applying learning theory; examining evaluation strategies; questioning techniques, and class room management.

EDU 549 Developmental Reading in the Secondary School. Semester course;3 lecture hours. 3 credits. For prospective and practicing secondary school teachers. The course explores theoretical concepts in learning and reading, and the translation of these concepts into specific teaching procedures for students in the secondary school.

EDU 550 Teaching Interdisciplinary Language Arts and Social Studies in the Middle School. Semester course;3 lecture hours. 3 credits. Describes and applies basic principles of middle school education and early adolescence with attention to the persistence of the academic disciplines and traditional curricular approaches to English and social studies. Offers a rationale for interdisciplinary instruction and proposes solutions to the practical dilemmas that confront interdisciplinary teaching in the middle school. Identifies interdisciplinary themes drawn from history, the social sciences, and literature;plans units of instruction around such themes;devises instructional strategies for the teaching of interdisciplinary skills and content.

EDU 552/ENG 552 Teaching English as a Second Language. Semester course;3 lecture hours. 3 credits. Provides students who plan to teach English to people whose native language is not English with a variety of instructional/learning strategies. Presents and explores current approaches and methodology, as these relate to linguistic features and pedagogy.

EDU 554/CSC 554 Applications of Computers in the Teaching of Mathematics. Semester course;2 lecture and 2 laboratory hours. 3 credits. Prerequisite:College calculus course or permission of instructor. Introduction to computers and programming using the language, BASIC. Applications of the computer in algebra,geometry, trigonometry, statistics, and calculus.

EDU 555 Geography in Social Studies Curriculum. Semester course;3 lecture hours. 3 credits. A survey of geographic concepts and processes as a basis for examining curricular projects for and developing instructional approaches to geography as part of the social studies curriculum.

EDU 556 Computer Applications in Education. Semester course; 3 lecture hours. 3 credits. Designed for persons who use, or plan to use, computers in the educational process. Emphasis will be placed on the role of computer technology in education,applications in various educational fields, the selection and evaluation of appropriate software, and the design of basic instructional programs.

EDU 558 Educating Students with Multiple Disabilities. Semester course;3 lecture hours. 3 credits. Graduate elective for special education majors. Review of a variety of physical disabilities. Analysis of major issues such as architectural engineering, equipment adaptation and modifications, and new advances in treatment and prevention.

EDU 561 Reading Foundations: Sociological/Psychological Perspectives. Semester course;3 lecture hours. 3 credits. The purpose of this course is to provide a basic understanding of the theories, processes, and methodologies of reading instruction.Multidisciplinary, multicultural aspects of reading instruction are stressed. Topics of particular importance to the classroom teacher are emphasized.

EDU 562 Reading Instruction in the Content Areas. Semester course;3 lecture hours. 3 credits. Prepares teachers to apply skills and methods of reading instruction to content areas in elementary, middle, and secondary school curricula.Includes theoretical bases and methodology for incorporating reading skills and strategies within content areas of instruction.

EDU 564 Teaching the Gifted. Semester course;3 lecture hours. 3 credits. Curriculum development and organization of activities for the gifted at different maturational levels with specific attention given to program content,materials, resources, and guidance.

EDU 566 Diagnosis and Remediation in Reading. Semester course; 3 lecture hours. 3 credits. Prerequisite: Basic reading methods course or permission of instructor. Studies reading problems by

focusing on reading diagnosis and correction related to classroom and clinic. Involves evaluating and tutoring individuals with reading difficulties. A supervised practicum is a component.

EDU 569 Diagnosis and Remediation in Mathematics. Semester course; 3 lecture hours. 3 credits. For classroom and resource teachers working with children whose arithmetic achievement is significantly lower than grade-level placement or expectancy level; designed to remediate learning problems in arithmetic at the child's level and to aid teachers in the sequential development of skills and concepts.

EDU 573 Introduction to Learning Disabilities. Semester course; 3 lecture hours. 3 credits. An overview of individuals with learning disabilities within the educational setting through readings, discussion, simulations, and guided field experiences. Recommended for teachers and other personnel who seek the understanding and skills to cope with learning problems in their own setting. Not for program majors, recertification, or endorsement.

EDU 575 Cross-Cultural Communications. Semester course; 3 lecture hours. 3 credits. An experimentally oriented seminar for persons preparing for or in careers demanding close working relations with numbers of differing cultural/ethnic backgrounds, primarily white/black. Supported by out-of-class readings and exercises, the class will focus on attitudes, opinions, and self-perceptions operative within the seminar and on relating these to race relations problems and change strategies within the larger society.

EDU 578 Creative Rhythmic Movement. Semester course; 3 lecture hours. 3 credits. A study of the importance and place of movement and music in a school program, and the uses of these media in teaching. Emphasis will be placed upon music as an accompaniment for movement and movement as an accompaniment for music. Attention will be given to analysis, improvisation, and creativity.

EDU 589 Integrating the Elementary Curriculum. Semester course; 1 credit. Corequisite: EDU 310. Required for early education prior to EDU 672. Explores the integration of the content methodologies in the elementary grades. Focuses on building associations among basic processes and the disciplines of the arts, sciences, and humanities at the upper elementary levels. Develops proficiencies in instructional management systems and assessment strategies that facilitate curriculum integration.

EDU 591 Social Studies Education in the Elementary School. Semester course; 3 lecture hours. 3 credits. A course designed to renew and/or expand the knowledge and skills of the classroom teacher in the teaching of social studies. Curriculum emphasis on the development of knowledge, skills, values, and attitudes will be examined in the light of professional recommendations, current trends, and research findings.

EDU 594 Topical Seminar. Semester course; variable; 1-3 credits. May be repeated for a maximum of six credits. A seminar intended for group study by students interested in examining topics, issues, or problems related to teaching and learning.

EDU 595 Reference and Bibliography. Semester course; 3 lecture hours. 3 credits. A study and evaluation of basic reference hooks and other bibliographical material most frequently used to answer reference questions in a library, including applications of computer technology.

EDU 596 Library Organization and Administration. Semester course; 3 lecture hours. 3 credits. A study of fundamental methods, routines, and procedures in the acquisition, preparation, and circulation of books and other materials for libraries. Special emphasis is on the school library.

EDU 597 Cataloging and Classification. Semester course; 3 lecture hours. 3 credits. A basic course in cataloging and classifying library materials. Practice is given in using classification systems, subject headings, filing rules, and the use and adaptation of printed cards and cataloging aids.

EDU 598 Media Center Development. Semester course; 3 lecture hours. 3 credits. The development and operation of a comprehensive library/media center requires a broad range of professional skills. This

course will provide library/media professionals with knowledge and practice in the design and evaluation of media facilities and an understanding of the specific administrative supervisory skills needed to operate a comprehensive library/media center.

EDU 600 Organizing for Effective Classroom Instruction. Semester course; 3 lecture hours. 3 credits. Designed to assist teachers in becoming effective classroom organizers. Emphasis on the theory and application of instructional planning, behavior control, classroom environment, instructional materials, and teaching models. For elementary and secondary teachers.

EDU 601 Philosophy of Education. Semester course; 3 lecture hours. 3 credits. A study of basic philosophies that have contributed to the present-day educational system. Attention will be given to contemporary philosophies and their impact on educational aims and methods.

EDU 602 Adolescent Growth and Development. Semester course; 3 lecture hours. 3 credits. Contemporary learning theories and their implications for teaching the adolescent learner. Emphasis will be placed on specific problems of adolescent growth and development as they relate to the learning situation.

EDU 603 Seminar in Child Growth and Development. Semester course; 3 lecture hours. 3 credits. Intensive study of child growth and development and application of this knowledge. Emphasis on current research.

EDU 604 Adult Development. Semester course; 3 lecture hours. 3 credits. An introductory study of adult development from the life cycle perspective with implications for educators working with adults. Emphasis will be placed on major physiological, psychological, sociological, and anthropological factors that make adults distinct from earlier developmental levels.

EDU 605 Theory and Practice of Educating Individuals with Special Needs. Semester course; 3 lecture hours. 3 credits. In-depth study of the past and current philosophies and approaches to serving students with special needs in educational settings. Attends to specific ways school services and classroom practices of general education teaching can assist in meeting these needs in today's schools through mainstreaming and inclusion. Not for certification or endorsement in special education. Not for certification or endorsement in special education.

EDU 606 Review of Research. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of nine credits. Application of research findings to a specific educational area of study. Emphasis is on the consumption and utilization of research findings rather than the production of research evidence.

EDU 607/PSY 607 Advanced Educational Psychology. Semester course; 3 lecture hours. 3 credits. Application of the principles of psychology to the teaching-learning process. Discussion will focus on the comprehensive development of individual learning experiences and educational programs from the point of view of the educator and the administrator.

EDU 608 History of Western Education. Semester course; 3 lecture hours. 3 credits. This course will explore the development of educational thought and practice from ancient times to the present, with special attention being given to the major issues confronting American education since its beginning.

EDU 609 Learning Theories in Education. Semester course; 3 lecture hours. 3 credits. A study of general learning theories applicable to education including the concepts and issues related to the teaching-learning process. Instruction and curriculum will be discussed to illustrate psychological principles of learning.

EDU 610 Social Foundations of Education. Semester course; 3 lecture hours. 3 credits. A study of significant social issues involved in the development and operation of schools and other educational institutions and processes.

EDU 611 Critical Investigations in Mathematics Education. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 522 or

permission of instructor. A critical investigation of current and appropriate learning theories, instructional activities, programs, and manipulative materials applicable to mathematics education in the elementary school. This course assumes an overall knowledge of the more prominent techniques and materials used to teach mathematics in elementary and middle schools. Students will undertake in-depth critical studies of alternative curricula, materials, and strategies based on experience, learning theory, and research findings.

EDU 612 Education and the World's Future. Semester course; 3 lecture hours. 3 credits. An examination of education as it relates to future changes in other areas: population, energy, transportation, family, etc. The course will consist of readings dealing with educational change as well as a series of modules where students will engage in future exercises, games, and projects.

EDU 613 Educational Change. Semester course; 3 lecture hours. 3 credits. Developing the skills for planned program change through the use of systematic inquiry, systems analysis, and systems approaches through systems concepts. Provides opportunities for students to develop "mini (classroom) changes" or "macro (school district) changes" through the use of systems.

EDU 614 Contemporary Educational Thought. Semester course; 3 lecture hours. 3 credits. This course will be devoted to a critical examination of educational ideas and programs emanating from contemporary writings on education. Students will be encouraged to develop critical skills of analysis in examining such writings utilizing historical and philosophical perspectives.

EDU 615 Curriculum Development. Semester course; 3 lecture hours. 3 credits. A basic graduate course in curriculum development. Curriculum decision making is examined in relation to foundation areas, content areas and current educational trends. Various conceptions of curriculum are explored.

EDU 617 Instructional Models. Semester course; 3 credits. An examination of instructional models with a focus on their analysis and adaptation to learning environments and school curriculum.

EDU 618 Curriculum Construction. Semester course; 3-6 lecture hours. 3-6 credits. A study of curriculum problems with special attention given to the organization and preparation of teaching units. The course is individualized to meet student needs and nature of study.

EDU 620 Designing Modular Instructional Packages. Semester course; 3 lecture hours. 3 credits. A study of the theory underlying simulation and instructional packages. Modular instructional packages will be developed with emphasis on their proper use as an instructional strategy.

EDU 621 Curriculum Seminar. Semester course; 3 lecture hours. 3 credits. A study of curriculum theory, research, and practice for advanced students. The seminar is an opportunity for students to integrate previous course work and professional experiences in curriculum.

EDU 622 Creative and Cognitive Development. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 603. Application of theories of creative and cognitive development in teaching.

EDU 623 Child Study and Assessment in Early Childhood Education. Semester course; 3 lecture hours. 3 credits. Investigation and application of methods of observing, recording, and interpreting the behavior of young children. Review of criterion and norm-referenced measures for assessing capacities and needs in early childhood education as a baseline for prescribing/providing appropriate activities.

EDU 624 Early Childhood Education Programs and Policies. Semester course; 3 lecture hours. 3 credits. A study of Early Childhood Education paradigms including historical, federally funded and current center and home-based programs. A review of legislation, state and federal, that has affected ECE program development.

EDU 625 Young Child and the Curriculum. Semester course; 3 lecture hours. 3 credits. Translation of curriculum development principles into appropriate curricular programs for young children. Impact of

recent research on these curricula. Consideration of child development as related to planned activities and expected outcomes.

EDU 626 Home-School Communication and Collaboration. Semester course; 3 lecture hours. 3 credits. Studies the rationale, methods, programs and current research of home-school partnerships, pre-school through secondary education.

EDU 627 Critical Investigations in Social Studies Education. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 491 or permission of instructor. Assuming a knowledge of basic content and techniques in the teaching of social studies in elementary and middle schools, this course conducts a critical examination of various curricula and methodologies from the standpoint of current research, philosophical positions, and relevant learning theory.

EDU 630 Trends in Special Education. Semester course; 3 lecture hours. 3 credits. Overview of mainstreaming, characteristics of individuals with exceptionalities, inclusion, transition, and classroom adaptations for educating these students in least restrictive environments.

EDU 631 Behavior Management of Students with Disabilities. Semester course; 3 lecture hours. 3 credits. An in-depth analysis of theoretical models, research, strategies for managing behavior of students with various disabilities. Emphasis on developing, implementing, and evaluating behavior management programs in special education programs.

EDU 632 Secondary Programming for Students with Disabilities. Semester course; 3 lecture hours. 3 credits. Designed to provide knowledge of the special educator's role in preparing students with disabilities for post-secondary educational and vocational environments. Emphasis is placed on designing and modifying high school curricula involving students and their families in transition planning and helping students acquire the services needed to be successful in adult life.

EDU 633 Educational Assessment of Individuals with Exceptionalities. Semester course; 3 lecture hours. 3 credits. An examination of standardized tests and informational techniques, and their application in educational settings. Skills needed for administration, interpretation, and application of such techniques in the development and understanding of individualized educational programs (IEP's) are developed.

EDU 636 Introduction to Supported Employment. Semester course; 3 lecture hours. 3 credits. This course is an overview of strategies for providing supported employment services to persons with severe disabilities. Emphasis is placed on job and contract development, job placement, job-site training, and follow-along. Content is appropriate for use in specialized industrial training, mobile work crews, sheltered enclaves, and supported competitive employment.

EDU 637 Developing and Implementing Supported Employment Programs. Semester course; 3 lecture hours. 3 credits. This course focuses on the development of comprehensive supported employment programs at the agency or community level. Course content includes strategies for the management and operation of supported employment programs, procedures for program evaluation, and methods for designing and implementing staff development programs.

EDU 641 Independent Study. Semester course; 1-6 credits. May be repeated for a maximum of nine credits. An individual study of a specialized issue or problem in education. Determination of the amount of credit and permission of the instructor and department chairman must be procured prior to registration. Cannot be used in place of existing courses.

EDU 648 Preparation of Instructional Materials. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 507 or permission of instructor. Development of materials for the classroom with an emphasis on determining medium, designing the message, producing the material, and evaluating the effect. The design of these materials will be predicated on the learning modes and instructional styles.

EDU 649 Educational Media: Theory and Practice. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 507 or permission

of instructor. An analysis of educational media with emphasis on the use of media in instructional design and development of teaching strategies.

EDU 651 Topics in Education. Semester course; 1-3 credits, repeatable to 9 credits. Check with department for specific prerequisites. A course for the examination of specialized issues, topics, readings, or problems in education.

EDU 660 Research Methods in Education. Semester course; 3 lecture hours. 3 credits. Designed to provide an introductory understanding of educational research and evaluation studies. Emphasizes fundamental concepts, procedures, and processes appropriate for use in basic, applied, and developmental research. Includes developing skills in critical analysis of research studies. Analyzes the assumptions, uses, and limitations of different research designs. Explores methodological and ethical issues of educational research. Students either conduct or design a study in their area of educational specialization.

EDU 661 Educational Evaluation: Models and Designs. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 660 or permission of instructor. A comprehensive review of the major evaluation theories and models including their focus, assumptions, designs, methodologies, and audiences in educational policy-making and program development. Designed for students to gain an understanding of alternative procedures of educational evaluation, an in-depth knowledge of at least one theoretical approach to evaluation, and skills in interpretation of evaluation studies for policy and in developing an evaluation design for their area of specialization.

EDU 662 Educational Measurement and Evaluation. Semester course; 3 lecture hours. 3 credits. Course is a prerequisite for more advanced courses in research and evaluation. To provide an understanding of basic concepts of educational measurement and evaluation. Includes development, interpretation, and use of norm-referenced and criterion-referenced measures, standardized instruments, and qualitative assessments applicable to a wide variety of educational programs and settings. Students study in-depth measurement and/or evaluation procedures in their specialization.

EDU 672 Internship. Semester course; 1-6 credits. May be repeated for a maximum of twelve credits. Prerequisite: Permission of adviser. Study and integration of theory with practice in clinical or off-campus settings supervised by an approved professional and University faculty. May include seminars, selected readings, projects, and other activities designed and evaluated by supervising faculty.

EDU 673 Seminar on Educational Issues, Ethics, and Policy. Semester course; 3 lecture hours. 3 credits. An analysis of the ethical dimensions of educational policies and practices. Examines aspects of selected educational policies and practices, drawn in part from practical issues encountered in clinical settings. Investigates how educational policies and practices reflect ethical values and how those values are grounded.

EDU 681 Investigations and Trends in Teaching. Semester course; 3 credits. May be repeated for a maximum of nine credits. A course designed to familiarize teachers and prospective teachers with recent trends and developments in course content, strategies for organizing learning experiences, and in presenting course material in their classrooms. Laboratory experience may be incorporated where appropriate.

EDU 682 Curriculum Development in Science Education. Semester course; 3 lecture hours. 3 credits. A course for science teacher-developed curriculum innovations that emphasize the initiation of formal and informal classroom work on current scientific trends, as well as special class work and laboratory programs.

EDU 700 Externship. Semester course; 1-6 credits. May be repeated for a maximum of nine credits. Prerequisite: Permission of department. Off-campus planned experiences for advanced graduate students designed to extend professional competencies, carried out in a setting, under supervision of an approved professional. Plan of work designed by extern with prior approval of the offering department. Externship activities monitored and evaluated by University faculty. State certification or equivalent may be required for some externships.

EDU 701 Urban Education. Semester course; 3 lecture hours. 3 credits. A study of urban education from historical and contemporary perspectives. This course includes study of the educative effect of urban environments; the development of public and private urban educational systems; the influence of social, political, and economic factors on urban educational programs; and the impact of theories, proposals, and practices on alternative futures.

EDU 705 Doctoral Seminar. Semester course; 3 lecture hours. 3 credits. Provides doctoral students with opportunities to investigate research areas related to their doctoral studies. Students and instructor will critique student conducted in-depth literature reviews and preliminary research proposals.

EDU 710 Educational Research Design. Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate-level statistics course and EDU 660 or equivalent, or permission of instructor. An examination of research designs and concepts commonly utilized in conducting research in applied educational settings. Fundamental principles of research are extended to cover such topics as quasi-experimental, multivariate, and qualitative research design.

EDU 711 Qualitative Methods and Analysis. Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate-level statistics course and EDU 660 or equivalent, or permission of the instructor. Examines qualitative research designs and inductive analysis, including research traditions, problems formulation in fieldwork, purposeful sampling, interactive data collection strategies, research reliability and validity. An interdisciplinary approach is used. Students conduct a small field study in their specialization.

EDU 730 Educational Staff Development. Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing, EDU 617. Provides educational leaders with the knowledge and skills necessary to design, implement, and evaluate staff development programs that focus on instructional improvement. Includes the application of staff development as part of teacher evaluation systems. This course cannot be used to meet a requirement for endorsement as a Supervisor of Instruction in Virginia.

EDU 731 Instructional Theories and Strategies. Semester course; 3 lecture hours. 3 credits. Prerequisites: Graduate standing, EDU 617. Provides instructional leaders with the knowledge and competence necessary to apply and evaluate instructional strategies that are appropriate for students in nursery through twelfth grade schooling. The focus of the course will be on case studies, applications of principles, use of simulation, and practical problem-solving approaches.

EDU 790 Educational Research Seminar. Semester course; 3 lecture hours. 3 credits. Provides doctoral students with opportunities to investigate research areas related to their doctoral studies. Students and instructor will critique student conducted literature reviews and preliminary research proposals.

EDU 798 Thesis. Semester course; 1-6 credits. May be repeated for a maximum of six credits. A research study of a topic or problem approved by the student's supervisory committee and completed in accordance with acceptable standards for thesis writing.

EDU 890 Dissertation Seminar. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of adviser or dissertation chair. Designed to develop and refine the skills applicable to the preparation of an acceptable draft of a dissertation prospectus.

EDU 899 Dissertation Research. Semester course; variable credit. May be repeated. A minimum of twelve semester hours required. Prerequisite: Successful completion of Comprehensive Examinations and approval of student's Doctoral Prospectus. Dissertation work under direction of dissertation committee.

Graduate Courses in Administration (ASE)

ASE 600 Public School Administration. Semester course; 3 lecture hours. 3 credits. An overview of the theory and practice of public school administration. Emphasis will be placed on the governance of education

and leadership roles of school boards, superintendents, principals, and supervisors at the elementary and secondary levels. Appropriate field-based experiences relating theory to practice.

ASE 601 Processes of Instructional Leadership. Semester course; 3 lecture hours. 3 credits. An examination of clinical supervision methods for use by principals and supervisors to facilitate instructional improvement in schools. Emphasis on collection and interpretation of observation and interview data for analysis of teaching problems and development of improvement strategies consistent with current research.

ASE 602 Seminar in Elementary School Administration. Semester course; 3 lecture hours. 3 credits. Problems and issues in elementary school leadership. Major responsibilities of the elementary school principal. Enrollment limited to specialists in administration.

ASE 603 Seminar in Secondary School Administration. Semester course; 3 lecture hours. 3 credits. Problems and issues in secondary school leadership. Major responsibilities of the secondary school principal. Enrollment limited to specialists in administration.

ASE 604 Principalship Seminar. Semester course; 3 lecture hours. 3 credits. Problems and issues in school administration, K-12. A culminating experience designed to provide school administrators with essential understandings, knowledge, and skills necessary to maintain and renew a school. Particular emphasis will be placed on planning, vision setting, student and staff affairs, curriculum and instruction, and resource allocation.

ASE 605 Educational Administration and Organizational Behavior. Semester course; 3 lecture hours. 3 credits. A study of organizational theory, structure, and culture relating to schools. Emphasis on conceptual understandings needed for practical implementation.

ASE 606 Development and Change in Educational Organizations. Semester course; 3 lecture hours. 3 credits. A study of organizational concepts and practices in educational contexts. Emphasis on both conceptual understandings and specific professional skills relating to diagnosis and development.

ASE 607 Principles of Educational Leadership. Semester course; 3 lecture hours. 3 credits. Develop understandings for school leaders of effective leadership in organizations, personal leadership styles, and modifying leadership styles. Leadership with respect to vision building, organizational communications, motivating others, and group problem solving will serve as major areas of study. Lecture, individual study, group work, and fieldwork will serve as major means of course delivery.

ASE 610 School and Community Relations. Semester course; 3 lecture hours. 3 credits. New concepts and specific techniques in school-community relations for teachers, involvement in educational planning, involvement in community planning, and an examination of evaluative projects for community use. Appropriate field-based experiences relating theory to practice will be included.

ASE 611 School Law. Semester course; 3 lecture hours. 3 credits. Legal aspects of school administration that include constitutional and statutory provisions and court decisions.

ASE 620 Improving School Programs and Performance. Semester course; 3 lecture hours. 3 credits. Introduction to principles of administering outcome-based instructional improvement strategies in schools. Applies testing and evaluation techniques to the problem of improving instruction, with an emphasis on identification, selection, and measurement of appropriate performance indicators.

ASE 621 Management of School Operations and Support Programs. Semester course; 3 lecture hours. 3 credits. Developing understanding and practices of the school principal with respect to key elements of managing school operations and support programs. Special attention will be given to goal setting for programs, securing, organizing, and managing human, material, and financial resources. Attention will be given to cost/time-effective practices and accountability.

ASE 632 Administration and Supervision of Special Education. Semester course; 3 lecture hours. 3 credits. Examines practices and

problems in providing school programs for individuals with disabilities and gifted students.

ASE 640 Public School Finance. Semester course; 3 lecture hours. 3 credits. A study of theories, policies, and expenditures of school funds. Special attention will be given to the practice of educational finance within the public school structure. The course will include such topics as the school budget, financial accounting, purchasing and supply problems, school equipment, and school insurance.

ASE 641 School Personnel Administration. Semester course; 3 lecture hours. 3 credits. A study of the personnel function in educational organizations. Designed to explore techniques and problems of staff-personnel relationships in contemporary education.

ASE 642 Organization and Administration of Guidance Services. Semester course; 3 lecture hours. 3 credits. A study of organizational principles and procedures necessary for the effective administration of guidance services. Consideration is given to procedures used in establishing guidance programs or modifying existing ones (or both), including the study of various community resources that can contribute to more efficient guidance services.

ASE 643 The Community School. Semester course; 3 lecture hours. 3 credits. The development and utilization of the community school concept will be examined. Community-wide use of school facilities and the involvement of the total community in the learning process will be studied. Emphasis will be placed on the physical plant design, organizational structure, staffing, and curriculum of the community school. The utilization of the community school to implement "life-long learning" will be stressed.

ASE 701 Development and Implementation of Administrative Policies in Education. Semester course; 3 lecture hours. 3 credits. Examines processes involved in developing and implementing educational policy from the perspective of the school administrator. Emphasis is given to the roles of federal and state governments in policy-making with attention to problems encountered in implementing educational policies.

ASE 702 Educational Administration: Contemporary Theory and Practice. Semester course; 3 lecture hours. 3 credits. Prerequisite: ASE 600 or equivalent. Study of recent developments in administrative theory and the application of these theories to contemporary and future educational issues and problems.

ASE 704 School Business Administration. Semester course; 3 lecture hours. 3 credits. Study of theories, principles, and practices of school business administration as they apply at the school district and school building levels.

ASE 705 Planning Educational Facilities. Semester course; 3 lecture hours. 3 credits. Study of the theory, principles, criteria, procedures, and practices of planning educational facilities and the modernization, maintenance, and operation of existing facilities.

ASE 706 Advanced Supervision of Instruction. Semester course; 3 lecture hours. 3 credits. Prerequisite: ASE 601 or equivalent. Examines the development of the curriculum and management of instruction in schools; particular attention to organizational processes in schools and their relationship to instruction.

ASE 707 Advanced Educational Law. Semester course; 3 lecture hours. 3 credits. Prerequisite: ASE 611 or equivalent. Study of the legal aspects of curricular decision making; the legal prerogatives and liabilities of school officials; and the legal responsibilities, rights, and liabilities of school personnel, school students, and parents of students.

Graduate Courses in Adult Education and Human Resource Development (ADE)

ADE 600 Adult Education Perspective. Semester course; 3 lecture hours. 3 credits. Provides a basic perspective on Adult Education. Presents a survey of the philosophical underpinnings of the field, including schools of thought and associated theorists, roles and functions of

adult educators, agencies and organizations that sponsor adult education programs. Examines selected processes and procedures used by adult educators and current issues impacting adult education.

ADE 601 The Adult Learner. Semester course; 3 lecture hours. 3 credits. An examination of the research findings from the applied behavioral sciences that affect adult learning throughout the life span. Emphasis is placed on the intellectual functioning and differential changes with age; the importance of self-image psychology to successful adult learning activities; relevant learning theories and principles that affect adult learning, motivation, adult attitudes, and participation patterns will be explored.

ADE 602 Adult Program Planning, Management, and Evaluation. Semester course; 3 lecture hours. 3 credits. Prerequisites: ADE 601 or permission of instructor. Models of program planning, management and evaluation appropriate for adult programs. Focuses on assessing needs, negotiating program content and logistics, and evaluating program effectiveness in a variety of settings.

ADE 603 Instructional Strategies for Adults. Semester course; 3 lecture hours. 3 credits. Prerequisites: ADE 602 or permission of instructor. Systematic models and specific teaching techniques will be studied. Emphasis on individualized instruction, instructional technology and student designed instructional projects.

ADE 604 Adult Education Seminar. Semester course; 3 lecture hours. 3 credits. An integrative End-of-Program Seminar. Enrollment is restricted to those who have completed the other ADE Core courses (600, 601, 602, 603), or are currently enrolled in them. Course involves students in real problem solving of community based Adult Education/HRD issues.

ADE 620 Human Resource Development Overview. Semester course; 3 lecture hours. 3 credits. Provides an overview of the HRD field, to include theories, practices and emerging concepts. Emphasis is on roles, functions and responsibilities of the HRD practitioner in supporting the strategies, mission and goals of the enterprise, whether public, private or nonprofit.

ADE 621 Skills Development for Human Resource Development. Semester course; 3 lecture hours. 3 credits. Develops skills and understandings critical to success as an HRD practitioner. Exposes students to techniques of instruction and survey instruments to gauge organizational climate and learning style differences. Emphasizes practical experience and issue analysis in gaining HRD skills that can be immediately employed.

ADE 622 Human Resource Development Strategies and Interventions. Semester course; 3 lecture hours. 3 credits. Examines organizational development, nature of interventions, when to use them (and not use them), and a variety of models for aligning human resources capabilities with organizational needs. Focuses on introduction of change and transformation of organizational culture.

ADE 700 Management of Adult Education and Human Resource Development Programs. Semester course; 3 lecture hours. 3 credits. Focuses on the policies and procedures essential to organizing and administering adult education and human resource development departments. Explores administrative theory, specific administrative tasks (e.g., staffing, budgeting) and administrative leadership as it relates to managing adult education and training units.

ADE 701 Advanced Program Planning in Adult Education and Human Resource Development. Semester course; 3 lecture hours. 3 credits. Prerequisites: ADE 603 Adult Program Planning, Management, and Evaluation or permission of the instructor. Analyzes current approaches to program planning in adult education and human resource development. Explores specific aspects of program planning, including needs analysis, managing large-scale program operations, and inter-organizational relationships.

ADE 702 Seminar in Adult Learning Theories. Semester course; 3 lecture hours. 3 credits. Provides an opportunity to examine adult learning theories from a variety of epistemologies. Course is cross-disci-

plinary in scope, capitalizes on a wide research base, and features interaction between students and lead theorists.

ADE 703 The Adult Education and Human Resource Development Consultant. Semester course; 3 lecture hours. 3 credits. Appropriate prerequisites required or permission of the instructor. Emphasizes the roles, responsibilities and skills of internal and external consultants working with adult education and/or human resource development organizations. Analyzes change, intervention and stabilization processes, the roles and functions of consultants, phases of the consulting process, adoption and diffusion of consultant innovations and diagnostic skills of consultants. Critiques current consultant intervention models and strategies.

ADE 704 Groups, Teams, and Organizational Learning. Semester course; 3 lecture hours. 3 credits. A critical analysis and evaluation of how human resource development draws on group dynamics, team related methodologies and organizational learning to create learning environments, analyze problems, build organizational capabilities and refine group processes.

ADE 705 Global Human Resource Development. Semester course; 3 lecture hours. 3 credits. Provides an in-depth awareness of how HRD practices must be modified when dealing with a global workforce. Probes a variety of multicultural dimensions in elevating cultural awareness and sensitivity. Emphasizes building effective HRD programs in cross-cultural contexts.

Graduate Courses in Counselor Education (COE)

COE 600 Introduction to Guidance. Semester course; 3 lecture hours. 3 credits. An introductory course for all students in counselor education. The course is designed for both elementary and secondary counselors and is a prerequisite to all other courses offered by the department of counselor education. It includes a survey of pupil personnel services and places special emphasis on those services associated with the guidance program.

COE 601 Theories of Counseling. Semester course; 3 lecture hours. 3 credits. The theories upon which counseling is based will be presented, with particular attention placed on the research underlying the theories. The primary focus will be on providing students with a theoretical foundation upon which to base their counseling techniques.

COE 602 Practicum: Techniques of Counseling. Semester course; 3 lecture hours. 3 credits. Prerequisites: COE 600 and COE 601 or permission of instructor. A study and application of a variety of counseling techniques employed in the counseling relationship. Emphasis will be placed on counseling skill development.

COE 603 Group Procedures in Counseling. Semester course; 3 lecture hours. 3 credits. Introduction to the group process, group counseling, and group guidance contrasted and defined; basically theoretical.

COE 604 Practicum: Group Procedures in Counseling. Semester course; 3 lecture hours. 3 credits. Prerequisites: COE 601 and COE 603. Utilization of small-group interaction as a vehicle to explore techniques and procedures common to human relations study. Focus on the teaching of interpersonal effectiveness, behavior objective identification, and developing of experiences relevant to leadership, communication skills, decision making, and development in affective or humanistic education.

COE 605 Career Information and Exploration. Semester course; 3 lecture hours. 3 credits. Designed to provide the potential counselor with an understanding of theoretical approaches to career development grades K-adult. Emphasis will be given to the relationship between counselor and student(s) in the career exploration and decision making process. A review of occupational, educational, and personal/social information resources will be made.

COE 606 Assessment Techniques for Counselors. Semester course; 3 lecture hours. 3 credits. An examination of individual and group tests

will be made. Particular attention will be given to tests of intelligence, aptitude, achievement, interest, and personality. Emphasis will be placed on the importance of careful selection, appropriate administration, skilled interpretation, and effective use of assessment instruments used by counselors.

COE 610 Guidance in Elementary and Middle Schools. Semester course; 3 lecture hours. 3 credits. An intensive study of guidance and counseling programs for children and young adolescents. Emphasizes the role of elementary and middle school counselors in developmental guidance. Methods for individual and group counseling and classroom guidance will be discussed and practiced.

COE 620 Student Personnel Services in Higher Education. Semester course; 3 lecture hours. 3 credits. Prerequisite: COE 601. A course that focuses attention on administration, decision making and problem solving in the area of student personnel services. Emphasizes the case study approach; students will participate in various administrative experiments requiring the employment of administrative theory and practice.

COE 621 Secondary School Guidance Seminar. Semester course; 3 lecture hours. 3 credits. An advanced course designed to provide a means for intensive study of secondary school guidance. The approach will be to integrate the knowledge and skills from various disciplines as they relate to the work of the secondary school counselor.

Graduate Courses in Early Childhood Special Education (ECH)

ECH 601 Assessment of Infants and Young Children with Disabilities. Semester course; 3 lecture hours. 3 credits. Provides knowledge and practical applications for the identification, placement, assessment for program planning, and evaluation of children with disabilities ages birth through five.

ECH 602 Instructional Programming for Infants and Young Children with Disabilities. Semester course; 3 lecture hours. 3 credits. Advanced study of intervention strategies for infants and preschool-aged children with disabilities. Emphasis on program planning, curriculum, classroom management, developmentally appropriate practice, and effective intervention strategies.

ECH 603 Program Management, Collaboration, and Service Coordination in Early Childhood Special Education. Semester course; 3 lecture hours. 3 credits. Examines provisions of state and federal laws applicable to service delivery systems for school-aged children with disabilities and their families. Emphasis on service delivery models, family participation options, resource coordination and collaboration, staffing problems, program evaluation procedures.

Graduate Courses in Emotional Disturbance (EMO)

EMO 500 Characteristics of Students with Emotional Disturbance. Semester course; 3 lecture hours. 3 credits. Focuses on the nature of children and youth with behavior disorders and emotional disturbances with emphasis on psychological, biophysical, sociological, and ecological factors that relate to their educational needs. Related topics include definitions and classification of disorders, school identification and assessment procedures, and intervention approaches.

EMO 501 Teaching Students with Emotional Disturbance. Semester course; 3 lecture hours. 3 credits. Prerequisite: EMO 500. Provides an in-depth study of instructional strategies and organization of activities for children and youth with behavior disorders and emotional disturbances children including curriculum, media, materials, and physical environment. Develops skills to plan and deliver instruction in a variety of educational settings including regular classes, resource rooms, self-contained classes, and residential programs.

EMO 603 Interactive Strategies in Teaching Students with Special Needs. Semester course; 3 lecture hours. 3 credits. Strengthens

teaching skills in affective education, social skills development, and life space interviewing techniques as methods of promoting human interaction skills among students with special needs in schools. Focuses on professional skills in interpersonal relationships, communication, consultation, and teamwork.

Graduate Courses in English Education (ENE)

ENE 532/ENG 532 Applied English Linguistics. Semester course; 3 lecture hours. 3 credits. May be repeated for credit. Application of linguistic theories and methods to selected teaching problems, such as teaching English grammar and usage, teaching English as a second or foreign language, or teaching standard English to students who speak different dialects.

ENE 601/ENG 601 Young Adult Literature. Semester course; 3 lecture hours. 3 credits. Examination of literature written for young adults, literature appropriate for young people in middle schools and high schools. Focuses on the content, characteristics, and teaching of such literature.

ENE 636/ENG 636 Teaching Composition. Semester course; 3 lecture hours. 3 credits. A study of the traditional and modern instructional strategies for teaching composition. The validity of strategies will be tested in the student's own writing.

ENE 643/ENG 643 Teaching Basic Writing Skills. Semester course; 3 lecture hours. 3 credits. The emphasis of this course will be on developing the student's ability to teach fundamental writing skills. It will include such topics as diagnosis of writing problems, strategies for correcting problems, and methods for evaluating progress.

ENE 694 Internship in Teaching Writing. Semester course; 1 lecture and 6 practicum hours. 3 credits. Observation and practice of instructional techniques in writing courses. By special arrangement the practicum may be done at a community college or other non-University setting.

Graduate Courses in Interdisciplinary Developmental Disabilities Studies (IDS)

IDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities. Semester course; 3 lecture hours. 3 credits. Provides information and activities on models of teamwork, group decision-making, team process, leadership, and communication and how they influence services for persons with disabilities and their families; content/discussion focuses on the roles and functions of individuals from various disciplines (including parents) as team members; includes case studies and simulations of interdisciplinary teamwork in action.

IDS 691 Special Topics in Developmental Disabilities. Semester course; 1-3 lecture hours. 1-3 credits. Prerequisite: Permission of graduate faculty adviser, course faculty coordinator, and director of preservice training at the Virginia Institute for Developmental Disabilities. Explores specific interdisciplinary content and issues in the field of developmental disabilities and examines the practice approaches of multiple disciplines.

IDS 692 Directed Study in Developmental Disabilities. Variable 1-4 credits. Prerequisite: Permission of graduate faculty adviser and director of preservice training at the Virginia Institute for Developmental Disabilities. Provides an independent study in a specific area of interdisciplinary practice in developmental disabilities developed under the supervision of a member of the graduate faculty.

Graduate Courses in Learning Disabilities (LDS)

LDS 530 Language Disabilities: Assessment and Teaching. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor or equivalent. Studies normal oral language development as a basis for understanding students who experience specific or general-

ized difficulties in learning a first language. Includes diagnostic and instruction strategies with an emphasis on the interrelationships of language content, and use.

LDS 600 Characteristics of Persons with Learning Disabilities. Semester course; 3 lecture hours. 3 credits. The nature and needs of individuals with learning disabilities, with emphasis upon psychological and behavioral characteristics as related to educational needs.

LDS 601 Methods of Clinical Teaching. Semester course; 3 lecture hours. 3 credits. Prerequisites: EDU 633 or LDS 620, and LDS 600. Specific methodologies for teaching individuals with identified precognitive and cognitive learning disabilities. Includes the use of developmental, remedial, and compensatory approaches for instruction in basic skills and accommodation to individual learning styles.

LDS 611 Teaching the Adolescent with Learning Disabilities. Semester course; 3 lecture hours. 3 credits. An advanced course in identifying, diagnosing, and remediating academic learning problems in the adolescent. Explores the organization, selection, and implementation of compensatory programs and methods under the impact of cognitive, motivational, curricular, social, and vocational factors.

LDS 620 Advanced Educational Diagnosis of Developmental Processes. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 633 or permission of instructor. Must be taken concurrently with Clinical Experience. An advanced course in the assessment and diagnosis of educationally relevant developmental processes in students with exceptionalities, including perception, cognition, language, and socialization. Develops skill in utilization and interpretation for educational purposes.

LDS 621 Advanced Educational Diagnosis of Academic Problems. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 633 or permission of instructor. Must be taken concurrently with Clinical Experience. An advanced course in the assessment and diagnosis of educationally relevant learning skills in students with exceptionalities, including language arts, mathematics, behavioral, vocational, and related skills. Develops skills in utilization and interpretation for educational purposes.

LDS 631 Aural Rehabilitation. Semester course; 3 lecture hours. 3 credits. A detailed review in techniques for teaching lip reading and auditory training for the hearing-impaired child.

Graduate Courses in Mental Retardation (MRT)

MRT 500 Language/Communication Intervention for Young Children and Individuals with Severe Disabilities. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of the instructor. An intensive study of the developmental sequence of language/communication acquisition and intervention strategies for infants; preschoolers and individuals with severe language delays or deficits, severe mental retardation, and/or other severe disabilities.

MRT 556 Introduction to Mental Retardation. Semester course; 3 lecture hours. 3 credits. Initial graduate offering for special education majors concentrating in mental retardation. Includes review and discussion of all ages and levels of individuals with mental retardation. Analysis of major issues in mental retardation such as deinstitutionalization, inclusion in school and community services, client advocacy, family involvement and new techniques in intervention and prevention.

MRT 560 Curriculum Design for Students with Mental Retardation. Semester course; 3 lecture hours. 3 credits. Prerequisites: EDU 330 or equivalent, and MRT 556. Examines issues and strategies required in selecting and developing curriculum for students with mental retardation. Emphasizes three components: the content and skills from resources used in teaching particular topics, instructional design procedures, and ways of coordinating and delivering instruction to students with mental retardation.

MRT 602 Curriculum for Students with Severe Disabilities. Semester course; 3 lecture hours. 3 credits. Evaluation, selection, and adaptation of curricula and programs for students with severe disabili-

ties. Emphasis on appropriate content across grade levels and curricular domains.

MRT 610 Teaching Strategies for Students with Severe Disabilities. Semester course; 3 lecture hours. 3 credits. This course is designed to provide instruction in teaching methods for individuals with severe behavior, learning, or emotional disabilities. Emphasis will be placed on instructional program development, task analysis, and methods of precision teaching.

Graduate Courses in Physical Education (PHE)

PHE 500 Motor Development of Young Children. Semester course; 3 lecture hours. 3 credits. This course will deal with the development of small children, preschool, kindergarten, and first-grade children through physical education. Emphasis will be on the construction of a program of motor development for each of these three groups. The programs will be based on the research findings in such areas as perceptual-motor development, motor learning, educational psychology, and others. Those students and teachers in the fields of physical education, special education, and elementary education should find this course useful in developing programs of motor development for their students.

PHE 501 Clinical Applications in Exercise Science. Semester course; 3 lecture hours. 3 credits. Designed specifically for students in Clinical Exercise Science. Emphasis is placed on physical evaluation procedures to include both spine and extremities, musculoskeletal function, goniometry and gait analysis. The lecture format of the course is augmented by labs to afford the student an opportunity to develop basic clinical skills and to gain an understanding of the rehabilitative techniques, treatment and process.

PHE 507 Teaching Health in the Public Schools. Semester course; 3 lecture hours. 3 credits. Examines health issues, family influences, teenage attitudes, and signs of progress in health behavior. School health programs, including remedial, classroom instruction, and environmental aspects of school life are also considered.

PHE 514 Physical Education for Special Populations. Semester course; 3 lecture hours. 3 credits. This course is designed to provide fundamental information to students at the graduate level on physical education programming for children with disabilities. Course content focuses on programming techniques and methods that are most effective in meeting the specific physical education needs of the individual child. Emphasis is on Public Law 94-142 provisions currently affecting physical education programming for special populations; in particular, the development of specially designed physical education programs, on individualized education programs, and providing programming in the least restrictive environment.

PHE 521 Athletic Care and Training. Semester course; 3 lecture hours. 3 credits. The course is designed to give the student insight and understanding into the basic principles in the care and prevention of athletic injuries. Course content includes emergency first aid techniques, mechanisms of athletic injuries with an anatomical and kinesiological analysis of common injuries, and preventive and protective techniques.

PHE 600 Seminar in Motor Learning Performance. Semester course; 3 lecture hours. 3 credits. Analysis of early patterns of behavior and the development of physical skills in childhood, adolescence, and adulthood. Consideration of differences in motor proficiency and factors affecting the acquisition of motor skills and concepts of motor learning with reference to the improvement of instructional practices.

PHE 601 Movement Physiology. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Physiological processes in relation to bodily exercises in everyday life and sports activities. Physiological changes in the human organism due to movement. Investigation and application of research to physical education. Students must design, conduct, and complete a research study.

PHE 602 Development of Research Techniques in Physical Education. Semester course; 3 lecture hours. 3 credits. Theory and techniques involved in the analysis and interpretation of data pertinent to research in physical education. Basic statistics applied to data

encountered in physical education research. Student must design, conduct, and write a pilot study.

PHE 603 Applied Fitness and Nutrition for Health and Physical Education Professionals and Coaches. Semester course; 3 lecture hours. 3 credits. Prerequisite: Open only to Health and Physical Education Professionals with at least a bachelor's degree. An in-depth study of applied fitness and nutrition areas which are vital to health and physical education teachers, coaches, health club instructors/directors and corporate fitness directors. Emphasis is on the application of knowledge and fundamental fitness and nutrition principles.

PHE 604 Sports Nutrition. Semester course; 2 lecture hours and 2 laboratory hours. 3 credits. Prerequisite: HED 400 or equivalent or permission of instructor. Provides students with a basic understanding of human nutrition through study of fats, carbohydrates, proteins, vitamins, minerals, and water. This course places major emphasis on the special nutritional needs of the exercising and athletic population. The major aspects of sports nutrition are examined including weight control and body composition, the energy system, performance enhancement, disease, and the modification of eating and exercise behavior.

PHE 605 Critical Issues in Health Education. Semester course; 3 lecture hours. 3 credits. Provides an overview of major health issues in the twentieth century. Considers knowledge, attitudes, and behaviors in the areas of consumer health, emotional health, family life, trends in disease, issues of the environment, drug use and abuse, nutrition, exercise and weight control. Designed for K-12 teachers, future teachers and health professionals with a focus on helping youth in the school setting.

PHE 606 Psychosocial Aspects of Sports. Semester course; 3 lecture hours. 3 credits. Introduces teachers and coaches to concepts and techniques that will enhance their effectiveness in working with teams and individuals in the sport and physical education setting. Examines current research in and theories of exercise science related to the improvement of individual performance including motor skill acquisition and practice, stress and anxiety reduction, optimal mental training concepts, and the relationship of performance to growth, maturation, and physical training.

PHE 610 Exercise Physiology: Instrumentation and Techniques. Semester course; 1 lecture and 4 laboratory hours. 3 credits. Designed to integrate practical and theoretical aspects of exercise physiology; experiences will benefit the physical educator, the coach, the athletic trainer, and the physiologist. Units include setting up and operating a movement physiology laboratory and techniques of open-circuit spirometry, closed-circuit spirometry, blood chemistry, and anthropometrics.

PHE 611 Mechanical Analysis of Human Motion. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Anatomical relationships dealing with arthrology, myology, neurology, and physical principles as applied to mechanical and kinesiological interpretation of normal, abnormal, and growth and development functions. Students must design, conduct, and complete a research study.

PHE 612 Administration and Supervision of Physical Education. Semester course; 3 lecture hours. 3 credits. Guides for administrative and supervisory policies and problems in physical education. Observation techniques, standards for judging instruction, the supervisory conference, cooperative supervision. Emphasis placed upon the common problems met by administrators and supervisors.

PHE 613 General Motor Ability Evaluation. Semester course; 2 lecture and 2 laboratory hours. 3 credits. The theory of the construction of evaluative instruments in physical education with emphasis on a critical examination of existing measurement devices. Emphasis on the use of measurement as a tool for improving physical education programs.

PHE 614 Motor Assessment for Special Populations. Semester course; 3 lecture hours. 3 credits. Prerequisite: PHE 514 or permission of instructor. This course is designed to provide the student with basic information regarding motor tests and observational instruments that assess and evaluate special populations. The content of the course will focus on the analysis of these tests as to their 1) main components and items purporting to measure these components; 2) administration, i.e.,

time, administrator's experience, group size, validity and reliability, and standardization; and 3) use in establishing and monitoring annual goals and short-term objectives for an individualized education program.

PHE 621 Sports Medicine. Semester course; 3 lecture hours. 3 credits. Prerequisite: PHE 521 or permission of instructor. The course is designed to give the student knowledge in the advanced principles of prevention and treatment of athletic injuries. The course includes advanced first aid techniques and the more sophisticated means of athletic care and prevention. Students are exposed to such modalities as mechanical therapies, thermal therapy, cryotherapy, hydrotherapy, and electrotherapy. One major component of the course deals with therapeutic exercise and its use in the rehabilitation of the injured athlete.

PHE 701 Clinical Exercise Physiology. Semester course; 2 lecture and 2 laboratory hours. 3 credits. Prerequisite: PHE 601. Theoretical and functional techniques of graded exercise testing for functional and/or diagnostic assessment are examined. Topics include pulmonary, cardiovascular, respiratory and myocardial physiology and the principles and skills of exercise prescription based on metabolic calculations.

Graduate Courses in Reading (REA)

REA 600 Analysis and Correction of Reading Problems. Semester course; 3 lecture hours. 3 credits. Prerequisite: EDU 561 or 549. An analysis of factors relating to reading difficulty. Diagnostic testing procedures and instructional strategies appropriate for the reading specialist in clinical and classroom settings will be emphasized.

REA 601 Psycholinguistics and Language Arts Curriculum. Semester course; 3 lecture hours. 3 credits. An investigation of the psychological processes involved in language behavior and the relationship of these processes to the teaching of the basic communication skills.

REA 602 Teaching Reading to Adults. Semester course; 3 lecture hours. 3 credits. Examines strategies appropriate for teaching adult readers functioning at levels ranging from beginning to college level. Analyzes basic reading concepts, skills, strategies, and adult reading methods and materials. Focuses on adapting teaching techniques for use with adults in various organizational patterns.

REA 605 Organizing and Implementing Reading Programs. 3 lecture hours. 3 credits. Prerequisites: EDU 561, REA 600, EDU 672 or permission of instructor. Integrates reading theory with program implementation. Analyzes the role of reading specialist as related to program design, assessment, supervision, instruction, and resource responsibilities. Includes specific field-based requirements.

REA 691 Topics in Reading. Semester course; 3 lecture hours. 3 credits. Examines recent trends and topics within the field. Includes review of pertinent research, examination of policy issues and investigation of historical movements. Clinical application is included as appropriate. Prerequisites determined by topic.

Graduate Courses in Recreation, Parks and Tourism (REC)

REC 506 Contemporary Issues in Therapeutic Recreation. Semester course; 3 lecture hours. 3 credits. Prerequisite: REC 371, 472 or equivalent. An examination of contemporary issues affecting the delivery of leisure services and programs to persons with disabilities. Both the scope and nature of leisure opportunities are considered.

REC 510 Tourism Policy. Semester course; 3 lecture hours. 3 credits. The examination of tourism policy with emphasis upon components involved in the formulation and implementation of public policy. The course will include an analysis of the legislative programs of regional and national tourism organizations.

REC 601 Conceptual Foundations of Recreation, Parks, and Tourism. Semester course; 3 lecture hours. 3 credits. A study of the development of the recreation, parks, and tourism services movement in the United States. Attention will be given to the historical, philo-

sophical, and social bases of recreation, parks, and tourism in today's society. Implications for present and future leisure service delivery planning will be emphasized.

REC 602 Organization and Administration of Recreation and Parks Systems. Semester course; 3 lecture hours. 3 credits. An analysis of administrative theories and patterns of management appropriate to the establishment and operation of community leisure service programs. Special emphasis will be given to organizational planning, goal setting, financial support, program evaluation, and the role of the administrator in a leisure service setting.

REC 603 Research and Evaluation Processes in Recreation, Parks, and Tourism. Semester course; 3 lecture hours. 3 credits. Familiarizes student with the scientific approach to inquiry as applied to the study of the phenomenon of leisure. Basic research terminology, methodology, procedures, and concepts are explored with particular reference to the application of empirical investigation to topics of interest to professionals in the field of recreation, parks, and tourism.

REC 604 Research Practicum. Semester course; 3 lecture hours. 3 credits. Prerequisite: REC 603. Conceptualizing and writing a professional paper or the first part of a research study (either REC 797 Research Project or REC 798 Thesis) on a topic in recreation, parks, and tourism chosen by the student in consultation with the instructor and adviser. Emphasis will be placed on problem identification, literature review, and research design.

REC 605 Program Development in Therapeutic Recreation. Semester course; 3 lecture hours. 3 credits. This course will provide students with an opportunity to critically examine contemporary models of leisure service programming for disabled persons. Emphasis will be placed upon observation and analysis of medical-clinical custodial, therapeutic community/milieu, and education and training approaches to recreation for persons with disabling conditions.

REC 606 Directed Readings. Semester course; 3 credits. Prerequisite: Permission of instructor. Provides student with the opportunity to pursue an independent research project or extensive literature review under the supervision of an instructor. Independent work by student must be preceded by the instructor's review and approval of the proposal. Cannot be used in place of existing courses.

REC 607 Field Instruction. Semester course; 3 semester hours; 150-360 clock hours. 3 credits. Application of theoretical knowledge as a practicing professional in a service delivery agency. Basic knowledge,

attitudes, and skills necessary to function as a provider or manager of leisure services will be assessed by a faculty member and field supervisor. Enrollment only by permission of departmental graduate committee.

REC 608 Analysis and Planning for Travel and Tourism. Semester course; 3 lecture hours. 3 credits. Analysis and planning of travel and tourism resources in the development of an effective comprehensive tourism services delivery system.

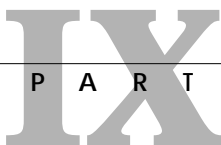
REC 609 Program Development and Management. Semester course; 3 lecture hours. 3 credits. Analysis of the individual, political, and societal determinants of recreation programming. Covers the factors influencing leisure behavior and the role of the program supervisor in recreational and leisure settings. The course also deals with the evaluation of recreation and park programs and with the research functions in recreation programming.

REC 690 Seminar. Semester course; 3 lecture hours. 3 credits. Restricted to second-semester graduate students who have completed the research methods course. Individual graduate thesis and research topics will be discussed as will topics of current, specialized interest to the recreation, parks, and tourism fields.

REC 722 Recreation Systems Planning. Not offered regularly. Semester course; 3 lecture hours. 3 credits. General principles of planning and development of local and regional recreation areas and facilities. Investigation of standards relative to size, location, and programs. Review of national and statewide outdoor recreation plans and trends in recreation development. A practical exercise in recreation planning to be completed in the field.

REC 797 Research Project. 3 credits with 1 credit extension. Prerequisites: REC 603 and 604. The research project involves a systematically planned and executed scholarly project utilizing an approved methodology for investigating and reporting on a major issue pertinent to the student's interest in the recreation, parks, and tourism fields.

REC 798 Thesis. 3 credits with 1 credit extension. Prerequisites: REC 603 and 604. The master's thesis involves a carefully planned and executed research study under the supervision of an adviser and thesis committee utilizing the traditional standards for thesis writing.



School of Engineering

Henry A. McGee Jr., PhD

Associate Provost for Engineering

Thomas W. Haas, PhD

Associate Dean for Academic and Faculty Affairs

Gerald Miller, PhD

Associate Dean for Graduate Affairs

Robert Heinz, PhD

Associate Dean for Industrial and Business Affairs

The School of Engineering, the newest school at Virginia Commonwealth University, began operation on July 1, 1995, and expects to graduate its first class in the year 2000. Undergraduate degrees are offered in the areas of biomedical, electrical, mechanical, and chemical engineering. The School of Engineering's main offices are located on the Academic (West) Campus of Virginia Commonwealth University. The School of Engineering advanced degree programs are coordinated through the Office of the Associate Dean for Graduate Affairs who acts for the dean of engineering on all issues related to administration of advanced degree programs.

The Biomedical Engineering Program, which began in 1984, offers an undergraduate, Master of Science (MS), and Doctor of Philosophy (PhD) degree. The Biomedical Engineering Program is located on the MCV (East) Campus of Virginia Commonwealth University, and has well-established ties to the schools on the MCV Campus.

Programs

The Biomedical Engineering Program offers advanced training leading to both master's (MS) and doctoral (PhD) degrees. The Biomedical Engineering Program also participates in an MD/PhD Program with the School of Medicine.

Through a cooperative agreement with Virginia Polytechnic Institute and State University (Virginia Tech), students in the Biomedical Engineering Program may access courses and/or research opportunities at Virginia Tech. The Commonwealth Graduate Engineering Program, which is located at and managed by Virginia Commonwealth University, coordinates MS degree offerings through the University of Virginia and Virginia Polytechnic Institute and State University (see Part II of this *Bulletin* for details).

One faculty member from the Biomedical Engineering Program serves as graduate program director, who is appointed by the chair of the program. The graduate program director acts on behalf of the program and holds the responsibility and authority to represent the program and its faculties to the University.

Requirements for Admission

- The following credentials constitute an application and should be sent to the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051.
 - Application for admission on a form furnished to the applicant on request. A fee paid in the form of a check or money order (payable to VCU) must accompany the application. The fee cannot be returned nor credited toward tuition payment.
 - Official transcripts of all undergraduate and graduate work sent directly from college or university registrars to the School of Graduate Studies.
 - Letters of recommendation from three present or former teachers or others believed by the applicant to be qualified to evaluate fitness to engage in graduate study for the degree in the field of choice.
 - A personal letter from the applicant summarizing motivation, education, and aims in pursuing graduate study.
 - Verbal, quantitative, and analytical portions of the Graduate Record Examination (GRE) are required for all applicants and are recommended for MD/PhD applicants. For information on GRE examination, contact the School of Graduate Studies, Virginia

Commonwealth University, Richmond, VA 23284-3051 or the Office of Student Services, School of Education, Virginia Commonwealth University, Oliver Hall, 2087, Richmond, VA 23284-2020 or Educational Testing Service, Box 955, Princeton, NJ 08540. Advanced tests are not required.

- International applicants for whom English is not their native language must meet university admission requirements for performance on the TOEFL (Test of English as a Foreign Language). The current minimum TOEFL score is 550.
- Acceptance of an applicant is based upon the recommendation of the Admissions Committee with approval of the program chair.

Registration

In Biomedical Engineering, all new students begin their course of study in the fall semester (August). Spring semester admissions require the recommendation of the graduate program director and approval of the chair. For the Commonwealth Graduate Engineering Program, students may begin their course of study in either the fall or spring semester.

Assistantships

A number of full or partial teaching and research assistantships are available in the Biomedical Engineering Program. Assistantships are awarded based on academic performance. Full support assistantships are for a 12-month period and will cover tuition, fees, and a stipend.

A brief description of financial aid based on demonstrated need is detailed in Part I of this *Bulletin*. Need-based aid programs include National Direct Student Loan, college work study, and institutional loans.

Honors

The **Alexander Mallory Clarke Award** for academic excellence is given each spring to the student who is recognized by the faculty for outstanding achievement in the first year of study.

Student Advisory and Advisory Committee

The successful completion of the requirements for both the MS and PhD degrees in Biomedical Engineering includes an original research project, the progress of which is guided by a faculty adviser and monitored by an advisory committee. Students receive guidance and counsel from the graduate program director prior to the appointment of the permanent adviser. The permanent adviser holds the primary responsibility for directing the development of the student in the program and providing the appropriate guidance and counsel essential to the scholarly development of the student.

An advisory committee, appointed shortly after the permanent adviser is appointed, serves as both an examining and consultative body. Its function is to assist the development of the student. Committee members hold a special responsibility as a source of counsel for the student. For details, students should contact either the graduate program director or the program chair.

Requirements for Graduate Degrees in Biomedical Engineering

- All full-time graduate students are expected to register for a minimum of 12 hours of graduate credits per semester and one semester hour during the summer, exclusive of audited courses. This requirement includes research.
- Graduate students are required to remain in good academic standing through the course of their degree program. Unsatisfactory student performance includes:

- The assignment of a grade of "U" or "D" or "F" in any course.
- Failure to maintain a cumulative grade-point average of 3.0 or greater.
- Failure to pass the written or oral comprehensive examination.
- Failure to pass the final examination.

A student whose performance is unsatisfactory must successfully petition the dean of the School of Graduate Studies to continue in the graduate program. Unsatisfactory performance also constitutes grounds for the termination of financial assistance to the student.

- Graduate students may not take the comprehensive examination for the PhD degree if their overall grade-point average is less than 3.0 or if the grade-point average for courses within the program is below 3.0. Students may not take the final oral examination for the MS or PhD degree if their overall grade-point average is below 3.0. The examining body for the administration of the comprehensive examinations and the final examination is the student's Advisory Committee.

Master of Science

- Advanced graduate study leading to the Master of Science degree is offered in the Biomedical Engineering Program and through the Commonwealth Graduate Engineering Program. The degree requirements for Biomedical Engineering are given below. The degree requirements for the Commonwealth Graduate Engineering Program are described in Part II of this *Bulletin*.
- For Biomedical Engineering, a minimum of 36 credit hours exclusive of research credits is required. Two calendar years of study usually are necessary to complete the requirements. A time limit of five calendar years, beginning at the time of first registration, is placed on work to be credited toward the Master of Science degree. Generally,

a maximum of six credits of approved graduate course work required for a master's degree may be transferred from another VCU program or outside institution and applied toward the degree.

Each student must conduct an original investigation under the supervision of the permanent adviser and prepare a thesis reporting the results of this research and analyzing its significance in relation to existing scientific knowledge. This study is reported in a thesis prepared in acceptable form and style. On approval of the thesis by the adviser, the student submits a copy to each member of the Advisory Committee. The thesis is examined by the student's Advisory Committee members, who shall decide upon its acceptability. The committee members may confer with one another before making their decision. Each committee member shall report to the student's adviser when the thesis is acceptable for defense. The thesis is approved for defense only if accepted unanimously.

On approval of the thesis, the student appears for a final oral examination administered by the student's Advisory Committee. This examination of an MS candidate includes the subject matter of course work as well as the thesis.

Doctor of Philosophy

- Advanced graduate study leading to a Doctor of Philosophy degree is offered only in the Biomedical Engineering Program.
- A minimum of 42 credit hours, exclusive of research credits, is generally required. A minimum of three years of study, including research, is necessary to complete all requirements.
- For all PhD programs, a period of residence of at least three consecutive semesters is required. Residency is defined as registration for at least nine credits per semester. A time limit of seven calendar years, beginning at the time of first registration, is placed on work to be credited toward the Doctor of Philosophy degree.

Comprehensive Examinations

In order to advance to doctoral candidacy, the student must pass both written and oral comprehensive examinations. The written examination(s) focuses on the subject matter deemed critical as a foundation in the Program. The written examination is largely based on material covered in required course work and its application to theoretical and practical problems. The oral examination, which follows successful completion of the written examination(s), is administered to assess the ability of the student to integrate information and display an appropriate mastery of problem-solving capabilities. Graduate students may not take the comprehensive exam if their grade-point average is less than 3.0 or the grade-point average is less than 3.0 for BME courses. For further details, see the graduate program director or the program chair.

Admission to Candidacy

Before admission to candidacy for the doctorate, students must have: (1) completed required course work; (2) successfully completed the comprehensive examinations; and (3) fulfilled all additional departmental requirements. In the Department of Biomedical Engineering, all students must complete all the requirements for the MS, including successfully defending an MS thesis, before being admitted into candidacy for the PhD degree. This last requirement will be waived for those students who: (1) already have an MS in Biomedical Engineering or related discipline or (2) have successfully completed two years of medical school in the MD/PhD Program as described in Part X of this *Bulletin*.

Dissertation Research

- The student must conduct a substantial original investigation under the supervision of the permanent adviser and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge.
- When the dissertation has been completed, copies in accepted form and style are submitted to the members of the Advisory Committee. The committee members decide upon the acceptability of the candidate's dissertation. A favorable unanimous vote is required to approve the dissertation, and all examiners are required to vote.
- If the Advisory Committee accepts the dissertation for defense, the candidate appears before them for a final oral examination. This examination is open to all members of the faculty. The final oral examination will be limited to the subject of the candidate's dissertation and related matters. A favorable vote of the candidate's Advisory Committee and no more than one negative vote, shall be required for passing the final oral examination. All committee members must vote. There shall be an announcement of the candidate's name, department, and title of dissertation, together with the day, place and hour of the final oral examination at least 10 working days in advance.

Nondegree-Seeking Students

Students not admitted to a degree program must obtain permission from the course director and chair before being allowed to register for courses.

Summer Registration

Graduate students are expected to devote 10 or more weeks during the summer to full-time research. Students registered for research credit are billed at the established tuition rate.

Termination of Enrollment

The University reserves the right to terminate the enrollment of any student for unlawful, disorderly, or immoral conduct or for persistent failure to fulfill the purposes for which the student was matriculated.

Program in Biomedical Engineering

- Abraham, Donald J. *Professor and Chair (Medicinal Chemistry)* PhD, University of Pittsburgh; molecular graphics, x-ray crystallography, drug design.
- Baumgarten, Clive M. *Professor (Physiology)* PhD, Northwestern University; properties of excitable membranes, cardiac electrophysiology.
- Bowlin, Gary *Assistant Professor* PhD, University of Akron; cellular engineering, tissue engineering.
- Cardea, John A. *Professor and Chair (Surgery, Orthopedics)* MD, West Virginia University; biomechanics and surgical procedures of total joint replacement.
- Chlebowski, Jan *Professor (Biochemistry and Molecular Biophysics)* PhD, Case Western Reserve University; structure and function of macromolecules.
- Damiano, Ralph J. Jr. *Assistant Professor (Surgery)* MD, Duke University; cardiac waveform analysis.
- Desai, Tushar *Affiliate Assistant Professor* PhD, Vanderbilt University; cardiophysiology.
- Fatouros, Panos *Professor (Radiation Physics)* PhD, Ohio State University; osphalometric radiography, magnetic resonance imaging.
- Fei, Ding-Yu *Associate Professor* PhD, Pennsylvania State University; medical imaging, biofluid mechanics, and ultrasonic tissue characterization.
- Genova, James *Affiliate Professor* PhD, State University at Stony Brook; acoustic signal processing.
- Grant, J. Wallace *Associate Professor (Engineering Sciences and Mechanics, Virginia Polytechnic Institute and State University)* PhD, Tulane University; mathematical modeling of biological systems.
- Haas, Thomas *Professor (Director, Commonwealth Graduate Engineering Program)* PhD, Princeton University; polymer engineering.
- Harkins, Stephen W. *Professor (Gerontology)* PhD, University of North Carolina; pain and age, psychophysiology of sensation, perception and cognitive processing.
- Hsia, Peng-Wie *Assistant Professor (Surgery)* PhD, University of Michigan; electrophysiology, signal processing.
- Kellogg, Glen E. *Assistant Professor (Medicinal Chemistry)* PhD, University of Arizona; molecular graphics and software development.
- Kraft, Kenneth *Associate Professor (Radiology)* PhD, University of Rochester; medical imaging, magnetic resonance imaging.
- Lenhardt, Martin L. *Professor* PhD, Florida State University; supersonic bone conduction, auditory neurobiology.
- Marmarou, Anthony *Professor (Surgery)* PhD, Drexel University; modeling of neurological function following cerebral trauma.
- Miller, Gerald *Professor and Chair* PhD, Pennsylvania State University; biofluid mechanics, artificial organs, rehabilitation engineering.
- Moon, Peter *Associate Professor (Dentistry)* PhD, University of Virginia; dental bonding and mechanical testing of dental materials, biological reactions of materials.
- Ochs, Alfred L. *Assistant Professor* PhD, Washington University; ocular motion in cerebella disease, visual evoked potentials in multiple sclerosis.
- Ornato, Joseph P. *Professor (Internal Medicine)* MD, Boston University; computer applications in cardiology and emergency medicine.
- Pittman, Roland N. *Professor (Physiology)* PhD, State University of New York at Stony Brook; microcirculation, oxygen delivery.
- Regelson, William *Professor (Medicine)* MD, New York State University College of Medicine; auditory neurobiology.
- Wayne, Jennifer S. *Assistant Professor* PhD, University of California, San Diego; biomechanics of cartilage and other soft tissue, joint biomechanics.
- Wechsler, Andrew S. *Professor (Chair, Surgery)* MD, State University of New York, Downstate Medical Center; cardiomechanics of skeletal cardiomyoplasty.
- Yin, Chang *Assistant Professor (Orthopedic Surgery)* PhD, University of London; molecular biology of soft tissues (cartilage, tendon, etc.).
- Zuelzer, Wilhelm *Associate Professor (Orthopaedic Surgery)* MD, Virginia Commonwealth University; biomechanics of knee and ankle joints.

Graduate Courses in Biomedical Engineering (BME)

- BME 507 Biomedical Electronics and Instrumentation.** II. 2 lecture and 2 laboratory hours. 3 credits. Fundamental principles and applications of electronics as related to biological sciences.
- BME 509 Microcomputer Technology in the Biomedical Sciences.** II.2 lecture and 2 laboratory hours. 3 credits. Microcomputer applications to the acquisition and manipulation of data in the biomedical laboratory.
- BME 511 Fundamentals of Biomechanics.** 3 lecture hours. 3 credits. Prerequisites: Calculus and ordinary differential equations (MAT 200-201, MAT 301 or equivalent). Presents basic properties of materials, describes methods of material testing, and introduces techniques for analyzing the solid and fluid mechanics of the body. Considers topics such as stress/strain relationships, particle mechanics, and force balances as well as viscous/inviscid flow. Bernoulli's Law, Poiseuille flow, and laminar/turbulent states.
- BME 603 Biomedical Signal Processing.** 3 lecture hours. 3 credits. Prerequisites: Calculus and differential equations (MAT 301 or equivalent), including Laplace and Fourier Transforms. Explores theory and application of discrete-time signal processing techniques in biomedical data processing. Includes discrete-time signals and systems, the Discrete/Fast Fourier Transforms (DFT/FFT), digital filter design and implementation, and an introduction into processing of discrete-time random signals.
- BME 610 Microprocessor Interfacing for Biomedical Instrumentation.** I.2 lecture and 2 laboratory hours. 3 credits. Prerequisite: BME 509 or permission of instructor. Principles and applications of microprocessor interfacing for biomedical instrumentation. Topics include microprocessor architecture, assembly language, programming and debugging techniques, EPROM programming, and bus structure and interfacing.
- BME 611 Cardiovascular Dynamics.** I.3 lecture hours. 3 credits. Pre or corequisite: PIO 501 or PIO 502. Analyzes and models the cardiovascular system in health and disease through studies on the properties of heart and vascular tissue, the mechanics of blood flow, and the application of engineering methods to the diagnosis and treatment of clinical abnormalities.
- BME 612 Structural Biomechanics.** 3 lecture hours. 3 credits. Prerequisite: BME 511. Treats mechanical functions of the human body as an engineering structure used to assist and supplement these functions. Includes movement of the musculoskeletal system, joint reaction forces, stresses and strains developed within bones, function and design of orthopedic prostheses and braces, effect of vibration and impact on the body, mathematical and other models of the body.
- BME 613 Biomaterials.** I. 3 lecture hours. 3 credits. Prerequisite: Undergraduate material science or permission of the instructor. Primary and secondary factors determining the performance of materials used for implants in the human body. Topics will include metallurgy of stainless steel, cobalt-chromium alloys, titanium alloys, biocompatibility of implant materials, mechanical and physical properties of biomaterials, corrosion of biomaterials, and medical polymers.
- BME 615 Medical Imaging.** I. 3 lecture hours. 3 credits. Prerequisite: Calculus and college physics. Covers the physical principles and techniques of medical imaging modalities such as ultrasound, x-ray, and nuclear magnetic resonance. Includes generation and detection of images, consideration of system design and qualitative image analysis.
- BME 635 Modeling for Biomedical Engineers.** II.3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Applies mathematical modeling techniques to biomedical systems. Covers linear and nonlinear systems, deterministic and random systems, large systems, ecosystems, numerical techniques, graph theoretical approaches, and simulation packages. Utilizes examples of biochemical, physiological, and pharmacokinetic systems throughout.

BME 641 Survey of Molecular Modeling Methods. Semester course; lecture and laboratory hours. 1 credit. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

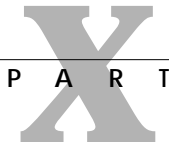
BME 670 Advanced Molecular Modeling Theory and Practice. Semester course; lecture and laboratory hours. 3 credits. Prerequisite: PHC 641, BME 641 or permission of the instructor. Examines the principles and applications of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hand-on experience using state-of-the-art hardware and software for molecular modeling.

BME 680-681 Research Orientation I-II. 4 laboratory hours. 2 credits (nondidactic course) per semester. Research rotation through BME core and selected affiliate laboratories.

BME 690 Biomedical Engineering Research Seminar. I, II. 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the program seminar or special group seminar.

BME 691 Special Topics in Biomedical Engineering. I, II. 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advance study, or specialized laboratory procedures not available in other courses or as part of the research training.

BME 697 Directed Research in Biomedical Engineering. I, II, S. 1-15 credits. Research leading to the MS degree or elective research projects for other students.



School of Medicine

Hermes A. Kontos, MD, PhD

Vice President for Health Sciences and Dean, School of Medicine

Heber H. Newsome, MD

Senior Associate Dean

Jan F. Chlebowski, PhD

Associate Dean for Graduate Education

The School of Medicine is located on the MCV Campus of Virginia Commonwealth University. In 1994, the Board of Visitors of VCU merged the former School of Basic Health Sciences with the School of Medicine. In so doing, the advanced graduate degree programs of the former school came under the aegis of the School of Medicine.

Programs

Graduate programs offering master's (MS) and doctoral (PhD) training in the School of Medicine include:

- Anatomy
- Biochemistry and Molecular Biophysics
- Biostatistics
- Human Genetics
- Microbiology and Immunology
- Pathology
- Pharmacology and Toxicology
- Physiology

A two semester post-baccalaureate certificate program offering training for students seeking admission to professional school (i.e., Medicine, Dentistry) is available as the Pre-Medical Basic Health Sciences Certificate. Defined curricula, which also may serve as a foundation in other advanced degree programs are offered in the following disciplines:

- Anatomy
- Biochemistry and Molecular Biophysics
- Human Genetics
- Microbiology and Immunology
- Pharmacology and Toxicology
- Physiology

The school also offers an MD/PhD training program, an MD/MPH program, a Master of Genetics Counseling program, combined degree programs at the MS and PhD level in cooperation with the School of Dentistry and combined Anatomy/Physical Therapy and Physiology/Physical Therapy PhD programs. In addition, the Department of Preventive Medicine and Community Health offers a program leading to the Master of Public Health (MPH) degree. Recognizing that graduate education should prepare students for a variety of career options, and that developments in the basic sciences have expanded the breadth of scholarship, the school has developed approaches to interdisciplinary education, particularly in the areas of neuroscience, molecular biology and genetics, immunology, and structural biology.

The basic science departments hold responsibility for providing instruction in their disciplines for students (at the undergraduate, graduate and professional level) in the other schools and colleges of the University as appropriate. This institutional outreach provides added opportunities for the development of collaborative activity in scholarship and teaching experience relevant to graduate education. Programmatic outreach extends beyond institutional boundaries with cooperative scholarly and educational programs that have recently been initiated with Virginia Union University and Virginia State University, two HBCU (Historically Black Colleges/Universities) institutions in the region. The scholarly programs of the faculty also provide an avenue for international experience for students in the various programs.

Organization

In the School of Medicine, advanced degree programs are coordinated through the Office of the Associate Dean for Graduate Education who acts for the dean on all

issues related to administration of advanced degree programs. Each advanced degree program is represented by a faculty member who serves as director for graduate programs. Directors are appointed either by the chair of the department offering graduate degrees or, in the case of interdisciplinary programs, by the dean in consultation with the chairs of participating departments. The directors of graduate programs act on behalf of the programs and hold the responsibility and authority to represent the respective department(s) and their faculty to the school.

MCV Graduate Committee

The assembled directors of graduate programs, directors of graduate programs from other schools on the MCV Campus, and the associate dean for graduate education form the MCV Graduate Committee, with the associate dean serving as chair of the committee. This committee holds the responsibility for ensuring appropriate administration of graduate programs, reviewing modifications of didactic courses and new course offerings, reviewing proposed modifications of program curricula to ensure maintenance of standards of quality, avoid duplication and comply with the missions of the school, and for recommending action to the dean. The directors of graduate programs provide the pool of candidates from which the school representatives are chosen to the University Graduate Council.

Requirements for Admission

1. The purpose of admission requirements and procedures is to ensure selection of competent students whose motivation, ability, education, and character qualify them for graduate study in preparation for a career in science.
2. The following credentials constitute an application and should be sent to the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051.
 - a. Application for admission on a form furnished to the applicant on request. A fee in the form of a check or money order (payable to VCU), must accompany the application. The fee cannot be returned nor credited toward tuition payment.
 - b. Official transcripts of all undergraduate and graduate work sent directly from college or university registrars to the School of Graduate Studies.
 - c. Letters of recommendation from three present or former teachers or others the applicant believes to be qualified to evaluate fitness to engage in graduate study for the degree in the field of choice.
 - d. A personal letter from the applicant summarizing motivation, education, and aims in pursuing graduate study.
 - e. Verbal, quantitative, and analytical portions of the Graduate Record Examination (GRE) are required. Advanced tests (biology, chemistry,

physics, or mathematics) are recommended where appropriate. The Medical College Admission Test or Dental Aptitude Test is acceptable in lieu of the GRE. For information on GRE examination, contact the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051 or the Office of Student Services, School of Education, Virginia Commonwealth University, Oliver Hall, 2087, Richmond, VA 23284-2020 or Educational Testing Service, Box 955, Princeton, NJ 08540.

- f. International applicants for whom English is a foreign language must meet departmental admission requirements for performance on the TOEFL (Test of English as a Foreign Language). See section on international students in Part I of this *Bulletin*.
3. Acceptance of an applicant is based upon the recommendation of the director of graduate programs of the relevant program.

Registration

While most students register for the first semester beginning in August, arrangements may be made to initiate graduate work at other times during the academic year.

Scholarships, Assistantships, and Fellowships

A number of state or federal teaching and research assistantships, scholarships, or fellowships are available. A brief description of financial aid based on demonstrated need is contained in Part I of this *Bulletin*. Need-based financial aid programs include National Direct Student Loan, college work study, and institutional loans.

Enrollment

Students are enrolled in a specific program offered by the school. The details of didactic and scholarly requirements are available from their individual programs. Specific curriculum requirements, mechanisms for the appointment of advisers and the format of written and oral comprehensive examinations are established by individual programs and are reviewed by the MCV Graduate Committee.

The Student Adviser and Advisory Committee

Students receive guidance and counsel from the director of graduate programs for the appropriate program prior to appointment of the permanent adviser. The permanent adviser holds the primary responsibility for monitoring the development of the student in the program and providing the appropriate guidance and counsel essential to the scholarly development of the student.

An advisory committee, appointed shortly after the permanent adviser is appointed, serves as both an examining and consultative body, functioning to assist the development of the student. Committee members hold a special responsibility as a source of counsel for each student.

1. Each student shall have an adviser and an advisory committee.
2. Appointment of the adviser:
 - a. The initial adviser will be the director of the graduate program or his/her designee prior to appointment of the permanent adviser.
 - b. A permanent adviser shall be appointed from the graduate faculty by the chair of the MCV Graduate Committee upon recommendation of the chair of the student's major department. Appointment should be made no later than the beginning of the fall semester following matriculation. A change in the permanent adviser may be made by the chair of the MCV Graduate Committee upon recommendation of the chair of the major department.
3. Duties of the adviser:
 - a. The adviser shall, with the student's advisory committee, have responsibility for guiding the student's academic program.
 - b. The adviser shall develop a plan for the student's didactic program with the student.
 - c. The adviser shall, on the basis of the proposed didactic and scholarly program for the student, identify members of the faculty to comprise the student's advisory committee and elicit their agreement to serve, the adviser serving as the chair of the committee.
 - d. The adviser shall supervise the student's research work and thesis preparation and be one of the examiners of the thesis (MS)/dissertation (PhD).
 - e. At the close of the spring term, the adviser shall submit to the chair of the MCV Graduate Committee a report covering the progress of the student. Copies of the report should be provided to the student and the membership of the student advisory committee by the adviser.
4. The student's advisory committee:
 - a. The student's advisory committee shall be appointed no later than the end of the fall term of the second year after matriculation by the chair of the MCV Graduate Committee, upon recommendation of the student's adviser, review by the graduate program director and recommendation of the chair of the major department. Appointment of the student advisory committee must be done within three months of the appointment of the permanent adviser prior to the administration of comprehensive (or final) examinations. The composition of the advisory committee shall be such that significant areas of the student's scholarly program are represented.

- i. The committee for the PhD candidate shall consist of a minimum of five members as follows: the student's adviser; two other members of the graduate faculty of the department/program in which the student is enrolled; and at least two other members of the graduate faculty from departments other than the one in which the student is enrolled (where feasible, from two different departments).
 - ii. The committee for the MS candidate shall consist of a minimum of three members as follows: the student's adviser (who serves as chair of the committee); one other member of the graduate faculty of the department/program in which the student is enrolled; and one other member of the graduate faculty from a department other than the one in which the student is enrolled.
 - iii. A faculty member who is not a member of the graduate faculty may be appointed to a student advisory committee if approved by the MCV Graduate Committee.
- b. Duties of the student's advisory committee:
- i. The advisory committee functions as an advisory body to ensure that timely progress toward degree completion is being achieved, as an examining body participating as appropriate for the intended degree in written qualifying examinations and conducting the oral qualifying examination and final examination, and as a consultative body to provide scholarly counsel.
 - ii. The student's advisory committee shall work with the student's adviser in guiding the student's graduate program and shall meet at least annually. It is strongly recommended that the advisory committee meet with the student prior to administration of the comprehensive examination(s) by the committee.
 - iii. The student's advisory committee shall recommend and approve a degree program (including foreign language if applicable) for the student as soon as it is practical. The proposed program should be filed with the chair of the MCV Graduate Committee no later than the third semester of study.
 - iv. The student's advisory committee shall conduct the oral comprehensive and final examination.

Graduate Degrees General Requirements

1. All full-time graduate students are expected to register for a minimum of 15 hours of graduate credit per semester and six semester hours during the summer, exclusive of audited courses. This requirement includes research. As an example, when students are registered for 10 credits in formal courses, they are expected to undertake five credits of research under the direction of their adviser or any approved faculty member. These courses shall be graded as "S" - satisfactory, "U" - unsatisfactory, or "F" - fail. Other grade interpretations are described in Part I of this *Bulletin*. Registration of one semester hour is permitted only in exceptional cases with prior permission from the chair of the MCV Graduate Committee.
2. Students are required to remain in good academic standing through the course of their degree program. Unsatisfactory student performance includes:
 - a. the assignment of a grade of "U" or "D" or "F" in any course.
 - b. failure to maintain a cumulative grade-point average of 2.5 or greater.
 - c. failure to pass the written or oral comprehensive examination.
 - d. failure to pass the final examination.

A student whose performance is unsatisfactory must obtain the approval of the MCV Graduate Committee to gain permission for continuing in the graduate program. The committee elicits the recommendation of the department/program (as represented by the director of graduate studies of the appropriate program) and, as appropriate, the student's adviser in making a determination. Unsatisfactory performance also constitutes grounds for the termination of financial assistance to the student.
3. Students may not take the comprehensive examination for the PhD degree if their overall grade-point average is less than 2.5 or if the grade-point average for courses within the major department is below 3.0. Students may not take the final oral examination for the MS or PhD degree if their overall grade-point average is below 3.0. The examining body for the administration of the comprehensive examinations and the final examination is the student advisory committee. For the oral comprehensive examination for PhD students and the final examinations for MS students, the body is supplemented by the addition of a representative of the MCV Graduate Committee who chairs the examining body. The representative must be a member of the graduate faculty and is appointed by the chair of the MCV Graduate Committee. The representative holds the responsibility for compliance with protocols appropriate to the examination, including the equitable treatment of the candidate.
4. Copies of the thesis/dissertation consistent with University standards shall be sent to the members of the student's advisory committee three

weeks or more before the date of the defense of the thesis/dissertation. Following acceptance of the thesis/dissertation by the committee, the student must submit a copy of the thesis/dissertation and a request for scheduling of the final examination to the chair of the MCV Graduate Committee. Registration of one semester hour is rarely permitted for graduate students on campus and only then in exceptional circumstances with prior permission. After passing the final examination, it shall be the responsibility of the candidate to present to the Office of the Dean the approved original thesis/dissertation plus the minimum required number of copies (three for MS, four for PhD) in final form suitable for binding. In consultation with the office staff, the candidate shall be responsible for the binding and the processing of the thesis through University Library Services and for the payment of all charges for these services.

5. A degree is granted only after all requirements have been fulfilled, including payment of all fees to the University, and after submission of the copies of the thesis for binding.

Post-Baccalaureate Pre-Medical Basic Health Sciences Certificate Program

This program is designed as a two-semester didactic program offering six departmentally-based curricula in the basic sciences. Curricula consist of a total of 30 credit hours of graduate courses offering students an advanced level of training in subject areas critical to professional (MD, DDS) degree programs. The certificate degree is offered by the Departments of Anatomy, Biochemistry and Molecular Biophysics, Human Genetics, Microbiology and Immunology, Pharmacology and Toxicology, and Physiology.

Completion of the program and awarding the certificate degree requires that students complete a minimum of 30 credit hours of course work, maintaining an overall grade-point average of 3.0. Course requirements and elective options are defined by the departments.

The program has been structured on a disciplinary basis to allow the accumulation of didactic credit hours which may be applicable to advanced degree training at the MS or PhD level in programs offered by the departments of the school. Students interested in this potential option must formally apply to the program of interest.

Enrollment in and/or completion of the program is not a guarantee of admission to either the MD or advanced degree programs offered by VCU. However, the curricula have been structured with the counsel of the Office of Admissions of the VCU School of Medicine to offer training which enhances performance on standardized admissions tests and provides a grounding applicable to a variety of career options.

Master of Science

1. Advanced graduate study leading to the Master of Science degree is offered in the Departments of Anatomy, Biochemistry and Molecular Biophysics,

Biostatistics, Human Genetics, Microbiology and Immunology, Pharmacology and Toxicology, and Physiology. The Department of Preventive Medicine and Community Health offers the Master of Public Health degree and the Department of Human Genetics offers the Master of Genetic Counseling degree.

2. A minimum of 24 semester hours is required, exclusive of research credits. In practice, it is found that two years of study are usually necessary to complete the requirements. A time limit of five calendar years, beginning at the time of first registration, is placed on work to be credited toward the Master of Science degree. Generally a maximum of one-third of the hours required for a master's degree may be transferred from another VCU program or outside institution and applied toward the degree upon recommendation of the student's director of graduate programs with the concurrence by the chair of the MCV Campus Graduate Committee.
3. Each student must conduct an original investigation under the supervision of the permanent adviser, prepare a thesis reporting the results of this research, and analyze its significance in relation to existing scientific knowledge. This study is reported in a thesis prepared in acceptable form and style. On approval of the thesis by the adviser, the student submits a copy to each member of the advisory committee.
4. The thesis is examined by the student's advisory committee members, who shall decide upon its acceptability. The committee members may confer before making their decision. Each committee member shall report to the chair of the MCV Graduate Committee, through the student's adviser, when the thesis is acceptable for defense. The thesis is approved only if accepted unanimously.
5. On approval of the thesis, the student appears for a final oral examination administered by the student's advisory committee. A representative of the MCV Graduate Committee serves as chair of the examination committee and will cast a vote. The final examination shall be open to the faculty, and its time and place, together with the candidate's name, department, and title of thesis, shall be announced at least 10 working days in advance.
6. The final examination of an MS candidate includes the subject matter of course work as well as the thesis. A favorable vote, with no more than one negative vote, is required for the candidate to pass the examination. Only members of the student's advisory committee and the representative of the MCV Graduate Committee shall vote. No examiner shall abstain from voting. A thesis is not required for completion of the Master of Genetic Counseling. In lieu of the thesis, students in this tract are required to pass successfully comprehensive oral and written examinations. Similarly, a thesis is not required for completion of the Master of Public Health program.

Doctor of Philosophy

1. Advanced graduate study leading to a Doctor of Philosophy degree is offered in the Departments of Anatomy, Biochemistry and Molecular Biophysics, Biostatistics, Human Genetics, Microbiology and Immunology, Pathology, Pharmacology and Toxicology, and Physiology.
2. A minimum of 30 credit hours exclusive of research credits is generally required. In practice, a minimum of four years of study, including research, is necessary to complete all requirements.
3. For all PhD programs, a period of residence of at least two consecutive semesters is required. Residency is defined as registration for at least nine credits per semester. The specific requirements for residency will be detailed by the individual programs. A time limit of seven calendar years, beginning at the time of first registration, is placed on work to be credited toward the Doctor of Philosophy degree.

Admission to Candidacy

Before admission to candidacy for the doctorate, students must have (1) completed required course work; (2) successfully completed the comprehensive examinations; and (3) fulfilled all additional departmental requirements. Students are admitted to candidacy by the chair of the MCV Graduate Committee upon recommendation of their advisers and advisory committees, with the approval of the director of graduate programs.

Comprehensive Examinations

In order to advance to doctoral candidacy, the student must pass both written and oral comprehensive examinations. The written examination(s) generally focus(es) on the subject matter deemed critical as a foundation in the particular program. The written examination is largely based on material covered in required course work and its application to theoretical and practical problems. The oral examination, which follows successful completion of the written examination(s), is administered to assess the ability of the candidate to integrate information and display an appropriate mastery of problem-solving capabilities.

1. Upon satisfactory completion of all required formal course work, the student takes written and oral comprehensive examinations. The written examination is administered by the student's department/program. In the event of failure of the written comprehensive examination, the student, with the approval of the MCV Graduate Committee, may be permitted to repeat the written examination.
2. After passing the written examination(s), the student is eligible for the oral examination. The oral examination is conducted by the student's advisory committee and is chaired by a graduate faculty member representing the MCV Graduate Committee who serves as a voting member of the examining committee. The oral examination is to

be administered no later than six months after passing the written examination.
(Departments/programs may require a shorter interval.)

3. The oral examination is scheduled through the Office of Graduate Education. An announcement of the candidate's name, department/program, and the time and place of the examination shall be posted at least 10 working days in advance of the examination. If a written document prepared by the candidate is a component of the examination, the document shall be provided to the members of the examining committee at least 10 working days in advance of the examination. The oral comprehensive examination is open to all members of the faculty. Faculty members in attendance may ask questions of the candidate, but their questions shall not be presented until after the advisory committee has completed its questions. Faculty members other than those on the advisory committee shall not vote on the success or failure of the candidate. If a student fails the oral examination, the student may be reexamined with the approval of the MCV Graduate Committee.
4. A favorable vote of the examining committee (all members of body being required to vote) with no more than one negative vote, is required to pass the examination. Members of the examining committee must vote on the performance as either pass or fail.
5. The oral examination must be completed successfully at least six months before submission of the dissertation.

Dissertation Research

1. The student must conduct a substantial original investigation under the supervision of the permanent adviser and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge.
2. When the dissertation has been completed, copies in acceptable form and style are submitted to the members of the advisory committee. The committee members decide upon the acceptability of the candidate's dissertation. A favorable unanimous vote is required to approve the dissertation, and all examiners are required to vote.
3. If the advisory committee accepts the dissertation for defense, the candidate appears before them for a final oral examination. This examination is open to all members of the faculty. The final oral examination will be limited to the subject of the candidate's dissertation and related matters. A favorable vote of the candidate's advisory committee and no more than one negative vote, shall be required for passing the final oral examination. All committee members must vote. There shall be an announcement of the candidate's name, department, and title of dissertation, together with the day, place, and hour of the final oral examination at least 10 working days in advance.

Nondegree-Seeking Students

Students not admitted to a degree program must obtain permission from the course director before being allowed to register for courses.

Summer Registration

Graduate students are expected to devote six or more weeks during the summer to full-time research. Students registered for research credit are billed at the established tuition rate.

MD/PhD Program

The MD/PhD program seeks to prepare physician-scientists for careers that encompass aspects of health care ranging from the discipline of basic investigation to patient care. The program begins two months prior to the first year of medical school. These students arrive on campus for orientation and complete two laboratory rotations before the start of medical school classes. They complete the first two years of medical school and, after taking the first part of the U.S. National Medical Licensing Examination, enter a PhD granting department as a graduate student. Each student must meet the PhD requirements of his or her department for course work, examinations, and research. Many of the medical school courses will provide credits for the graduate phase, but students also must take additional graduate-level courses as determined by the dissertation adviser and advisory committee. The main undertaking at this phase is laboratory research which leads to the PhD dissertation. After completion of doctoral degree requirements, students move to the clinical year of medical school. Students may begin their clinical year of medical school immediately after completion of doctoral (PhD) requirements, regardless of the time in the calendar year, and, 14 months later, may complete their medical school requirements. These students are exempt from the major part of the fourth year of medical school.

Prospective students submit applications through the American Medical College Application Service (AMCAS). Upon review of the AMCAS documents, qualified applicants are sent supplemental admission materials, including an application for the MD/PhD program. Those invited to Richmond for interviews will take part in the standard interview for the School of Medicine, and also will meet with the director of the MD/PhD program and one or more academic members of the MD/PhD committee.

Admission of medical students regularly enrolled in these schools to the combined degree program is processed through the Office of Graduate Education of the School of Medicine by established procedures. The Medical College Admission Test or Dental Aptitude Test may be accepted in lieu of the GRE. Undergraduate transcripts and references are obtained from the professional school. No application fee is required of students already regularly enrolled as degree-seeking graduate students at the University.

The requirements for a combined professional school/graduate school degree in the School of Medicine are equivalent to those required of students seeking a graduate degree alone and are determined by the individual departments. A time limit of seven calendar years for the PhD degree, beginning at the time of first registration in the graduate school, applies to work to be credited toward degrees for students in combined programs.

MD/MPH Program

The objective of the MD/MPH program is to provide high quality and in-depth training for motivated medical students wishing to pursue a career in public health. The program consists of four years of medical school (M-I, M-II, M-III and M-IV), and one year of study in the MPH program. Students commit most of their time in a given year to either medical studies or graduate studies in public health without interdigitating the two. The final year of the MD/MPH program is the clinical M-IV year in preparation of their residency. The average time to complete the MD/MPH program is five to six years, depending on the degree of flexibility allowed in the last three years.

Since enrollment into the MD/MPH program requires admission into both the School of Medicine and the School of Graduate Studies, each student must apply and be formally accepted into the appropriate department/program. Students must successfully complete all required course work in the MPH program to be awarded the MPH degree.

Combined MS/PhD and DDS Degree Programs

In cooperation with the School of Dentistry, students in dentistry with an interest in academic and research careers are afforded the opportunity to undergo advanced degree training while in dental school or residency. Admission of students enrolled in the School of Dentistry to combined degree programs is processed through the Office of Graduate Education of the School of Medicine by established procedures. The Dental Aptitude Test may be accepted in lieu of the GRE as an admission requirement. No application fee is required of students already regularly enrolled as degree-seeking graduate students at the University.

The requirements for a combined professional school/graduate school degree in basic health sciences are equivalent to those required of students seeking a graduate degree alone and are determined by the individual departments. A time limit of five calendar years for the MS and seven calendar years for the PhD degree, beginning at the time of first registration in the graduate school, applies to work to be credited toward degrees for students in combined programs.

Interdisciplinary PhD Programs

The Schools of Medicine and Allied Health Professions offer PhD programs in physical therapy and in anatomy/physical therapy and physiology/physical therapy. These

research degrees are planned primarily as physical therapy faculty development programs; other needs may be met for individual students. Interested physical therapists should contact the Departments of Anatomy or Physiology for details.

Termination of Enrollment

The University reserves the right to terminate the enrollment of any student for unlawful, disorderly, or immoral conduct or for persistent failure to fulfill the purposes for which he or she was matriculated.

A student enrolled in a graduate program under the supervision of the MCV Graduate Committee may be dismissed from the school in which he is enrolled for failure to meet academic requirements prescribed by his school or failure to exhibit the attitudes and skills deemed necessary to function within his chosen scientific discipline.

Any action by a graduate student in a program under the supervision of the MCV Graduate Committee considered to be unprofessional conduct shall constitute cause for disciplinary action.

Unprofessional conduct includes, but is not limited to:

1. fraud or deceit in gaining admission to the University, i.e., false or obviously misleading representations on the admission application;
2. an act that violates the established legal standards regarding conduct of one person towards society (i.e., stealing, lying, cheating and slander);
3. conviction of a felony involving moral turpitude; and
4. plagiarism or other scientific misconduct.

Process Handbook

An expanded guide to protocols followed in the graduate programs administered by the School of Medicine is available to students and faculty. This manual of procedures should be consulted following matriculation in a particular program.

Departmental Research Interests

The graduate course offerings and the list of graduate faculty for each department offering graduate work under the administration of the dean of the School of Medicine are given in the appropriate school sections of this *Bulletin*. The pages on which these may be found and brief statements of the research interests of the faculties of the departments follow.

School of Medicine

Department of Anatomy

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Research Interests: morphological and functional studies of axonal reaction, cerebral blood flow, neurotransmitter imbalance, and protein synthesis following traumatic or ischemic brain injury; neurophysiology, transmitter neurochemistry, and neuroanatomy of eye movement; neural regeneration and myelination; brain mechanisms

of multisensory integration; function of neuroglia in development and disease; ontogeny, aging, and cell biology of the immune system and immune system dysfunction; immunobiology of antibody responses; molecular origins of brain tumors and therapeutic approaches to brain malignancy; molecular mechanisms of angiogenesis; endothelial pathophysiology; neuroendocrinology and hypothalamic control mechanisms; ultrastructure, immunocytochemistry, and aging of the reproductive system; molecular genetics of lung and breast cancer; computer-assisted instructional methods for teaching gross anatomy, histology, and neuroanatomy. The Department of Anatomy also offers a pre-professional master's degree track designed for students who are seeking to improve their academic qualifications prior to application to professional school. The track consists of 40 credit hours of course work and requires the writing of a library research thesis, which can be completed in one calendar year (fall and spring semesters, plus the following summer term). Enrollment is limited to 10 students.

Department of Biochemistry and Molecular Biophysics Page 224

Research Interests: enzyme chemistry; cellular control mechanisms; protein structure and function; macromolecular structure; genetic control of development and differentiation; complex carbohydrate biochemistry; nuclear proteins; mechanism of hormone action; neurochemistry; intracellular protein catabolism; protein and nucleic acid metabolism and processing; membrane structure and function; cell surface receptors; eucaryotic molecular genetics; spectroscopy; x-ray crystallography and other aspects of physical biochemistry. The Department of Biochemistry and Molecular Biophysics offers a master's degree program designed for individuals interested in a technical educational experience, but not necessarily a career in a laboratory science. The program includes 24 credit hours of course work, a laboratory research-based thesis, and requires a minimum of one calendar year (fall and spring semesters plus the following summer). Enrollment is limited to 10 students.

Department of Biostatistics Page 225

Research Interests: response surface applications to biomedical problems; correlation analysis; sequential analysis; multivariate analysis; statistical analysis of toxicology studies; multidimensional scaling; linear models; categorical data analysis; statistical analysis of clinical trials; epidemiological and demographic research; applications of Bayesian statistics to the medical sciences; robust statistics; stochastic modeling; time series analysis; statistical computing.

Department of Human Genetics Page 227

Research Interests: human cytogenetics and somatic cell genetics; biochemical and molecular genetics; human population, quantitative and behavior genetics; genetic epidemiology; clinical genetics including studies of twins, metabolic and neurosensory disorders, genetic counseling.

Department of Microbiology and Immunology Page 228

Research Interests: microbial biochemistry, ecology, genetics and physiology; molecular biology; genetic mechanisms and regulation of prokaryotic and eukaryotic cells; biologic transport; cellular differentiation; immunobiology; immunotoxicology; hypersensitivity mechanisms; immunopotentiality; host-parasite interactions; animal virology; mycology; microbial pathogenesis; cellular and molecular parasitology; cellular oncology; cellular and tumor immunology; cancer chemotherapy; antibiotics and chemotherapy.

Department of Pathology Page 230

Research Interests: biochemical and clinical applications of enzyme and protein immobilization, clinical enzymology, techniques in clinical chemistry, immune effector systems; molecular diagnostics; carcinogenesis; cell injury; toxicology; tumor progression, invasion and metastasis, microbial pathogenesis; gastrointestinal cancer; prostate cancer.

Department of Pharmacology and Toxicology Page 231

Research Interests: adrenergic receptors; analgesics; analytical toxicology; behavioral pharmacology and toxicology; cancer chemotherapy; carcinogenesis; central cardiovascular regulation; cholinergic mechanisms; clinical pharmacology; DNA damage and repair mechanisms; drug abuse; drug interactions; drug metabolizing enzymes; endogenous opioids; hepatotoxicology; ion and drug transport; immunotoxicology and immunopharmacology; macrophage function; microsomal proteins; neuropharmacology; peptide and drug synthesis; phospholipids; prostaglandins; receptor mechanisms; reproductive toxicology; safety evaluation; secretory mechanisms; toxicokinetics.

Department of Physiology Page 233

Research Interests: cell physiology including ion transport, volume regulation, cardiac and neural excitability, excitation-contraction coupling, hormonal signaling (glucocorticoids, peptides, placental prostaglandins), and nonionizing radiation; human cardiovascular physiology and pathophysiology; microcirculation; gastrointestinal physiology; molecular biology; muscle, steroid receptors; network analysis; neuroscience including development, plasticity, regeneration, transmitter neurochemistry, chemical senses, motor and sensory processing, pain.

Department of Preventive Medicine and Community Health Page 234

Research Interests: environmental and occupational epidemiology; hearing loss; low back pain; violence prevention; asbestos assessments; health care to underserved populations; cancer prevention in rural youth; international studies of diet and blood pressure; family

and community studies of substance abuse; and other psychiatric disorders.

Department of Anatomy

- Abubaker, A. Omar *Assistant Professor (Oral and Maxillofacial Surgery)** PhD, DMD, University of Pittsburgh; temporomandibular pathogenesis.
- Astruc, Juan A. *Professor [Neurology]** MD, PhD, University of Granada; neuro-ophthalmology and ocular motility.
- Bigbee, John W. *Associate Professor* PhD, Stanford University; cell adhesion and neural development.
- Bogler, Oliver *Assistant Professor* PhD, Ludwig Institute for Cancer Research; molecular origins of brain tumors.
- Boudreau, Nancy J. *Assistant Professor* PhD, University of Toronto; molecular mechanisms of angiogenesis.
- Broadus, William C. *Assistant Clinical Professor [Neurosurgery]** MD, Case Western Reserve University; neuro-oncology; therapeutic approaches to brain malignancy.
- Christman, Carole W. *Assistant Professor* PhD, Virginia Commonwealth University; axonal response to injury and neural regeneration.
- Clemo, H. Ruth *Assistant Professor* PhD, Virginia Commonwealth University; cortical and subcortical mechanisms of somatic sensation.
- Colello, Raymond J. *Assistant Professor* DPhil, Oxford University; role of neuroglia in development and disease.
- Coulter, Douglas A. *Assistant Professor (Neurology)** PhD, Boston College; neurophysiology and neural biology of epilepsy.
- Craig, Shirley S. *Associate Professor Emerita* PhD, Virginia Commonwealth University; mast cell biology.
- Ellison, Mary D. *Assistant Professor (United Network for Organ Sharing)** PhD, Virginia Commonwealth University; cerebral microvasculature.
- Geeraets, Ragnit *Associate Professor Emeritus* PhD, Virginia Commonwealth University; developmental biology of the eye; computer-assisted instructional methods.
- Goldberg, Stephen J. *Professor* PhD, Clark University; cranial nerve motor unit physiology related with eye and tongue movement.
- Gudas, Stephen A. *Assistant Professor (Rehabilitation Medicine)** PhD, Virginia Commonwealth University; endothelial cell biology; cancer rehabilitation.
- Haar, Jack L. *Professor and Dean, School of Graduate Studies* PhD, Ohio State University; immunobiology, thymic and hemopoietic stem cell differentiation.
- Harris, Thomas M. *Professor Emeritus* PhD, University of North Carolina; developmental biology of the eye; computer-assisted instructional methods.
- Hegre, Erling S. *Professor Emeritus* PhD, University of Minnesota; embryology.
- Jackson, Caroline G. *Associate Professor Emerita* PhD, Virginia Commonwealth University; developmental biology of the eye; computer-assisted instructional methods.
- Johnson, James H. *Professor* PhD, University of California-Los Angeles; mechanisms controlling luteinizing hormone release; computer-assisted instructional methods.
- Jollie, William P. *Professor Emeritus* PhD, Harvard University; reproductive biology; placental transport mechanisms; neonatal immunity.
- Krieg, Richard J., Jr. *Professor* PhD, University of California-Los Angeles; impairments of growth and reproduction during kidney disease.
- Leichnetz, George R. *Professor* PhD, Ohio State University; cortical and subcortical brain connections concerned with eye movement and visual attention.
- Matt, Dennis W. *Associate Professor (Obstetrics and Gynecology)** PhD, Rutgers University; reproductive biology and aging; in vitro fertilization.
- Mayer, David J. *Professor (Anesthesiology)** PhD, University of California-Los Angeles; brain mechanisms of analgesia.
- McClung, J. Ross *Associate Professor* PhD, University of Texas-Galveston; anatomy of cranial nerve motor units associated with eye and tongue movement.
- Merchant, Randall E. *Associate Professor* PhD, University of North Dakota; neurooncology; therapeutic approaches to brain malignancy.
- Meredith, M. Alex *Associate Professor* PhD, Virginia Commonwealth University; cortical and subcortical mechanisms of multisensory integration.

- Newsham, Irene F. *Assistant Professor* PhD, Massachusetts Institute of Technology; genetics of lung and breast cancer.
- Pakurar, Alice S. *Associate Professor* PhD, University of Michigan; computer-assisted instructional methods.
- Phillips, Linda L. *Assistant Professor (Neurosurgery)** PhD, Wake Forest University; gene expression following traumatic brain injury.
- Povlishock, John T. *Professor and Chair* PhD, St. Louis University; axonal injury, neuroplasticity and impaired vascular reactivity with associated brain injury.
- Ramoa, Ary S. *Associate Professor* MD, PhD, Rio de Janeiro, University of California at Berkeley; neurobiology, neuronal differentiation during eye development.
- Reeves, Thomas M. *Assistant Professor* PhD, Southern Illinois University; neurophysiological correlates of neural injury.
- Seibel, Hugo R. *Professor* PhD, University of Rochester; reproductive biology; pineal organ; computer-assisted instructional methods.
- Shall, Mary Snyder *Assistant Professor (Physical Therapy)** PhD, Virginia Commonwealth University; cranial nerve physiology in motor control.
- Sholley, Milton M. *Professor* PhD, Temple University; endothelial cell biology and angiogenesis.
- Spencer, Robert F. *Professor [Otolaryngology-Head and Neck Surgery]** PhD, University of Rochester; neurobiology, anatomy, physiology, and pharmacology of vestibular and auditory systems.
- Szkal, Andras K. *Professor* PhD, University of Tennessee; immunobiology of antibody responses.
- Taubenberger, Jeffrey K. *Assistant Clinical Professor [Armed Forces Institute of Pathology]** MD/PhD, Virginia Commonwealth University; differentiation and gene regulation of lymphocyte development; molecular genetics of breast cancer and morbilloviruses.

* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

Graduate Courses in Anatomy (ANA)

ANA 501 Gross Anatomy (Dentistry). I.Semester course; 5.5 lecture and 8 laboratory hours. 9.5 credits. A systematic dissection and study of the human body with clinical correlation and emphasis on the head and neck.

ANA 502 Microscopic Anatomy (Dentistry). I.Semester course; 3 lecture and 6 laboratory hours. 6 credits. A study of the normal tissues and organs of the human body at the microscopic level, with emphasis on the histological organization and development of the oral cavity.

ANA 503 Neuroanatomy (Dentistry). I. Semester course; 1.5 lecture hours. 1.5 credits. This course provides the student with a broad exposure to the field of neuroanatomy. The structure and connections of the brain and spinal cord are stressed to prepare the student for dealing with physiological, pharmacological, and clinical aspects presented in other courses.

ANA 505 Principles of Human Anatomy (Pharmacy). I.Semester course; 2.5 lecture and 1.5 laboratory hours. 3 credits. The structure of the human body is surveyed by studying micro-, neuro-, and gross Anatomy. Emphasis is placed on basic concepts and their application to various body components.

ANA 509/PIO 509/PMC 509 Introduction to Neuroscience. I. Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

ANA 525 Advanced Functional Anatomy (Occupational Therapy). I.Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisites: BIO 205 or equivalent and permission of the instructor. A study of the anatomy and kinesiology of the human body using prosected specimens and the dissected cadaver. Emphasis is placed on the study of the extremities, particularly the hand.

ANA 529 Advanced Functional Neuroanatomy (Occupational Therapy). II. 2 lecture and 2 laboratory hours. 3 credits. Prerequisites: ANA 525 and permission of instructor. A study of the morphological and functional aspects of the central and peripheral nervous systems of the human body with particular emphasis on motor activity.

ANA 609 Gross and Developmental Anatomy. I. Semester course; 4 lecture and 10 laboratory hours. 8 credits. A dissection and macroscopic study of the human body, with clinical correlations.

ANA 610 Neuroanatomy. II. Semester course; 4 lecture and 2 laboratory hours. 5 credits. A study of the structure, connections and function of the central nervous system. Laboratory sessions complement lecture presentations, emphasizing light microscopic and ultrastructural neurohistology, gross and sectional anatomy of the brain, and tracing of functionally related CNS connections.

ANA 611 Histology. I. Semester course; 4 lecture and 2 laboratory hours. 5 credits. A study of the basic light and electron microscopic structure of cells, tissues, and organs. Emphasis on correlating structure with function.

ANA 613 Advanced Studies in Anatomy. I, II, S. 1-6 credits. An in-depth course in specific areas of anatomy: histology, gross anatomy, and neuroanatomy.

ANA 614 Cytology. I. Semester course; 2 lecture hours. 2 credits. A topical approach to current areas of interest in mammalian cell and molecular biology.

ANA 690 Anatomy Research Seminar. I, II. 1 lecture hour. 1 credit. A course consisting of faculty and student-led seminars presenting current research in neurobiology, immunobiology, and reproductive biology.

ANA 691 Special Topics in Anatomy. I, II, S. 1-4 credits. Lectures, seminars, tutorial sessions, and/or library research assignments in selected areas of advanced study not available in other graduate level anatomy courses, or as concentrated emphasis on a particular area of anatomical research.

ANA 697 Directed Research in Anatomy. I, II, S. 1-15 credits. Research leading to the MS or PhD degree and elective research projects for other students.

Department of Biochemistry and Molecular Biophysics

Abraham, Donald *Professor (Chair; Medicinal Chemistry)* [Biomedical Engineering]* PhD, Purdue University; X-ray crystallography and drug design.

Ariga, Toshio *Associate Professor* PhD, Niigata University, Japan; glycolipid biochemistry and cellular differentiation.

Banks, William L. Jr. *Professor [Surgery and Preventive Medicine]* PhD, Rutgers University; cancer and nutrition education.

Bieberich, Erhard *Instructor* PhD, University of Cologne/Bonn; enzyme purification; characterization; molecular biology and intracellular regulation.

Brandt, Richard B. *Professor Emeritus [Preventive Medicine]* PhD, New York University; glyoxalase enzyme system in cancer.

Broga, Dean W. *Associate Professor (Environmental Health/Safety)** PhD, University of Virginia; nuclear engineering (radiation protection).

Chan, James C. *Professor (Pediatrics)** MD, McGill University.

Chan, Winnie M. Y. *Assistant Professor (Pediatrics)**.

Chlebowski, Jan F. *Professor [Chemistry]* PhD, Case Western Reserve University; biosynthesis and regulation of enzyme structure and function.

Clore, John N. *Associate Professor (Internal Medicine-Endocrinology)**.

Collins, James M. *Professor* PhD, University of Tennessee; biochemistry of cell cycle, DNA synthesis.

DeLorenzo, Robert *Professor (Neurology)* [Pharmacology and Toxicology]* MD/PhD, Yale University.

Diegelman, Robert F. *Professor (Surgery)** PhD, Georgetown University; biochemistry of extra-cellular matrix metabolism during tissue repair.

Franson, Richard *Professor* PhD, Bowman Gray School of Medicine; phospholipid metabolism, phospholipases A2.

Ghosh, Shobha *Assistant Professor* PhD, India Institute of Science; regulation of lipid metabolism.

Gil, Gregorio *Associate Professor* PhD, University of Barcelona; transcriptional regulation of cholesterol and bile acid metabolism.

Graham, Martin F. *Professor (Pediatrics)**.

Grant, Steven *Professor (Internal Medicine-Hematology/Oncology)* [Microbiology and Immunology, Pharmacology and Toxicology]* MD, Mt Sinai; signal transduction and apoptosis.

Grogan, W. McLean *Professor* PhD, Purdue University; lipid metabolism in differentiation and transformation.

Hawkridge, Fred M. *Professor (Chemistry)** PhD, University of Kentucky; analytical chemistry, bioenergetics and bioelectrochemistry and heme protein electron transfer reactions.

Hibbert, Jacqueline M. *Assistant Professor (Surgery)** PhD, University of the West Indies, Jamaica; substrate and energy metabolism; clinical studies.

Holmes, Walter M. *Professor (Microbiology and Immunology)** PhD, University of Tennessee, School of Medicine; protein nucleic acid interactions, RNA polymerase promoter interactions, RNA modifications.

Hylemon, Phillip B. *Professor (Microbiology and Immunology)** PhD, Virginia Tech; regulation of bile acid biosynthesis; cell signalling; bile acid metabolism by intestinal bacteria.

Kirby, Donald F. *Professor (Internal Medicine-Gastroenterology)**.

Liberti, Joseph P. *Professor* PhD, Loyola University, Chicago; mechanism of hormone action, regulation of translation.

Peterson, Darrell L. *Professor* PhD, University of Notre Dame; structure of hepatitis B surface antigen proteins.

Rizzo, William B. *Professor (Pediatrics)** MD, University of Illinois, College of Medicine; biochemistry of inherited metabolic diseases.

Roesser, James R. *Assistant Professor* PhD, University of Virginia; RNA-protein interactions and regulation of gene expression.

Roth, Karl S. *Associate Professor (Pediatrics)** MD, Bowman Gray School of Medicine, Wake Forest University; biochemistry of inherited disorders.

Sato-Bigbee, Carmen *Assistant Professor* PhD, Buenos Aires University, Argentina; signal transduction systems and gene regulation in cell differentiation.

Scarsdale, Neel *Assistant Professor* PhD, Yale University; nuclear magnetic resonance spectroscopy and macromolecular structure.

Schirch, LaVerne G. *Professor* PhD, University of Michigan; properties of enzymes involved in one-carbon metabolism.

Shelton, Keith R. *Professor* PhD, University of Illinois; role of stress proteins in formation of lead-induced nuclear inclusion bodies, molecular structure of the nuclear envelope.

Van Tuyle, Glenn C. *Associate Professor* PhD, Thomas Jefferson University; mitochondrial DNA metabolism, RNA processing.

Wolf, Barry *Professor (Human Genetics)** MD/PhD, University of Illinois; inherited metabolic diseases, specifically biotinidase deficiency and biotin metabolism.

Wright, Christine S. *Professor* PhD, University of California; sequencing and X-ray diffraction of wheat germ agglutinin.

Wright, H. Tonie *Professor* PhD, University of California, San Diego; protein and nucleic acid structure by X-ray crystallography.

Yu, Robert K. *Professor and Chair [Chemistry, Neurology]* PhD, University of Illinois; chemistry and metabolism of sphingolipids; chemistry and metabolism of glycoconjugates, mechanism of autoimmune diseases; control of cellular differentiation and proliferation; NMR spectroscopy.

Zehner, Zendra E. *Professor* PhD, Baylor College of Medicine; regulatory signals governing gene expression; mRNA localization; translation control.

Zeng, Guichao *Assistant Professor* PhD, McGill University; gene cloning and regulation.

* Department in parentheses indicates primary appointment.

* Department in brackets indicates affiliate appointment.

Graduate Courses in Biochemistry and Molecular Physics (BIC)

BIC 503-504/MIC 503-504 Biochemistry, Cell and Molecular Biology. I, II. Continuous course; 5 lecture hours. 5 credits.

Prerequisites: Undergraduate organic and physical chemistry, or permission of instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

BIC 505-506 Experimental Biochemistry. I,II. Continuous course; 4 laboratory hours. 2 credits. Prerequisite: BIC 503 (or concurrent) or equivalent quantitative chemistry. Laboratory work, including theory and practice of advanced biochemical research methods.

BIC 507-508 Bioorganic Chemistry. I, II. Continuous course; 3 lecture hours. 2 credits. Prerequisite: Permission of the instructor. Study of structure, chemistry, and mechanism of small, biologically important molecules.

BIC 509 Biophysical Chemistry. I. Semester course; 3 lecture hours. 2 credits. Study of major physical/chemical concepts of biological organization with emphasis on self-assembly and dynamic interactions of biological structures.

BIC 510 Radiation Safety. I,II, S. Semester course offered on a demand basis (2-4 times or approximately 20 students per year); 15 lecture hours. 1 credit. Provides basic principles for the safe use of radioactive materials in biological research and meets the minimum training requirements set forth for responsible investigators in the University's Nuclear Radiation License.

BIC 523-524 Biochemistry (Pharmacy). I,II. Continuous course; 2-3 lecture hours. 2-3 credits. Prerequisites: CHE 301-302 or equivalent. A presentation of structural biochemistry, intermediary metabolism, physiological chemistry, and nutrition as a part of the fundamental background of modern pharmacy.

BIC 601 Membranes and Lipids. II (Alternate years Spring 1999). Semester course; 3 lecture hours. 3 credits. Prerequisite: BIC 503-504. Comprehensive presentation of important areas in biological membrane research. Key topics include techniques in the study of membrane lipids and proteins, "order" and organization in membranes, transport, receptors and cell surface antigens, physical measurements in membranes, reconstituted systems, and signal transduction.

BIC 602 Physical Properties of Macromolecules. II. Semester course; 3 lecture hours. 3 credits. Prerequisite: BIC 503-504 and physical chemistry. Physicochemical approaches to the determination of the structure and conformation of macromolecules.

BIC 604 Enzymology. I. Semester course; 3 lecture hours. 3 credits. Prerequisites: BIC 503-504. Physical and chemical properties and mechanisms of action of enzymes. Treatment of chemical catalysis, enzyme kinetics, and correlation of enzyme structure to mechanisms.

BIC 605 Molecular Biology. II. Semester course; 3 lecture hours. 3 credits. Prerequisite: Undergraduate chemistry or biochemistry. Nucleic acid structure, genetic code, DNA replication, transcription, translation; structure and properties of self-assembling systems: viruses, ribosomes, cytoskeletal proteins, and membranes.

BIC 606 Biochemical Control Processes. II (Alternate years Spring 1998). Semester course; 3 lecture hours. 3 credits. Prerequisite: BIC 503-504 and permission of instructor. An advanced course on aspects of control mechanisms at the molecular level.

BIC 610 Current Trends in Biochemistry. I. Semester course; 2 lecture hours. 2 credits. Prerequisites: BIC 503-504. A study and literature review of common and complex biochemical substances using recent research methodology.

BIC 690 Biochemistry Research Seminar. I,II. Semester course; 1 credit. Reports on recent biochemical literature and research by students and staff.

BIC 691 Special Topics in Biochemistry. I,II. Semester course; 1-4 credits. Lectures, tutorial studies and/or special assignments in selected areas of advanced study not available in other courses or as part of research training.

BIC 697 Directed Research in Biochemistry. I,II, S. Semester course; 1-15 credits. Research leading to the MS or PhD degree and elective research projects for other students.

Department of Biostatistics

Bauer, David F. *Associate Professor (Mathematical Sciences)** PhD, University of Connecticut; nonparametric statistics.

Best, Alvin M., III *Associate Professor (Psychiatry)** PhD, Virginia Commonwealth University; linear models, response surface methodology, multivariate analysis, statistical computing.

Bovberg, Victor E. *Assistant Professor (Internal Medicine, Health Administration)** PhD, University of Washington; epidemiology.

Carchman, Richard A. *Professor (Philip Morris, Inc.)** PhD, State University of New York, Downstate Medical Center; cyclic nucleotide metabolism in malignant transformation, macrophage function, toxicology.

Carter, Walter H. Jr. *Professor and Chair [Internal Medicine, Pharmacology and Toxicology]** PhD, Virginia Polytechnic Institute and State University; design and analysis of response surface experiments, clinical trials, toxicology.

Chinchilli, Vernon M. *Professor (Hershey Medical Center)** PhD, University of North Carolina, Chapel Hill; multivariate analysis, clinical trials and nonparametric statistics, toxicological experiments.

Choi, Sung C. *Professor [Neurosurgery]** PhD, University of California; multivariate biostatistics, sequential analysis, design, and analysis of clinical trials.

Elswick, Ronald K. *Assistant Professor* PhD, Virginia Commonwealth University; multivariate analysis, statistical computing, clinical trials.

Flora, Roger E. *Associate Professor (Pharmaceutical Research Associates, Inc.)** PhD, Virginia Polytechnic Institute and State University; design and analysis of clinical trials, multivariate analysis.

Gennings, Chris *Associate Professor* PhD, Virginia Commonwealth University; response surface analysis, multivariate statistics, toxicology.

Gunsolley, John C. *Associate Professor (Periodontics)** DSS, Indiana University; periodontal disease, statistical methods.

Johnson, Robert E. *Associate Professor (Mathematical Sciences)** PhD, University of North Carolina, Chapel Hill; linear models, nonparametrics, survey sample theory.

Kilpatrick, S. James *Professor* PhD, Queen's University of Belfast; health services research, epidemiology.

Kish, Charles W., Jr. *Assistant Professor (Whitehall-Robin)** PhD, Virginia Commonwealth University; design and analysis of clinical trials, multivariate analysis, response surface methodology, software design and statistical computing.

Ko, Daijin *Associate Professor* PhD, University of Washington; robust statistics, survival analysis, nonparametric regression, directional data.

Lu, I-Li *Assistant Professor* PhD, University of Virginia; multivariate statistical analysis, probability theory, sampling survey, econometrics.

McClish, Donna K. *Associate Professor* PhD, University of North Carolina; statistical methods in epidemiology, applied stochastic processes, health services research.

Minton, Paul D. *Professor Emeritus* PhD, North Carolina State University; distributions and models for biomedical applications.

Peace, Karl E. *Professor (Biopharmaceutical Research Consultants, Inc.)** PhD, Virginia Commonwealth University; survival analysis, design and analysis of clinical trials.

Penberthy, Lynne T. *Assistant Professor (Massey Cancer Center)** MD, University of Michigan; data linkage and analysis of health services research, cancer treatment and control, epidemiology.

Shaw, James E. *Assistant Professor (Internal Medicine)** MD/MPH, University of California, Los Angeles; epidemiology; clinical research.

Smith, Wally R. *Associate Professor (Internal Medicine)** MD, University of Alabama; clinical epidemiology; quality health care; clinical research.

* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

Graduate Courses in Biostatistics (BIS)

BIS 513-514/STA 513-514 Mathematical Statistics I-II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisite: MAT 307. Probability, random variables and their properties, distributions, moment generating functions, limit theorems, estimators and their properties; Neyman-Pearson and likelihood ratio criteria for testing hypotheses.

BIS 516 Biostatistical Consulting. I,II.Semester course; 1 lecture hour. 1 credit.The principles dealing with the basic art and concepts of consulting in biostatistics. The nonstatistical course discusses role, responsibilities of biostatisticians, relationship between clients and consultants, method of writing reports, etc.

BIS 523/STA 523 Nonparametric Statistical Methods. II.Semester course;3 lecture hours. 3 credits. Prerequisites:Any two courses of statistics or permission of instructor. Estimation and hypothesis testing when the form of the underlying distribution is unknown.One-, two-, and k-sample problems. Tests of randomness, Kolmogorov-Smirnov tests, analysis of contingency tables, and coefficients of association.

BIS 524 Biostatistical Computing. I.Semester course;3 lecture hours. 3 credits. The Statistical Analysis System (SAS) is both a powerful computer language and a large collection of statistical procedures. Students learn how to create and manage computer data files. Techniques for thorough examination and validation of research data are presented as the initial step of a complete, computerized analysis. Descriptive statistics are computed and statistical procedures such as t-tests, contingency tables, correlation,regression,and analysis of variance then applied to the data.Special attention is paid to the applicability of each procedure. Students are encouraged to analyze their own or typical data from their discipline.

BIS 530 Elements of Biometry. II.Semester course;5 lecture hours weekly during January and February. 2 credits. For dental and medical fellows;graduate students with consent.Concepts of biostatistics and epidemiology. Summary statistics and tables. Normal distribution and statistical association. Chi-square tests, t-tests, Wilcoxon test,and other tests. Sensitivity, specificity, odds ratios, and related topics. Clinical trials, prospective and retrospective studies, and other miscellaneous topics in biostatistics and epidemiology.

BIS 531 Clinical Epidemiology. II. Semester course;3 lecture hours. 3 credits. Epidemiological concepts necessary for evidence based studies of medicine. Specific topics will include:cause and effect criteria,demographic rates, measures of association or effect,study designs, decision trees, meta-analysis, evaluation of the literature, sources of data,reliability and validity, bias, confounding and effect modification,screening and diagnostic tests, sensitivity, specificity, false positives, false negatives, applications of the above to diagnosis and treatment,treatment efficacy and improved patient care. This course is intended primarily for clinicians. Permission of the course coordinator is required for others interested in registering.

BIS 543/PMH 543/STA 543 Statistical Methods I. Semester course; 3 lecture hours. 3 credits. Prerequisite:Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information,data analysis, and statistical measures;variation,sampling, and sampling distributions;point estimation, confidence intervals, and tests of hypotheses for one and two sample problems;principles of one-factor experimental design,one-way analysis of variance, and multiple comparisons;correlation and simple linear regression analysis;contingency tables and tests for goodness of fit. Students may not receive degree credit for both STA 541 and STA 543.STA 543 is not applicable toward the MS degree in mathematical sciences or the MS degree in computer science.

BIS 544/STA 544 Statistical Methods II. Semester course;3 lecture hours. 3 credits. Prerequisite:STA 541 or STA 543, or equivalent. Introductory treatment of the design of experiments and the statistical analysis of experimental data based on analysis of variance (ANOVA) and multiple-regression problems will be covered. Includes the use of a statistical software package for data analysis.

BIS 546 Linear Models. II.Semester course;3 lecture hours. 3 credits. Prerequisites:BIS 513 and 543/553.Distribution of quadratic forms under normal theory; general linear model of full rank and less than full rank,Gauss-Markov theorem;estimability.

BIS 553-554 Applied Statistics. I, II. Continuous course; 3 lecture hours. 3-3 credits. Prerequisites:MAT 200-201 or equivalent and one previous course in statistics and permission of instructor. Introduces applied statistics of biostatistics intended primarily for graduate students in the

Department of Biostatistics. Reviews elementary probability, theory and frequency distributions, sampling theory, principles of inference, one and two sample problems. ANOVA.Principles of experimental design. Variance components. Multiple comparison procedures. Block designs and Latin Squares. Nested ANOVA.Multiway ANOVA. Correlation and regression analysis. Multiple regression. Nonlinear regression.ANCOVA.MANOVA.Repeated measures.

BIS 571 Clinical Trials. I.Semester course; 3 lecture hours. 3 credits. Concepts of data management and statistical design and analysis in single-center and multicenter clinical trials. Data management topics include the collection, edition,and validation of data.Statistical design topics include randomization, stratification,blinding, placebo- and active-control groups, parallel and crossover designs, and power and sample size calculations. Statistical analysis topics include sequential and group sequential methods.

BIS 572 Statistical Analysis of Biomedical Data. II.Semester course;3 lecture hours. 3 credits. Statistical methodology for data sets frequently encountered in biomedical experiments. Topics include analysis of rates and proportions, epidemiological indices, frequency data, contingency tables, logistic regression,life-tables and survival analysis.

BIS 581 Applied Multivariate Analysis. II.Semester course;3 lecture hours. 3 credits. Prerequisite: BIS 544 or 554. Focuses on multivariate statistical methods, including Hotelling's T-square, MANOVA, multivariate multiple regression,canonical correlation, discriminant analysis, partially and blocking, multivariate outliers, components and factor analysis, and GMANOVA.Presumes the material in BIS 543-544 or BIS 553-554,including a matrix approach to multiple regression.

BIS 615-616 Advanced Inference. I,II.Continuous course; 4 lecture hours. 4 credits. Prerequisites:BIS 514 and MAT 508, or permission of instructor. Mathematical preliminaries:probability and measure;integration;modes of convergence. Decision theoretical approach to statistical inference; decision rules;admissibility. Bayes and minimax procedures, invariance;complete classes. Point estimation; unbiasedness; efficiency;M,L,and R estimators;U statistics. Hypothesis testing: the Neyman-Pearson theory;unbiasedness and invariant tests; conditional tests;permutation tests;rank tests; likelihood based tests. Interval estimation;confidence sets;relationship between confidence sets and families of tests; unbiased and invariant confidence sets. Asymptotics;stochastic convergence;statistical limit theorems;ARE;asymptotic likelihood based procedures. Overview of robust statistical procedures.

BIS 625 Analysis of Categorical Data. I (Alternate years beginning Fall 1997).Semester course; 4 lecture hours. 4 credits. Prerequisites: BIS 514,554 and 572.Introduction to the theory and methods of analysis of binomial and multinomial data. Topics include exact and asymptotic analysis of contingency tables;measures of association and agreement;modeling approaches including logistic regression,loglinear models, tests;invariance, MANOVA,GMANOVA,and multiple design models, nonparametric methods;inference with covariance matrices; principal components;factor analysis; discriminant analysis; clustering; multidimensional scaling.

BIS 631-632 Multivariate Analysis. I,II.(Alternate years beginning Fall 1998.) Continuous course;3 lecture hours. 3-3 credits. Prerequisites:BIS 514, 546,and 554. Introduction to the theory and methods of multivariate analysis;distributions;partial,multiple, and economical correlations; maximum likelihood and decision theoretical estimation;one-and two-sample tests;invariance:MANOVA,MANCOVA,GMANOVA, and multiple design models, nonparametric methods; inference with covariance matrices;principal components;factor analysis; discriminate analysis; clustering;multidimensional scaling.

BIS 638-639 Statistical Design and Analysis in Toxicology. I, II (Alternate years beginning Fall 1998). Continuous course;3 lecture hours. 3-3 credits. Prerequisites for BIS students:BIS 514 and 554. Prerequisite for non-BIS students (who can enroll on a Pass/Fail basis): BIS 554.Classical bioassay, dose-response relationships, continuous and quantal data;probit and logit analysis;estimation of the ED50; combination experiments; low dose extrapolation and risk assessment; carcinogenicity, mutagenicity, and teratogenicity screening;overview of laboratory and experimental problems for the toxicologist.

BIS 647 Survival Analysis. II (Alternate years beginning Spring 1998). Semester course; 3 lecture hours. 3 credits. Prerequisites: BIS 514 and 554. The analysis of survival (or failure time) data, with/without censoring. Actuarial and life-table methods, nonparametric and parametric estimation of survival functions, and comparison of survival curves; regression methods, such as the Cox proportional hazards model; competing risks; sequential models; applications to clinical trials.

BIS 650 Design and Analysis of Response Surface Experiments. I (Alternate years beginning Fall 1997). Semester course; 3 lecture hours. 3 credits. Prerequisites: BIS 546 and 554. Philosophy, terminology, and nomenclature for response surface methodology, analysis in the vicinity of the stationary point, canonical analyses, description of the response surfaces, rotatability, uniform information designs, central composite in design, and modern design criteria.

BIS 655 Quantitative Epidemiology. II (Alternate years beginning Spring 1998). Semester course; 3 lecture hours. 3 credits. Prerequisites: BIS 554 and 572. Examines the quantitative aspects of epidemiological research. Includes causality in epidemiological research; the design, analysis, and interpretation of cohort and case-control studies; bias, confounding, and misclassification, matching, stratification, and adjusting of covariates; generalized linear models in epidemiological research, goodness-of-fit tests, and goodness-of-link tests.

BIS 660 Sequential Analysis and Advanced Design and Analysis of Clinical Trials. II (Alternate years beginning Spring 1997). 3 lecture hours. 3 credits. Prerequisites: BIS 514 and 554. Sequential methods versus fixed sample methods; the sequential probability ratio test with extensions and modifications; some applications of Cox's theorem; overview of analysis of clinical trials; closed and truncated tests; group sequential tests in clinical trials; sequential monitoring; sequential estimation; other topics with emphasis in clinical trials.

BIS 667 Advanced Data Analysis. I, II (Alternate years beginning Spring 1998). Semester course; 3 lecture hours. 3 credits. Prerequisites: BIS 514 and 554. Explores recently developed data analysis techniques to find the main features and underlying structure of data. Includes robust methods, bootstrap, linear model diagnostics, cross validation, nonparametric regression, optimal transformation, ACE algorithm, projection pursuit regression.

BIS 690 Biostatistical Research Seminar. I, II. Semester course; 1 lecture hour. 1 credit. Talks by the students, faculty, and visitors describing recent research or reviewing topics of mutual interest.

BIS 691 Special Topics in Biostatistics. I, II, S. Semester course; Lecture and laboratory hours by arrangement. 1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized biostatistical procedures not available in other courses or as part of the research training.

BIS 697 Directed Research in Biostatistics. I, II, S. Semester course; 1-15 credits. Research leading to the MS or PhD degree and elective research projects for other students.

Department of Human Genetics

Black, Susan *Assistant Professor (Fairfax Hospital)** MD, McGill University; clinical genetics.
 Bodurtha, Joann *Associate Professor [Pediatrics and Obstetrics]* MD, MPH, Yale University; clinical genetics, epidemiology, birth defects.
 Brown, Judith A. *Professor (Obstetrics and Gynecology)** PhD, Indiana University; cytogenetic, clinical and molecular genetics.
 Chinnici, Joseph P. *Associate Professor (Biology)** PhD, University of Virginia; population genetics.
 Corey, Linda A. *Professor [Dentistry]* PhD, North Carolina State University; genetic epidemiology and twin studies.
 Eaves, Lindon J. *Distinguished Professor [Psychiatry]* PhD, DSc, University of Birmingham; MA, Oxon; behavior and quantitative genetics.
 Foley, Debra L. *Instructor* PhD, LaTrobe University; genetic epidemiology and psychiatric genetics.
 Holmes, W. Michael *Associate Professor (Microbiology and Immunology)** PhD, University of Tennessee; molecular genetics, nucleic acid chemistry.

Howard-Peebles, Patricia *Professor (Fairfax Hospital)** PhD, University of Texas, Austin; cytogenetics, fragile X syndrome.
 Hymes, A. Jeanne *Instructor* PhD, West Virginia University; biochemical and clinical genetics.
 Jackson-Cook, Colleen *Assistant Professor* PhD, Virginia Commonwealth University; clinical, molecular, and population cytogenetics; Down's syndrome; sperm chromosome aneuploidy.
 Kendler, Kenneth S. *Professor (Psychiatry)** MD, Stanford University; human behavioral and psychiatric genetics.
 Levinson, Gene *Assistant Professor (Fairfax Hospital)** PhD, University of California; molecular genetics.
 Lloyd, Joyce *Assistant Professor* PhD, Wesleyan University (CT); eucaryotic molecular biology, globin gene regulation.
 MacLean, Charles *Professor (Psychiatry)** PhD, University of North Carolina; genetic epidemiology, biostatistics, linkage.
 Maes, Hermine H.M. *Instructor* PhD, Catholic University of Leuven; statistical genetics and genetic epidemiology.
 Murrelle, Edward L. *Instructor* PhD, University of Pittsburgh; genetic epidemiology.
 Nance, Walter E. *Professor and Chair [Pediatrics and Internal Medicine]* MD, Harvard; PhD, University of Wisconsin; clinical genetics, twin studies and hereditary deafness.
 Neale, Michael *Associate Professor (Psychiatry)** PhD, University of London; behavioral genetics.
 Pandya, Arti *Assistant Professor* MD, University of Bombay; clinical and molecular genetics.
 Phelps, Lorna M. *Lecturer* MSSW, University of Wisconsin-Madison; genetic counseling.
 Rizzo, William B. *Associate Professor (Pediatrics)** MD, University of Illinois, College of Medicine; biochemical and clinical genetics.
 Schieken, Richard *Professor (Pediatrics)** MD, University of Pennsylvania; genetics of cardiovascular disease.
 Shiang, Rita *Assistant Professor* PhD, University of Iowa; molecular genetics.
 Shulman, Joseph D. *Professor (Fairfax Hospital)** MD, Harvard Medical School; reproductive biology.
 Silberg, Judy L. *Assistant Professor* PhD, Virginia Commonwealth University; behavior genetics, psychology, twin studies, adolescent behavior, psychological testing.
 Stern, Harvey J. *Assistant Professor (Fairfax Hospital)** MD, Albert Einstein College of Medicine; PhD, College of Physicians and Surgeons of Columbia University; clinical genetics.
 Vanner Nicely, Lauren *Instructor* MS, University of Pittsburgh; genetic counseling.
 Wolf, Barry *Professor [Pediatrics]* MD, PhD, University of Illinois College of Medicine; biochemical and clinical genetics, newborn screening.
 Woodward, Charlene *Assistant Professor* PhD, University of Georgia; behavioral genetics.
 Young, Reuben B. *Professor (Pediatrics)** MD, Medical College of Virginia; pediatric endocrinology and genetic disorders of sexual differentiation.

* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

Graduate Courses in Human Genetics (GEN)

GEN 501/BIO 530 Human Genetics. I. Semester course; 3 credits. Prerequisites: BIO 310 and CHE 301, L301, 302, L302, or equivalents. Emphasizes a broad approach, at an advanced level, to human genetics. Explores topics including cytogenetics, pedigree analysis, gene mapping, aneuploid syndromes, inborn errors of metabolism, neonatal screening, cancer, genetic engineering, behavior and intelligence, prenatal diagnosis, and genetic counseling.

GEN 502 Advanced Human Genetics. I, II. Semester course; 2-6 lecture hours. 2-6 credits. Prerequisite: GEN 501 or equivalent. For human genetics graduate students only. A comprehensive study of the principles of specific areas in human genetics.

GEN 511 Human Cytogenetics. I. (Even years only beginning in 1998.) Semester course; 3 lecture hours. 3 credits. Prerequisites: GEN 501 and GEN 502. A discussion of recent advances in human cytogenetics. Topics covered will include chromosome banding techniques and ultrastructure, meiosis, numerical and structural abnormalities, fragile

sites, cancer cytogenetics, methodology for linkage studies, and population cytogenetics. Clinical cases are used to illustrate the application of special diagnostic methodologies.

GEN 516 Population Genetics. II.Semester course;3 lecture hours. 3 credits. Genetic and ecological factors affecting normal and abnormal variation within and between populations of organisms, especially man.

GEN 518 Methods in Human Population Genetics. I. Semester course;3 lecture hours. 3 credits. Data analysis and discussion of methods including segregation analysis and linkage. Topics covered will include inbreeding, ascertainment,and genetic epidemiology.

GEN 525-526 Practice of Genetic Counseling. I and II.Continuous course;3 lecture hours. 3-3 credits. Provides context for practice of genetic counseling through literature review and practical techniques. Places specific emphasis on pregnancy and childhood evaluation,interviewing techniques, social and ethical issues, including fieldwork in prenatal,general genetics and specialty clinics.

GEN 527-528 Medical Genetics. I and II.Continuous course; 3 lecture hours. 3-3 credits. Provides medical information and principles of human genetic disease with specific emphasis on the molecular basis of Mendelian disorders, disorders of sexual development,assessment of dysmorphic features, and the genetics of common diseases. Emphasizes the use of all available resource materials in genetics.

GEN 531 Dental Genetics. I.Semester course; 1 lecture hour. 1 credit.The basis of inheritance and variation in man, including simple and complex modes of inheritance, the nature of mutations, human chromosomal aberrations, variation in protein and antigens, genetic aspects of some syndromes, and birth defects.

GEN 600 Clinical Genetics. I, II,and S. Semester course;1 lecture and 4 laboratory hours. 3 credits. Prerequisite: GEN 501 or equivalent. Practical experience in the genetic counseling clinic and on ward rounds. Includes collection and analysis of family histories, genetic counseling, and introduction to genetic nosology.

GEN 603 Mathematical and Statistical Genetics. II.Semester course;3 lecture hours. 3 credits. Prerequisite: BIS 543-544 or equivalent.Provides an introduction to the rudiments of theoretical and applied mathematical population genetics including the segregation of genes in families, genetic linkage and quantitative inheritance. Emphasizes the methods used in the analysis of genetic data.

GEN 614 Human Biochemical and Molecular Genetics. I (Odd years only beginning in 1999).Semester course; 4 lecture hours. 4 credits. Prerequisites:BIC 503-504, equivalent,or permission of instructor. Surveys the mechanisms and varieties of human gene mutations resulting in human genetic disease and emphasizes different investigational disorders using current scientific literature.

GEN 617 Segregation and Linkage Analysis. I. Semester course; 3 lecture hours. 3 credits. Prerequisite:Introductory Biostatistics or permission of instructor. Introduces the theory and practice of segregation and linkage analysis as applied to human kinship data.Emphasizes the techniques for the detection, characterization,and mapping of single loci with large effects on phenotype.

GEN 618 Advanced Segregation and Linkage Analysis. I (Odd years only beginning in 1999).Semester course;3 lecture hours. 3 credits. Prerequisite:GEN 617 or permission of instructor. Focuses on advanced topics related to segregation and linkage analysis. Presents alternatives to single major locus segregation patterns, advanced linkage analysis techniques such as multipoint mapping, and combined segregation and linkage analyses.

GEN 619 Quantitative Genetics. I.Semester course; 3 lecture hours. 3 credits. The effects of genes and environment on complex human traits with emphasis on:Genetic architecture and evolution;nongenetic inheritance;mate selection;developmental change;sex-effects;genotype-environment interaction; resolving cause from effect;design of genetic studies, statistical methods and computer algorithms for genetic data analysis.

GEN 620 Principles of Human Behavioral Genetics. I.(Even years only beginning in 1998.) Semester course;3 lecture hours. 3 credits. The theory of genetic and nongenetic transmission considered in relation to the design,analysis, and interpretation of studies to identify the principal genetic and environmental causes of behavioral variation. Included will be analysis of intelligence, personality, social attitudes, and psychiatric disorders.

GEN 690 Genetics Research Seminar. I,II.Semester course; 1 lecture hour. 1 credit.Selected topics in genetics presented by students and staff.

GEN 691 Special Topics in Genetics. I, II.1-4 credits. Lectures, tutorial studies, library assignments in selected areas of advanced study or specialized laboratory procedures not available in other courses or as part of the research training.

GEN 697 Directed Research in Genetics. I,II, S. 1-15 credits. Research leading to the MS or PhD degree and elective research projects for other students.

Department of Microbiology and Immunology

- Archer, Gordon L. *Professor (Medicine)** MD, University of Virginia; staphylococcal genetics, virulence factors in *Staphylococcus epidermidis*, prosthetic valve endocarditis.
- Barbour, Suzanne E. *Assistant Professor* PhD, John Hopkins University School of Medicine;regulation of cell phospholipid metabolism.The role of phospholipid metabolism in the control of macrophage cell biology.
- Bear, Harry D. *Professor (Surgery)** PhD, MD, Virginia Commonwealth University;tumor immunology.
- Buck, Gregory A. *Professor* PhD, University of Washington; eukaryotic gene expression and RNA processing, catalytic RNA, molecular pathogenicity of trypanosomes and *Pneumocystis carinii*,automated nucleic acid synthesis and sequencing.
- Burns, James C. *Associate Professor (Oral Pathology)** DDS, PhD, Virginia Commonwealth University; herpes virology, cytomegalovirus and the etiology of Sjogren's syndrome, latency of virus infection in mice.
- Cabral, Guy A. *Associate Professor* PhD, University of Connecticut;viral oncology (herpes virus);Non-A,Non-B hepatitis, the effect of environmental chemicals on virus infections, drugs of abuse and the immune system.
- Califano, Joseph V. *Assistant Professor (Periodontics)** DDS, Virginia Commonwealth University;PhD, Virginia Commonwealth University;immunology and microbiology of periodontal diseases.
- Christie, Gail E. *Associate Professor* PhD, Yale University; protein-nucleic acid interactions in regulation of gene expression,RNA polymerase structure and function,global control mechanisms.
- Conrad, Daniel H. *Professor* PhD, West Virginia University; mechanisms of immediate hypersensitivity, structure and function of IgE receptors.
- Cornelissen,Cynthia N. *Assistant Professor* PhD, University of Illinois; internalization of transferring bound iron by pathogenic nisseria; inhibition and relation to bacterial pathogenesis.
- Formica, Joseph V. *Associate Professor* PhD, Georgetown University; pathogenesis, physiology and biological control of *Agrobacterium tumefaciens*.
- Gates, James E. *Associate Professor (Biology)** PhD, University of Missouri at Columbia; applied and environmental microbiology.
- Grant, Steven *Professor (Medicine)** [Pharmacology and Toxicology] MD, Mt.Sinai School of Medicine; cancer therapy mechanisms of apoptosis;sphingolipids.
- Hard, Richard C. *Associate Professor (Pathology)** MD, St.Louis University;pathogenesis of host vs. graft disease;experimental model of pediatric AIDS, maternal-fetal transmission of HIV.
- Holmes, W. Michael *Associate Professor [Human Genetics]** PhD, University of Tennessee;molecular genetics of tRNA in metabolic control,rna-protein interactions, Pol III gene expression.
- Hsu, Hsiu-Sheng *Professor* PhD, University of Pennsylvania;host-parasite relationships and experimental pathology of bacterial infectious diseases.
- Huff, Thomas F. *Professor* PhD, University of Louisville;basic mechanisms of immediate hypersensitivity, mast cell differentiation,IgE regulation,protooncogenes and hematopoiesis.

Hylemon, Phillip B. *Professor* PhD, Virginia Polytechnic Institute and State University; biochemistry and genetics of steroid metabolism by anaerobic gut bacteria; regulation of cholesterol and bile acid biosynthesis in the liver, enzymology and genetics of hydroxysteroid dehydrogenases.

Jacobson, Eric S. *Professor (Medicine)** MD, PhD, University of Wisconsin; pathogenesis of cryptococcosis, genetic study of *Cryptococcus neoformans*.

Kauma, Scott W. *Associate Professor (Obstetrics and Gynecology)** MD, University of Wisconsin; maternal immunity to fetus; regulation of trophoblast proliferation/differentiation by cytokines and other stimuli.

Koertge, Thomas E. *Associate Professor (Periodontics)** DMD, Southern Illinois University, PhD, University of Iowa; immunology of periodontal disease, secretory immunology.

Krystal, Geoffrey D. *Assistant Professor (Medicine)** MD, University of Miami, PhD State University of New York, Stony Brook; molecular biology of oncogenes, transcription and RNA processing of the myc gene family.

Lebman, Deborah A. *Assistant Professor* PhD, University of Pennsylvania; regulation of immunoglobulin genes, cytokines, molecular immunology.

Loria, Roger M. *Professor [Academic Pathology]* PhD, Boston University; host-virus interactions; up regulation of host immunity to combat infectious diseases; enteroviruses in diabetes mellitus; cardiovascular diseases and atherosclerosis; role of environmental factors, nutrition, lipids, and pesticides on virus infections.

Macrina, Francis L. *Professor* PhD, Syracuse University; genetic control of colonization and virulence in human indigenous microflora.

Marciano-Cabral, Francine *Professor* PhD, University of Connecticut; pathogenic protozoa, parasite-host interactions, parasite immunology, host resistance mechanisms.

Marconi, Richard T. *Assistant Professor* PhD, University of Montana; pathogenic spirochetes, molecular pathogenesis of the Lyme disease spirochetes, molecular evolution.

Markowitz, Sheldon *Professor (Medicine)** MD, Virginia Commonwealth University; bacteria genetics, molecular epidemiology, investigational chemotherapy, animal models of infection.

McCoy, Kathleen L. *Associate Professor* PhD, University of Washington; regulation of immune responsiveness with emphasis on antigen processing and presentation.

Mikkelsen, Ross B. *Associate Professor (Department of Radiation Oncology)** PhD, University of California, Santa Barbara; host-parasite interactions in malaria and Ca²⁺/pH homeostasis and growth control in tumor cells.

Munro, Cindy *Assistant Professor (Nursing)** PhD, Virginia Commonwealth University; oral and systemic streptococcal infections of humans; viridans streptococcal endocarditis; oral health in immunocompromised persons.

O'Neal Charles H. *Associate Professor* PhD, Emory University; proteins and nucleic acids involved in cellular transformation; role of tRNA in metabolic control.

Povirk, Lawrence F. *Associate Professor (Pharmacology and Toxicology)** PhD, University of California, Berkeley; DNA damage and mutagenesis; DNA double strand break repair and genesis rearrangement in mammalian cells.

Regelson, William *Professor (Medicine)** MD, New York State University College of Medicine, Downstate; the immunological regulation of tumor growth, gerontological research, chemotherapy, and host resistance to both tumor and microbiological disease.

Ruddy, Shaun *Professor (Medicine, Division of Rheumatology, Allergy and Immunology)** MD, Yale University; cellular interactions with complement receptors, transmembrane signaling by immunoglobulin Fc receptors.

Schenkein, Harvey A. *Professor (Periodontics)** DDS, PhD, State University of New York at Buffalo; immunobiology of periodontal disease, complement and inflammatory mediators in periodontal disease.

Schwartz, Lawrence B. *Professor (Medicine, Division of Rheumatology, Allergy and Immunology)* [Pathology]* PhD, MD, Washington University; immunology and biochemistry of mast cells.

Swerdlow, Paul S. *Assistant Professor (Medicine)** MD, Harvard University; ubiquitin and chromatin structure in eukaryotic differentiation.

Taylor, Shirley M. *Assistant Professor* PhD, University of Southern California; regulatory mechanisms during cell differentiation; identification and characterization of lineage determination genes and mechanisms controlling their expression. Regulation of expression of folate-dependent enzymes.

Tew, John G. *Professor and Interim Chair* PhD, Brigham Young University; role of follicular dendritic cells in the immune response and the role of immune mechanisms in the pathogenesis of periodontal disease.

Valerie, Kristoffer *Associate Professor (Radiation Oncology)** PhD, Royal Institute of Technology, Stockholm, Sweden; radiation-induced gene expression and DNA repair; genetic regulation of human immunodeficiency virus.

Yager, Dorne R. *Assistant Professor (Surgery)** PhD, University of North Carolina, Chapel Hill; molecular virology; molecular biology of wound healing.

* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

Graduate Courses in Microbiology and Immunology (MIC)

MIC 503-504/BIC 503-504 Biochemistry, Cell and Molecular Biology. I,II. Continuous course; 5 lecture hours. 5 credits.

Prerequisites: Undergraduate organic and physical chemistry, or permission of instructor. A comprehensive introductory course that describes basic biochemistry and reviews current concepts of modern cell and molecular biology.

MIC 505 Immunobiology. I. Semester course; 3 lecture hours. 3 credits. A survey of immunobiology as a total host response to foreign agents, covering the nature of antigens and antibodies, antigen-antibody reactions, immunocompetent cells, allergic reactions, tumor immunology, transplantation immunology, and immunogenetics.

MIC 507 Techniques in Molecular Biology and Genetics. I. Semester course; 1 or 2 lecture hours. 1 or 2 credits. Prerequisite: BIC/MIC 503-504 or equivalent, permission of instructor. This course is designed to give an overview of the techniques utilized in modern molecular biology. The principles underlying techniques such as plasmid and phage cloning, RNA detection, PCR, DNA sequencing, genomic mapping, heterologous gene expression, and production and analysis of recombinant protein will be discussed in detail by experts in the field.

MIC 508-509 Introduction to Microbiology and Immunology Research. I,II, and S. Continuous course; 1 lecture and 4 laboratory hours. 3-3 credits. Prerequisite: Permission of instructor. Required of all first-year graduate students. Introduction to all active research programs in microbiology and immunology. Presentations of research programs by investigators and rotation of students through faculty laboratories to gain direct exposure to individual research projects.

MIC 510 Scientific Integrity. I. Semester course; 1 lecture hour. 1 credit. A survey of contemporary issues relating to scientific integrity and ethics. Topics include scientific fraud and misconduct, peer review, use of humans and animals in biomedical research, ownership of data, intellectual property, conflict of interest, scientific record keeping, and biomedical ethics.

MIC 512 Laboratory Safety. I. Semester course; 1 lecture hour. 1 credit. Describes health hazards commonly found in biomedical laboratories and appropriate safety precautions and responses. Includes hazards of working with bacteria, viruses, parasites, fungi, recombinant DNA procedures and regulations, and chemical, electrical, and fire hazards.

MIC 513 Infection and Immunity (Dentistry). II. Semester course; 3.5 lecture and 4 laboratory hours. 5.5 credits. A lecture and laboratory study of the disease producing microorganisms of man with special emphasis on the roles of microorganisms in oral diseases and related topics that are of importance in dentistry.

MIC 516 Medical Microbiology. II. Semester course; 3 lecture hours. 3 credits. A comprehensive introduction to the basic principles of virology, human parasitology, bacteriology, and mycology. Interactions of the infecting agents and hosts will be stressed at the molecular and cellular level.

MIC 519 Molecular Mechanisms of Microbial Pathogenesis. I. Semester course; 3 lecture hours. 3 credits. Prerequisite:

Undergraduate-level courses in microbiology or microbial physiology, immunology, and molecular genetics. The goals of this comprehensive course are to explore in detail the virulence mechanisms of microbes and the response of the infected host. The focus will be on important bacterial and viral pathogens.

MIC 551 Basic Science Core Curriculum for Postgraduate Dental Students. II.Semester course;1-3 lecture hours. 1-3 credits. This course is designed to provide the postgraduate dental student with the educational experience in the basic science required for the successful completion of his/her specialty training program. Selected lectures in the basic science areas related to dentistry are presented and are supplemented by assigned articles.

MIC 604 Cell Physiology and Metabolism. I.Semester course; 3 lecture hours. 3 credits. Prerequisite: MIC 503. An advanced course on the physiology and metabolism of prokaryotic and eukaryotic cells with some emphasis on the regulation of cell functions. Lectures and class discussions will focus on current scientific literature including review articles and original research papers.

MIC 605 Molecular Biology and Genetics. I. Semester course;3 lecture hours. 3 credits. Prerequisite:Undergraduate organic and physical chemistry, or permission of the instructor. A comprehensive introductory course that describes the structure of the genetic material and the molecular mechanisms involved in its maintenance, replication, transmission and expression. Emphasis will be on experimental approaches integrating genetics and biochemistry in the studies of molecular genetics in prokaryotic and eukaryotic cellular and viral systems.

MIC 653 Advanced Molecular Genetics. I. Semester course;3 lecture hours. 3 credits. Prerequisite:MIC 517 or equivalent or permission of instructor. An advanced course on the molecular mechanisms of gene regulation in prokaryotic and eukaryotic cells, with some emphasis on developmental control of gene expression, oncogenesis, and the molecular basis of antibody diversity. Lectures and class discussion will focus on current scientific literature, including original research papers and recent review articles.

MIC 686 Advanced Immunobiology. II.Semester course; 2 lecture hours. 2 credits. Open primarily to residents, medical students, and graduate students with an immunology background such as MIC 506. Lectures, seminars, and conferences on basic and clinical immunobiology. Topics have included tumor immunology, cell interactions in the immune response, genetics of the immune response, mechanisms of host-defense and membrane receptors in immunology and neoplasia.

MIC 690 Microbiology Research Seminar. I,II.Semester course; 1 lecture hour. 1 credit. Presentation and discussion of research reports and topics of current interest to the departmental seminar or special group seminars.

MIC 691 Special Topics in Microbiology. I,II.Semester course;1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

MIC 697 Directed Research in Microbiology. I, II, S. Semester course;1-15 credits. Research leading to the MS or PhD degree and elective research projects for other students.

Department of Pathology

Anderson, Philip F. *Assistant Professor (Clinical Chemistry)** PhD, Virginia Commonwealth University; immunoassay development.
 Ferreira-Gonzalez, A. *Assistant Professor* PhD, George Washington University; molecular diagnostics.
 Garrett, C. T. *Professor (Division Chair, Molecular Diagnostics)** PhD, University of Wisconsin, MD Johns Hopkins; molecular diagnostics.
 Hadfield, M. Gary *Professor* MD, University of Utah; neurotransmitter responses to aggressive behavior, stress, and psychoactive drugs, electron microscopy.
 Jackson-Cook, Colleen *Assistant Professor (Human Genetics)** PhD, Virginia Commonwealth University; clinical, molecular and population cytogenetics; Down's syndrome; sperm chromosome aneuploidy.

Miller, W. Gregory, Jr. *Professor* PhD, University of Arizona; fiber-optic immunochemical sensors for in vivo quantitative monitoring.
 Pandya, Arti *Assistant Professor (Human Genetics)** MD, University of Bombay; clinical and molecular genetics.
 Poklis, Alphonse *Professor* PhD, University of Maryland; forensic toxicology drug metabolism, analytical methods to detect drugs and intoxicants.
 Robinson, Susan E. *Professor (Pharmacology and Toxicology)** PhD, Vanderbilt University; interactions between putative neurotransmitters and central cholinergic neurons, correlation between behavioral and biochemical effects of drugs; effect of prenatal exposure to drugs in developing neurotransmitters.
 Rosenblum, William I. *Professor Emeritus* MD, New York University; cerebral microcirculation, blood substitutes, endothelial injury.
 Sirica, Alphonse E. *Professor (Division Chair, Experimental Pathology)** PhD, University of Connecticut; hepatocarcinogenesis, pathobiology of liver neoplasms and biliary epithelium, intrahepatic biliary epithelial cell function, proliferation and differentiation, neoplastic transformation of biliary cells, hepatocyte and bile ductal cell culture.
 Ware, J. L. *Professor and Director of Pathology Graduate Education* PhD, University of North Carolina; prostate cancer cell biology, invasion and metastasis.
 Weymouth, L.A. *Assistant Professor* PhD, University of Pennsylvania; application of molecular biology to virology.
 Wilkinson, David S. *Professor and Chair* PhD, University of Wisconsin, MD University of Miami; experimental oncology and pathology.

* Department in parentheses indicates primary appointment.

Graduate Courses in Pathology (PAT)

PAT 521 Laboratory Techniques in Diagnostic Pathology. I (Alternative years beginning Fall 1999). Semester course; 3 lecture hours. 3 credits. This team taught course includes principles of automated and non-automated testing, diagnostic testing, and an active laboratory demonstration of each method.

PAT 522 Clinical Chemistry. II. Semester course; 3 lecture hours. 3 credits. May be repeated for a maximum of twelve credits. Prerequisite: Permission of instructor. The metabolic basis of disease and the interpretation of laboratory data for diagnosis and patient management.

PAT 540 Pathology for Allied Health Sciences. Semester course; 1.5 lecture and 1 laboratory hour. 2 credits. Explores morbid tissue changes involved in selected disease states, with emphasis on musculoskeletal and nervous systems. Provides the foundation to understanding clinical problems that physical therapists and other paramedical personnel will encounter and treat in their patients.

PAT 570 Experimental Approaches to Tumor Biology. I. Semester course; 3 lecture/discussion hours. 3 credits. Introduces central problems in tumor biology and the methods available for their study. Develops through lectures and presentations skills in critical review and interpretation of research reports.

PAT 590 Experimental Pathology Seminar. I,II. Semester course; 1 lecture hour. 1 credit.

PAT 601 General Pathology (Dentistry). I. Semester course; 3 lecture and 6 laboratory hours. 5 credits. Instruction in the basic principles regarding alteration of structure and function in disease and in the pathogenesis and effect of disease in the various organ systems.

PAT 620 Special Topics in Modern Instrumental Methods. I,II, S. Semester course; 1 lecture and 2 laboratory hours. 2 credits. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studies.

PAT 690 Clinical Chemistry Seminar. I,II. Semester course; 1 lecture hour. 1 credit. Graduate students, residents, and staff present topics of current interest in clinical chemistry.

PAT 691 Special Topics in Modern Instrumental Methods. I,II, S. Semester course; 1 lecture and 2 laboratory hours. 2 credits. By special

arrangement with instructor. A study of some of the modern research methods of molecular biology. The student gains experience with the technique concomitant with discussions with faculty. The student writes a comprehensive review of the technique studied.

PAT 697 Research in Pathology. I,II, S. Semester course;1-15 credits. Research leading to PhD degree and elective research projects for other students.

Department of Pharmacology and Toxicology

Abd-Elfattah, Anwar S. *Associate Professor (Surgery)** PhD, Mississippi State University; neuropharmacology and biochemical and toxicology of organophosphorus and organochlorine neuropoisons.

Abood, Mary E. *Associate Professor* PhD, University of California at San Francisco; molecular pharmacology of opioid action, second-messenger systems, regulation of gene expression during development.

Aceto, Mario D. *Professor* PhD, University of Connecticut; mechanisms of action of analgesics and psychotherapeutic agents, drug dependence.

Allen, Robert C. *Professor and Chair (Ophthalmology)** MD, University of Virginia; glaucoma.

Balster, Robert L. *Professor and Director, Center for Drug and Alcohol Studies (Psychology)** PhD, University of Houston; animal models of drug dependence, behavioral pharmacology, behavioral toxicology, excitatory amino acids, inhalation studies.

Beardsley, Patrick M. *Associate Professor* PhD, University of Minnesota; behavioral pharmacology, development of medications for drug dependency disorders.

Borzelleca, Joseph F. *Professor* PhD, Thomas Jefferson University, Jefferson Medical College; general toxicology; safety evaluation of pesticides and chemicals; water contaminants; effects of chemicals on reproduction, food chemicals, interactions of toxic agents.

Carter, Walter H. *Professor (Chair, Biostatistics)* [Internal Medicine]** PhD, Virginia Polytechnic Institute and State University; design and analysis of response surface experiments, clinical trials, toxicology.

Coulter, Douglas A. *Associate Professor (Neurology)** PhD, Boston University; electrophysiology of glutamate neurotoxicity.

Damaj, M. Imad *Assistant Professor* PhD, University of Paris; CNS Pharmacology, cholinergic system, drugs of abuse, mechanisms of tolerance.

DeLorenzo, Robert J. *Professor (Neurology)** PhD, MD, Yale University; neuroscience and molecular neurobiology, molecular bases of membrane excitability, neuropharmacology of neuroleptic drugs, and biochemical bases of the effects of calcium on neuronal functions.

Dent, Paul *Assistant Professor (Radiation Oncology)** PhD, University of Dundee; growth factor signal transduction, cellular growth, development and differentiation within the liver.

Dewey, William L. *Professor [Vice President for Research and Graduate Studies]** PhD, University of Connecticut; mechanism of action of the constituents of marijuana, narcotic analgesics and their antagonists, including the role of endogenous substances in these actions, sudden infant death, neurosciences.

Egle, John L., Jr. *Professor* PhD, West Virginia University; cardiovascular pharmacology, the arachidonic cascade, cerebral microcirculation, platelets, nonsteroidal anti-inflammatory agents, brain injury.

Ellis, Earl F. *Professor* PhD, Bowman Gray School of Medicine; cerebral blood flow and metabolism, brain injury, arachidonic acid metabolism, drugs of abuse.

Gao, Bin *Assistant Professor* MD, Bethune University; molecular biology of adrenergic receptor regulation of gene transcription.

Gewirtz, David A. *Professor [Internal Medicine]** PhD, Mount Sinai College with Mount Sinai School of Medicine; inhibitors in breast cancer; role of oncogenes in growth arrest and cell death, biochemical and molecular pharmacology of topoisomerase II.

Glennon, Richard A. *Professor (Medicinal Chemistry)** PhD, State University of New York at Buffalo; design, synthesis and evaluation of site-selective serotonergic agents, studies on drugs of abuse and on designer drugs.

Grant, Steven *Professor (Internal Medicine, Division of Hematology and Oncology)** MD, Mt. Sinai; leukemic cell apoptosis, signal transduction, regulation of oncogene expression.

Harris, Louis S. *Harvey Haag Professor* PhD, Harvard University; relationship between chemical and biochemical factors and pharmacological actions of drugs affecting the central nervous system.

Ishac, Edward J.N. *Assistant Professor* PhD, Monash University, (Australia); Biochemical pharmacology and second-messenger systems.

Kunos, George *Professor and Chair* PhD, MD, McGill University (Canada); Budapest Medical University (Hungary); molecular biology of adrenergic receptors; central mechanisms of blood pressure regulation; endogenous opioids.

Lamb, Robert G. *Professor [Medicine]** PhD, University of North Carolina; hepatotoxicology, role of phospholipid metabolism in aging and chemical (alcohol, cocaine, CC14, etc.) dependent liver cell dysfunction, development of cytoprotective agents and in vitro models of agent-induced liver cell injury, liver cell culture.

Lichtman, Aron H. *Assistant Professor* PhD, Dartmouth College; neuronal mechanisms of cannabinoid action; pharmacology of antinociception; behavioral pharmacology; drugs of abuse.

Martin, Billy R. *Professor* PhD, University of North Carolina; central nervous system pharmacology, drugs of abuse, drug metabolism.

May, Everette L. *Professor* PhD, University of Virginia; medicinal chemistry, drug abuse.

Meade, Barbara J. *Assistant Professor* PhD, DVM, Virginia Polytechnic Institute, University of Georgia; hypersensitivity and autoimmune responses to chemicals; drug development.

Moran, Richard G. *Professor* PhD, State University of New York at Buffalo; pharmacology and molecular biology of folate metabolism; cancer cell biology.

Nestler, John E. *Professor and Chair (Endocrinology)** MD, University of Pennsylvania; insulin regulation of human steroid metabolism; dehydroepiandrosterone metabolism; biologic actions of dehydroepiandrosterone; breast cancer epidemiology; pathogenic role of insulin in breast cancer.

Patrick, Graham A. *Professor* PhD, University of North Carolina; central nervous system pharmacology and neurotransmitter systems, drugs of abuse.

Poklis, Alphonse *Associate Professor (Pathology)** PhD, University of Maryland; analytical and forensic toxicology, drug metabolism, biological monitoring.

Povirk, Lawrence F. *Professor [Microbiology and Immunology]** PhD, University of California, Berkeley; mutagenic effects of DNA-directed cancer chemotherapeutic agents, mechanisms of DNA damage and repair, application of DNA sequence analysis to study mutational mechanisms.

Ritter, Joseph K. *Assistant Professor* PhD, University of Utah; toxicology and molecular biology of xenobiotic metabolizing enzymes in liver.

Robinson, Susan E. *Professor* PhD, Vanderbilt University; interactions between putative neurotransmitters and central cholinergic neurons, correlation between behavioral and biochemical effects of drugs, effect of prenatal exposure to drugs in developing neurotransmitters.

Rosecrans, John A. *Professor* PhD, University of Rhode Island; psychopharmacology, correlations between the behavioral and biochemical effects on CNS-acting drugs, drug dependence, effects of drugs on adaptive mechanisms to chronic stress.

Rzagalinski, Beverly *Assistant Professor* PhD, Old Dominion University; neurotrauma, calcium signaling, signal transduction.

Satin, Leslie S. *Associate Professor* PhD, University of California at Los Angeles; physiology, biophysics and pharmacology of ion channels in endocrine and nerve cells, calcium channels, role of ion channels in pancreatic islet B-cells, role of calcium ions in secretion, channel modulation diabetes, neuronal injury and NMDA receptors.

Sawyer, Stephen *Associate Professor* PhD, University of Tennessee; erythropoietic receptors; biology of growth factors.

Schnoll, Sidney H. *Professor (Internal Medicine, Division of Substance Abuse Medicine)** MD, New Jersey Medical College; PhD, University of Pennsylvania; treatment of addiction, perinatal addiction and pain management.

Sica, Domenic A. *Professor (Internal Medicine, Division of Nephrology)** MD, Medical College of Virginia; hypertension, renal failure, electrolyte disorders and drug interactions.

Smith, Forrest L. *Assistant Professor* PhD, Texas Tech University, Health Sciences Center; central role of endogenous opioids and tachykinins; calcium/opiate modulation of transmembrane calcium influx and sequestration; central mechanisms of opiate analgesia, tolerance and physical dependence.

Varga, Karoly *Assistant Professor* PhD, MD, Semmel-Weis Medical University (Hungary); cardiovascular physiology and pharmacology; blood pressure regulation.

Welch, Sandra P. *Associate Professor* PhD, Virginia Commonwealth University; measurement of free intracellular calcium adenylate

cyclase and other second messengers in the development of tolerance and physical dependence to opioids and cannabinoids.

White, Kimber *Associate Professor (Biostatistics)* [Biomedical Engineering]* PhD, Virginia Commonwealth University; immunotoxicology of polycyclic aromatic and chlorinated hydrocarbons, statistical methods in toxicology, complement, risk assessment.

Wiley, Jenny *Assistant Professor* PhD, Virginia Commonwealth University; psychopharmacology, behavioral pharmacology.

Woods, Lauren A. *Professor Emerita* PhD, Iowa State University; MD University of Michigan Medical School; narcotic metabolism and distribution.

Woodward, John J. *Associate Professor* PhD, University of Washington; central nervous system pharmacology, effects of ethanol and other drugs of abuse on neuronal glutamate receptors; nitric oxide and neurotransmitter release; second messengers and signal transduction.

* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

Graduate Courses in Pharmacology and Toxicology (PMC)

PMC 400 Drugs and their Actions. II. Semester course; 3 lecture hours. 3 credits. Prerequisites: Junior or senior 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.

PMC 509/ANA 509/PIO 509 Introduction to Neuroscience. I. Semester course; 3 lecture hours. 3 credits. Prerequisites: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

PMC 515 Pharmacology for Nurse Anesthetists I. Semester course; 3 lecture hours. 3 credits. The basic principles of pharmacology including mechanisms of absorption, distribution, biotransformation, elimination, dose-response relationships, drug and receptor interactions are presented followed by a detailed discussion of autonomic, cardiovascular, and renal pharmacology as it relates to nurse anesthesia. Detailed presentation of the pharmacology of classes of drugs used by nurse anesthetists will be made, with emphasis on general anesthetics.

PMC 516 Pharmacology for Nurse Anesthetists II. Semester course; 3 lecture hours. 3 credits. Prerequisite: PMC 515. Continuation of PMC 515. Detailed presentation of the pharmacology of classes of drugs used or encountered by nurse anesthetists will be made with emphasis upon local anesthetics, cardiovascular, chemotherapeutic, and anti-inflammatory agents.

PMC 535 Introduction to Toxicology. II. Semester course; 4 lecture hours. 4 credits. The basic principles of toxicology and toxicological evaluations; correlations of toxicological responses with biochemical, functional and morphological changes; environmental (including occupational and public health), forensic and regulatory concerns; and risk assessment and management are presented for graduate students in the biomedical sciences.

PMC 536 Principles of Pharmacology and Toxicology. I. Semester course; 5 lecture hours. 5 credits. Prerequisites: PIO 501 and BIC 503 or permission of instructor. A comprehensive course in pharmacology for graduate students. The mechanisms of action of major classes of pharmacologically active agents and basic principles of pharmacology are discussed. Topics include drug absorption, distribution, and metabolism; chemotherapy; endocrine pharmacology and principles of toxicology/immunotoxicology.

PMC 537 Principles of Pharmacology and Toxicology. II. Semester course; 5 lecture hours. 5 credits. Prerequisites: PMC 536 or with permission of instructor. Continuation of PMC 536. Topics include receptor theory, autonomic, cardiovascular, and central nervous system pharmacology and toxicology.

PMC 548 Drug Dependence. II. Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate or post-baccalaureate standing. A broad survey course in problems of drug and alcohol use and abuse. It will focus on the pharmacology of abused drugs as well as a study of the psychological and sociological factors in drug-taking behavior, rehabilitation methods, and prevention. This course may not be taken in lieu of any pharmacology offerings in the professional schools on the MCV Campus.

PMC 597 Introduction to Pharmacological Research. I, II. Continuous course; 1-12 credits. Prerequisite: Permission of instructor. Rotation research in pharmacology and toxicology laboratories for beginning graduate students.

PMC 609 General Pharmacology and Pain Control. I, II. Continuous course; 2 lecture hours per week for 2 semesters. One grade for 4 credits at end of second semester. The basic principles of pharmacology, including mechanisms of absorption, distribution, biotransformation, elimination; dose-response relationships, drug-receptor interactions are presented followed by detailed discussions of the various classes of drugs, with special consideration given to mechanisms of action and toward effects of drugs used in dentistry to control pain and related symptoms.

PMC 611 General Pharmacology and Pain Control. I. Semester course; 2 lecture hours. 2 credits. A continuation of PMC 609.

PMC 620/PIO 620 Ion Channels in Membranes. II (Alternate years beginning Spring 1999). Semester course; 3 lecture hours. 3 credits. Detailed presentation of the fundamental biophysical properties of ionic channels in membranes including the elementary properties of pores, molecular mechanisms of ionic selectivity, mechanisms of drug block, structure-function relationships, and basis for channel gating. Discussion will encompass modern techniques for studying ion channel function. Previous course work including basic concepts in electrophysiology, such as those covered in PIO 501 Mammalian Physiology or PMC/PIO/ANA 509 Introduction to Neurosciences, is highly recommended.

PMC 625 Biochemical Pharmacology. I (Alternate years Fall 1998). Semester course; 3 lecture hours. 3 credits. Prerequisite: PMC 536 or consent of instructor. Covers biomedical and molecular biology approaches to pharmacological problems. Emphasizes signal transduction, oncogenes, protein kinases and the control of cellular proliferation. Examines uptake, metabolism and intracellular effects of anticancer drugs, particularly the interaction with DNA.

PMC 632 Neurochemical Pharmacology. II (Alternate years Spring 1999). Semester course; 3 lecture hours. 3 credits. Prerequisites: PMC 536 or consent of instructor. Investigates the mechanisms of drugs acting on the central nervous system in relation to their effects on endogenous neurochemical systems. Examines the milieu in which drugs act upon the central nervous system, experimental techniques frequently used in neuropharmacology, specific neurotransmitter systems, as well as the mechanisms of action of specific drugs.

PMC 633 Behavioral Pharmacology. I (Alternate years Fall 1999). Semester course; 3 lecture hours. 3 credits. This is a survey course covering research on the effects of drugs on behavior. The major emphasis will be on schedule-controlled learned behavior. Additional topics will include drug self-administration, drug discrimination, and conditioned drug effects and behavioral toxicology. The course focuses primarily on laboratory research in animals although human research will also be covered. The relevance of this research literature to drug treatment of behavioral disorders and substance abuse will be discussed.

PMC 637 Cellular Pharmacology. II (Alternate years Spring 1998). Semester course; 3 lecture hours. 3 credits. Prerequisite: PMC 536 or permission of instructor. The principles governing the interactions of drugs and hormones with their cellular receptors are presented followed by a discussion of the biochemical mechanisms by which the

interactions are transduced into specific cellular responses. Lectures are supplemented with demonstrations and student presentations of current literature in the area.

PMC 638 Cellular Mechanisms of Toxicology. II (Alternate years Fall 1999). Semester course; 3 lecture hours. 3 credits. Prerequisite: PMC 536 or permission of instructor. A holistic approach is taken to describe and analyze toxicological information. Intact animal, organ, cellular, and biochemical responses to toxic agents are presented. Immunologic, genetic, endocrine, and central nervous system paradigms and their relationship to the mechanism of action of toxic agents as well as the predictive value of tests of these systems are presented. Kinetics and metabolism of toxic agents as well as statistical and analytical procedures are integrated into the discussions.

PMC 639 Drug Development. I (Alternate years Fall 1998). Semester course; 1 lecture and 4 laboratory hours. 3 credits. Prerequisites: PMC 536 and 537 or their equivalents. The principles of drug screening, advanced testing, and procedures necessary prior to the clinical evaluation of new products are described. An emphasis is placed on physiological type procedures used in pharmacology.

PMC 644 Forensic Toxicology. II (Alternate years Spring 1998). Semester course; 2 lecture and 2 laboratory hours. 3 credits. Lecture and demonstrations in which common poisons and groups of poisons are discussed as to detection, diagnosis, and treatment of poisoning. Demonstrations include basic principles of analytical toxicology, forensic science, and courtroom testimony.

PMC 690 Pharmacology Research Seminar. I, II. Semester course; 1 lecture hour. 1 credit. Members of the departmental staff, students, and visiting lecturers participate in discussions on topics of current and historical interest.

PMC 691 Special Topics in Pharmacology. I, II, S. Semester course; 1-4 credits. Prerequisite: Permission of instructor. Special topics in pharmacology or toxicology covered in less detail in other courses will be studied in depth in this course.

PMC 697 Directed Research in Pharmacology. I, II, S. Semester course; 1-15 credits. Research leading to the MS or PhD degree and elective projects for other students.

Department of Physiology

Baumgarten, Clive Marc *Professor* PhD, Northwestern University; cardiac electrophysiology.

Biber, Thomas U. L. *Professor* PhD, University of Berne; epithelial transport.

Boadle-Biber, Margaret C. *Professor and Chair* DPhil, University of Oxford; neurotransmitters.

Bowlin, Gary Lee *Assistant Professor (Biomedical Engineering)** PhD, University of Akron; endothelial cell seeding for grafts and prostheses.

Cleary, Stephen F. *Professor* PhD, New York University; radiation biophysics.

Clemo, S. Henry *Assistant Professor (Cardiology)** MD, PhD, University of Virginia; cell volume regulation.

Costanzo, Linda S. *Professor* PhD, State University of New York Upstate Medical Center; renal physiology.

Costanzo, Richard M. *Professor* PhD, State University of New York Upstate Medical Center; sensory physiology-chemical senses.

Coulter, Douglas A. *Associate Professor (Neurology)** PhD, Boston University; electrophysiology of glutamate neurotoxicity.

DeSimone, John A. *Professor* PhD, Harvard University; sensory physiology, chemical senses.

Eckberg, Dwain L. *Professor (Cardiology)** MD, Northwestern University; cardiovascular physiology.

Fabiato, Alexandre *Professor* MD, PhD, University of Paris; cardiac physiology.

Fehr, Joseph J. *Professor* PhD, Cornell University; muscle physiology.

Feldman, George *Associate Professor (Medicine)** MD, New York University; epithelial transport in the kidney and gut.

Fine, Michael L. *Associate Professor (Biology)** PhD, University of Rhode Island; behavior of marine fishes.

Ford, George D. *Professor* PhD, West Virginia University; vascular smooth muscle physiology.

Goldberg, Stephen J. *Professor (Anatomy)** PhD, Clark University; neurobiology, cranial nerve motor unit physiology.

Grider, John R. *Professor* PhD, Hahnemann University; gastrointestinal physiology.

Heck, Gerard L. *Assistant Professor* PhD, Duke University; sensory physiology, chemical senses.

Hess, Michael L. *Professor (Internal Medicine)** MD, University of Pittsburgh School of Medicine; cardiac muscle physiology.

Jakoi, Emma *Associate Professor (Neurology)** PhD, Duke University; cell and electrophysiology.

Kalimi, Mohammed Y. *Professor* PhD, Bombay University; endocrinology.

Karnam, Srinivasa *Assistant Professor* PhD, Sri Venkateswars University; cell biology and signal transduction.

Kuemmerle, John Francis *Assistant Professor (Internal Medicine)** MD, Eastern Virginia Medical School; gastroenterology.

Kukreja, Rakesh *Assistant Professor (Internal Medicine/Cardiology)** PhD, Kurukshetra University (India); molecular cardiology.

Lyall, Vijay *Assistant Professor* PhD, Postgraduate Institute of Medical Education Research (India); membrane transport.

Marmarou, Anthony *Professor (Neurosurgery)** PhD, Drexel University; neurosciences.

Mayer, David J. *Professor (Anesthesiology)** PhD, University of California, Los Angeles; sensory physiology, pain.

Meredith, Alex *Associate Professor (Anatomy)** PhD, Virginia Commonwealth University; sensory processing and sensorimotor transformation.

Mikulecky, Donald C. *Professor* PhD, University of Chicago; theoretical biology.

Miller, Gerald Edward *Professor (Chair, Biomedical Engineering)** PhD, Pennsylvania State University; rehabilitation engineering; fluid mechanics; artificial internal organs; epilepsy genesis.

Pittman, Roland N. *Professor* PhD, State University of New York at Stony Brook; circulatory physiology.

Poland, James L. *Associate Professor* PhD, West Virginia University; muscle physiology.

Price, Steven *Professor* PhD, Princeton University; sensory physiology, chemical senses.

Ramoa, Ary S. *Assistant Professor (Neurology)** MD/PhD, Rio de Janeiro, University of California at Berkeley; neurobiology, neuronal differentiation during eye development.

Ridgway, Ellis B. *Professor* PhD, University of Oregon; muscle physiology.

Satin, Leslie *Associate Professor (Pharmacology and Toxicology)** PhD, University of California at Los Angeles; physiology and pharmacology of ion channels.

Schoolwerth, Anton C. *Professor (Internal Medicine; Chair, Division of Nephrology)** MD, Harvard Medical School; nephrology.

Schubert, Mitchell Lee *Professor (Internal Medicine)** MD, Baylor College of Medicine; gastroenterology.

Shapiro, Steven M. *Associate Professor (Neurology)** MD, PhD, University of Pittsburgh School of Medicine; neurophysiology, evoked potentials, auditory nervous system, development.

Stewart, Jennifer K. *Associate Professor (Biology)** PhD, Emory University; endocrine physiology, hormone secretion.

Walsh, Scott W. *Professor (Obstetrics and Gynecology)** PhD, University of Wisconsin; endocrinology, reproductive physiology.

Ware, Joy L. *Associate Professor (Pathology)** PhD, University of North Carolina; cancer cell biology.

Witorsch, Raphael J. *Professor* PhD, Yale University; endocrinology.

* Department in parentheses indicates primary appointment.

Graduate Courses in Physiology (PIO)

PIO 501 Mammalian Physiology I. Semester course; 5 lecture hours. 5 credits. Prerequisites: Biology, chemistry, and physics. A comprehensive study of the function of mammalian organ systems, designed primarily for graduate students.

PIO 502 Mammalian Physiology II (Dentistry). Semester course; 5 lecture hours. 5 credits. Prerequisites: Same as for PIO 501. A comprehensive study of the function of mammalian organ systems, designed primarily for dental students.

PIO 504 Mammalian Physiology. II.Semester course;3 lecture hours. 3 credits. A comprehensive study of the function of mammalian organ systems, designed primarily for high school science teachers.

PIO 506 Mammalian Physiology (Pharmacy). II.Semester course; 4 lecture hours. 4 credits. A comprehensive study of the function of mammalian organ system, designed primarily for pharmacy students.

PIO 509/ANA 509/PMC 509 Introduction to Neuroscience. I. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Designed as an interdisciplinary introduction to the function of the central nervous system. The basic principles of neuroscience including neuronal anatomy, electrical properties of single neurons, and cell biology of neurotransmitter release are followed by a discussion of individual sensory systems and an introduction to the organization and function of discrete brain regions including cortex, basal ganglia, hypothalamus, hippocampus, and others. Understanding basic aspects of nervous system function is emphasized, with relevant clinical examples.

PIO 512 Cardiovascular and Exercise Physiology II. Semester course;3 lecture hours. 3 credits. Prerequisites: PIO 501 or permission of instructor. A comprehensive study of cell and system cardiovascular and exercise physiology with pathophysiological implications, primarily designed for professional students. Physiological basis and introduction to the practical interpretation of the electrocardiogram will be taught with a computer-assisted method.

PIO 604 Cell Physiology. II.Semester course;4 lecture hours. 4 credits. A description of the functional properties of cells in terms of physics and chemistry. Topics discussed include cell structure and cytochemistry, bioenergetics, secretion,transport of material across membranes, excitation,and contractility.

PIO 605 Mathematical Physiology. I. Semester course;3 lecture hours. 3 credits. The application of set theory to physiological problems. Physiological functions and mappings. Linear transformations. The use of complex numbers. Limits, derivatives, and integrals and their use in physiology. Rate processes. Physiological function and its dependence on many variables. Probabilistic ideas in physiology.

PIO 606 Physical Principles in Physiology. II.Semester course; 4 lecture hours. 4 credits. Prerequisite: PIO 605 or permission of instructor. A survey of those principles of physics and physical chemistry underlying physiological processes. Topics include energetics of equilibrium and nonequilibrium systems, electrode processes, reaction-diffusion systems, kinetics, photochemistry, physical techniques in physiological research.

PIO 612 Cardiovascular Physiology. II (Alternate years beginning 1998).Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. An in-depth study of the original literature in selected areas of cardiovascular physiology.

PIO 615 Neurophysiology. I (Alternate years beginning 1999). Semester course;3 lecture hours. 3 credits. Prerequisite:PIO 501 or permission of instructor. An in-depth study of the original literature in selected areas of neurophysiology.

PIO 617 Endocrine Physiology. I (Alternate years beginning 1998). Semester course;3 lecture hours. 3 credits. Prerequisites:PIO 501 and BIC 503 or permission of instructor. An in-depth study of the original literature in selected areas of endocrine physiology.

PIO 618 Renal and Epithelial Physiology. II (Alternate years beginning 1999).Semester course; 3 lecture hours. 3 credits. Prerequisite:PIO 604 or permission of instructor. An in-depth study of selected areas of renal and epithelial physiology. Topics include mechanisms of salt and water transport in the nephron,urinary concentrating mechanisms, hormonal regulation of ion transport,role of the kidney in acid-base homeostasis, diuretics, ion transport in amphibian epithelia, water and solute transport in gastrointestinal epithelia and lingual epithelia.

PIO 620/PMC 620 Ion Channels in Membranes. II (Alternate years beginning Spring 1999).Semester course;3 lecture hours. 3 credits. Detailed presentation of the fundamental biophysical properties of ionic

channels in membranes including the elementary properties of pores, molecular mechanisms of ionic selectivity, mechanisms of drug block, structure-function relationships, and basis for channel gating. Discussion will encompass modern techniques for studying ion channel function. Previous course work including basic concepts in electrophysiology, such as those covered in PIO 501 Mammalian Physiology or PMC/PIO/ANA 509 Introduction to Neurosciences, is highly recommended.

PIO 630 The Application of Network Thermodynamics to the Analysis and Computer Simulation of Life Processes. I,II. Semester course; 3 lecture and 4 laboratory hours. 5 credits. Prerequisite:Consent of instructor. Network thermodynamics applied to organization in living systems. Relations between biological and electrical networks. Simulation of nonlinear, complex, dynamic, physiological,pharmacological,and biochemical systems with applications to diffusion,blood flow, reaction kinetics, membrane transport (cellular and epithelia),endocrine effects, cellular and whole body pharmacokinetics, model design and verification,metabolic regulation and control, reaction-diffusion systems, morphogenesis, others.

PIO 690 Physiology Research Seminar. I,II. Semester course;1 lecture hour. 1 credit.Presentation and discussion of research reports and topics of current interest to the departmental seminar or special group seminar.

PIO 691 (Section 1) Special Topics in Physiology. I,II, S. 1-4 credits. Prerequisites:A 500-level physiology course or equivalent and permission of instructor. Lectures, tutorial studies and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

PIO 691 (Section 3) Special Topics:Student Seminar. I,II. Semester course; 1 credit. Designed to develop skills in preparing and delivering lectures and other oral presentations. Students present talks on topics in which they are particularly interested,and provide mutual constructive criticism.

PIO 691 (Section 5) Special Topics: Nutrition Research. I. Semester course; 3 credits. Weekly discussion of selected topics in nutrition. Topics change yearly. Topics range from biochemical aspects of nutrition to International Nutrition,with selections from various levels of nutritional interest presented each year. Past topics have included nutrition and exercise, diet and cancer, total parenteral nutrition, alcohol nutrition, food safety, drug-nutrient interactions, nutrition and immunological response, cholesterol and nutrition,salty taste mechanisms, vitamin A,vitamin D, and intestinal calcium absorption.

PIO 697 Directed Research in Physiology. I,II, S. Semester course; 1-15 credits. Research Leading to the MS or PhD degree and elective research projects for other students.

Department of Preventive Medicine and Community Health

- Adera,Tilahun *Associate Professor [Biostatistics, Health Administration]** PhD, Oregon State University;MPH,University of Washington;MA, Oregon State University;occupational epidemiology, low back pain,hearing loss, breast cancer, and health effects of environmental pollutants.
- Armstrong, Carl W. *Associate Professor (Virginia Department of Health)** MD, Case Western Reserve University in Cleveland, Ohio; infectious diseases, and forensic toxicology.
- Ayres, Stephen M. *Professor Emeritus (Sponsored International Programs)** MD, Cornell University College of Medicine;internal medicine and cardiology.
- Baffi,Charles R. *Professor (Division of HPER at Virginia Tech)** PhD, University of Maryland; MPH,Hunter College of the City University of New York; drug free schools, prevention of substance abuse, AIDS education,smoking and alcohol risks and diabetes.
- Banks, William L. *Professor (Biochemistry/Molecular Biophysics)** [Surgery]* PhD, Rutgers University;preventive medicine, cancer, protein and nucleic acid metabolism,and Drotein nutrition.
- Barker,Thomas C. *Professor Emeritus (Health Administration)** PhD, State University of Iowa;hospital and health administration,and philosophy and statistics.

- Bradford, Judith *Assistant Professor (Center for Public Policy)** PhD, Virginia Commonwealth of Virginia; CAC, State of Pennsylvania; M.Ed., James Madison University; develop, support and administer interdisciplinary applied research and community health projects, collect, analyze, and present data to state and federal agencies and policy makers.
- Brandt, Richard B. *Professor Emeritus (Biochemistry and Molecular Biophysics)** PhD, New York University; glyoxalase enzyme system in cancer.
- Brinson, Elizabeth *Assistant Professor (Center for the Advancement of Generalist Medicine)** PhD, Union Institute at Cincinnati, Ohio; women and ecology, infectious disease, civil rights, aging, primary care and health care reform.
- Brown, Edwin M. *Associate Professor* MD, University of Vermont; MPH, University of Pittsburgh; preventive medicine, maternal and child health, epidemiology, nursing services and clinical social work.
- Buttery, C.M.G. *Professor* MBBS, University of London, England; MPH, Johns Hopkins University; preventive medicine, public health.
- Buzzard, I. Marilyn *Associate Professor (Massey Cancer Center)** PhD, MA, and MS, Syracuse University; nutritional epidemiology, dietary assessment, and nutrition intervention.
- Clements, Dolores A. *Associate Professor (Health Administration)** PhD, University of California, Berkeley; MS, Rush University; MA, Ohio University Health policy and administration, health systems management, health care economics and finance, international affairs, political science, economics and business administration.
- Cole, Homer M. *Assistant Professor* MSPH, University of North Carolina; air pollution and industrial hygiene, application of several particle sizing techniques, and biology.
- Compton, David A. *Associate Professor (Philip Morris USA)** MD, Virginia Commonwealth University; MPH, Johns Hopkins University; MS, Virginia Commonwealth University; biology, biochemistry, medicine, and occupational medicine.
- Cooper, Kevin R. *Associate Professor (Chair, Division of Pulmonary Disease)** MD, State University of New York; MA, Boston College; pulmonary disease and critical care, and preventive medicine.
- Goldstein, Risë B. *Assistant Professor* PhD, University of Massachusetts; MPH, University of Pittsburgh; MSW, University of Washington; epidemiology, biostatistics, and preventive medicine.
- Ginder, Gordon D. *Professor (Director, Massey Cancer Center)** MD, Johns Hopkins University; internal medicine, hematology, oncology.
- Gordon, Randolph L. *Associate Professor (Commissioner, Virginia Health)** MD, Medical College of Virginia; MPH, Johns Hopkins University; preventive medicine, family practice, managed care, and biometrics.
- Harns, Shelley *Assistant Professor (Center for Environmental Studies)** PhD, University of Toronto; MS, University of Guelph; epidemiology and environmental toxicology.
- Hanna, Constance *Associate Professor (Allied Signal)** MD, Hahnemann Medical College; MPH, Virginia Commonwealth University; occupational medicine, and internal medicine.
- Jannuzzi, Daniel M. *Associate Professor (Cross-Over Health Center)** MD, Eastern Virginia Medical School; family practice, biology, and philosophy.
- Kaplowitz, Lisa G. *Associate Professor (Director, HIV/AIDS Center)** MD, University of Chicago; internal medicine and infectious disease.
- Kerkering, Thomas M. *Associate Professor (Internal Medicine)** MD, Medical College of Virginia; infectious disease, internal medicine, biostatistics, epidemiology, world health, microbiology and human and animal mycology, tropical medicine and hygiene.
- Kilpatrick, S. James *Professor (Biostatistics)** PhD, The Queen's University of Belfast; MSc, The Queen's University of Belfast; medical statistics, genetic statistics, pure and applied mathematics, epidemiology.
- Kreutzer, Kathleen O. *Instructor (Curriculum Office, School of Medicine)** MEd, Virginia Commonwealth University; medical school curriculum development, curriculum planning and design, and planning program for accreditation.
- Lanier, Jack O. *Professor and Chair and Associate Vice President for Health Sciences for Public Health [Health Administration]* DrPH, University of Texas Health Services Center; community health, health planning, preventive medicine, and public health policy.
- Mazmanian, Paul E. *Professor (Associate Dean, Continuing Medical Education)** PhD, University of Michigan; MA, Michigan State University; preventive medicine, and research in medical education.
- McGehee, Read F. *Associate Professor (Sleep Disorders Center of Virginia)** MD, Medical College of Virginia; epidemiological investigations.
- Miller, Grayson B. *Associate Professor (Director, Virginia Department of Health, Office of Epidemiology)** MD, Medical College of Virginia; internal medicine, epidemiology, immunology, and infectious diseases.
- Nelson, William R. *Associate Professor (Director, Chesterfield Health District)** MD, Medical College of Virginia; MPH, University of North Carolina; preventive medicine, public health, and OB/GYN.
- Peoples, Edward H. *Associate Professor Emeritus* PhD, University of Kentucky; MA, University of Pennsylvania; violence prevention, teen pregnancy, cancer rehabilitation, human rights and relations, African-American studies, and instilling family values, education and a variety of social services to penitentiary inmates.
- Redican, Kerry *Associate Professor (Virginia Tech)** PhD, University of Illinois; MPH, University of North Carolina; MSPH, University of California; sexually transmitted diseases, drug and alcohol education.
- Ross, James W. *Associate Professor (Richmond Health Group)** MD, University of Florida; MPH, Medical College of Wisconsin; occupational medicine, toxicology, industrial hygiene, ergonomics, OSHA regulations, and development of corporate wellness programs.
- Sanders, Karen M. *Associate Professor (Chief of Staff for Education, VA Medical Center)** MD, New York Medical College; internal medicine, microbiology, immunology and connective tissue disease.
- Stern, Donald R. *Associate Professor (Deputy Health Commissioner, Virginia Department of Health)** MD, University of New Mexico; MPH, University of North Carolina; pediatrics, and preventive medicine.
- Stockwell, Heather G. *Associate Professor (Director, Office of Epidemiologic Studies, Department of Energy)** ScD, Johns Hopkins University; MPH, Johns Hopkins University; Msc, McMaster University Medical Center Ontario, Canada; preventive medicine, epidemiology, biostatistics, and cancer epidemiology.
- Stroube, Robert B. *Associate Professor* MD, Medical College of Virginia, MPH Johns Hopkins University; preventive medicine, epidemiology, radiological health, occupational health, environmental health, and toxic substance.
- Turf, Elizabeth P. *Associate Professor (Survey Research Lab)** PhD, Wayne State University; MS, Wayne State University; epidemiology, immunology, microbiology and medical technology.
- Tweel, Theodore *Associate Professor (Health Director, Hanover Health Department)** MD, Medical College of Virginia, MPH, Medical College of Virginia; preventive medicine, and family practice.
- Vance, R. Leonard *Associate Professor* PhD, University of Virginia; JD, University of Richmond; chemistry, inorganic chemistry, occupational and environmental issues, industrial hygiene, law, environmental law, continuing educational/environmental training, and consultant on state and federal regulatory issues.
- Wan, Thomas *Professor (Health Administration)** PhD, University of Georgia; MHS, Johns Hopkins University; MA, University of Georgia; health systems, evaluation/analysis, medical sociology, and demography/epidemiology.
- Wenzel, Richard P. *Professor (Internal Medicine)** MD, Jefferson Medical College; MSc, London University; allergy and infectious diseases, epidemiology, internal medicine, preventive medicine, and tropical medicine.
- Wesdock, James C. *Associate Professor* MD, Hahnemann University; MPH, University of Oklahoma; family medicine, occupational medicine, and preventive medicine.
- Winter, Phillip E. *Associate Professor* MD, Washington University; MPH, University of California; internal medicine, infectious diseases, epidemiology, preventive medicine, statistics, and environmental health.
- Yancey, Antronette K. *Associate Professor (Director, Richmond City Department of Public Health)** MD, Duke University; MPH, University of California; preventive medicine, public health, and community-based health promotion.

* Department in parentheses indicates primary appointment.

+ Department in brackets indicates affiliate appointment.

Graduate Courses in Preventive Medicine and Community Health (PMH)

PMH 511-512 Basic Industrial Hygiene I and II. I, II, and S. Continuous course; 3 lecture hours. 3 credits. Basic concepts including: epidemiology, industrial toxicology, biological monitoring dermatosis, sampling strategy, solvents, particulates, respiratory protection, ventilation, sound, heat stress, radiation, ergonomics, special topics, and the regulatory aspects.

PMH 521 Regulation of Toxic Substances. I.Semester course;3 lecture hours. 3 credits. This course introduces the student to the administrative law and policy issues. This course examines the Clean Water Act,Clean Air Act,Resources Conservation & Recovery (RCRA), Federal Facility Compliance Act,Comprehensive Environmental Response, Compensation & Liability Act (CERCLA-Superfund), Toxic Torts; Real Estate Issues;Recovery of Money Damages;Criminal Law, Occupational & Mine Safety & Health Acts (OSHA/MSHA), Workman's Compensation;Occupational Disease; Victim Compensation,Safe Drinking Water Act; Pollution Prevention Act, Food Drug & Cosmetic Act,RCRA & Superfund Regulations & Case Law; State Hazwaste/Superfund Programs, Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA); Lead Based Paint Poisoning Prevention Act, Radiation Law & Regulation;Transportation,Marine Sanctuaries Act; International Environmental Law.

PMH 541 Principles of Waste Management. I.Semester course; 3 lecture hours. 3 credits. Design and operation of waste treatment,storage, disposal and control processes will be covered.Design tanks, landfills, and incinerators will be discussed in detail.Data acquisition and interpretation methods needed for process control and monitoring will be examined.

PMH 543/BIS 543/STA 543 Statistical Methods I. Semester course; 3 lecture hours. 3 credits. Prerequisite:Graduate standing, or one course in statistics and permission of instructor. Basic concepts and techniques of statistical methods, including: the collection and display of information,data analysis, and statistical measures;variation,sampling, and sampling distributions;point estimation,confidence intervals, and tests of hypotheses for one and two sample problems;principles of one-factor experimental design, one-way analysis of variance, and multiple comparisons;correlation and simple linear regression analysis;contingency tables and tests for goodness of fit.Students may not receive degree credit for both STA 541 and STA 543. STA 543 is not applicable toward the MS degree in mathematical sciences or the MS degree in computer science.

PMH 571/NUR 571 Principles of Epidemiology. I.Semester course; 2 lecture hours and 1 seminar. 3 credits. Offers the theoretical foundation for understanding the health problems and needs of American society and uses scientific and social knowledge to examine factors that cause and alter the course of health problems in selected populations.

PMH 583 Industrial Ventilation. I.Semester course;3 lecture hours. 3 credits. Principles of design and evaluation of local exhaust systems. Principles of airflow, characteristics of pressure losses, and selection of air cleaners and air moving.

PMH 600 Introduction to Public Health. I, II.Semester course; 3 lecture hours. 3 credits. Describes the public health system in the United States. Explores the disease prevention and philosophy and foundations of public health management,economics, law, ethics and education.Examines the use of epidemiology and statistics to determine personal,environmental, and occupational health problems.

PMH 602/HAD 602 Health Care Organization and Services. Semester course; 3 lecture hours. 3 credits. Examines the structure and functions of the American health care industry, the concepts and processes of health and illness, the institutional and individual providers of health services and related concepts.

PMH 603 Public Health Policy and Politics. II.Semester course; 3 lecture hours. 3 credits. Provides an understanding of the public health policy development process, the influence of politics and special interest groups on this process, and current governmental policies for the provision of major public health services. The legislative process is a major focus of the course.

PMH 604 Principles of Occupational and Environmental Health II. II.Semester course; 3 lecture hours. 3 credits. Basic principles of occupational and environmental health are presented,with emphasis on biological, chemical,and physical factors that influence human health.Current workplace and public health safety and regulatory issues are emphasized.

PMH 605 Survey of Public Health Behavior. I,II. Semester course; 3 lecture hours. 3 credits. An overview of psychosocial,cultural,demographic, economic and other related behavioral factors, associated with health,morbidity, disability, and mortality, with special reference to behavior relevant to the public health domain.Areas covered will include selected theory and research findings from the behavioral sciences and behavioral epidemiology, research methods and techniques, and evaluation methods for behavioral interventions in public health.

PMH 607 Nutritional Epidemiology. II. Semester course;3 lecture hours. 3 credits. This course focuses on methods of measuring exposures to dietary factors for epidemiological investigations of diet-disease relationships and risk assessment.An introductory course in basic epidemiology is a prerequisite. Students learn to select the most appropriate method(s) of collecting and analyzing food intake and to evaluate the adequacy of dietary assessment methods used in published epidemiological studies.

PMH 615 Public Health Issues and Interventions in Communities of Color. I. Semester course;3 lecture hours. 3 credits. This course is an overview of many critical psychological,social, cultural,demographic, biological,and other factors that influence lifestyle and disease susceptibility among minority status ethnic groups and other medically underserved populations in the United States. A lecture/discussion seminar format will be used,along with readings, student presentations and guest lecturers working in the field,to:(1) improve the students' understanding of the underpinnings of health status differences across communities;and (2) provide students with tools that can be used in developing effective interventions to address the maldistribution of health risk behavior and disease burden.

PMH 616 Public Health Education. II.Semester course; 3 lecture hours. 3 credits. Provides the student with an examination of theory and practice of public health education.This examination represents an overview of selected topics that are congruent to the Responsibilities and Competencies for Entry-Level Health Educators. Specifically, course content will be centered around assessing individual and community needs for health education programs, coordinating provision of health education services, acting as a resource person in health education,and communicating health and health education needs, concerns, and resources.

PMH 617/HAD 626 International Health. I,II. Semester course; 3 lecture hours. 3 credits. Provides an overview of and/or introduction to international health. Focus is on the relationship between external factors and the health of populations.

PMH 618 Public Health Law. I. Semester course; 3 lecture hours. 3 credits. Provides the student with the structure of the legal system and statutes and regulations governing state and local health departments. This course examines the federal public health laws, medical malpractice, privacy and confidentiality issues, mental health laws, abortion and sterilization, patients rights, emergency medical care law, human experimentation, rights of the terminally ill, AIDS law, occupational and environmental health law, and health planning and reimbursement law.

PMH 619 Intentional Injury. I, S. Semester course;3 lecture hours. 3 credits. Examines the number, distribution, and impact of intentional injuries in the United States, as well as some of the crucial psychological, social,cultural,demographic, economic, biological,and other factors associated with their cause, control,and prevention.Through lectures and dialogue, expert panels, student presentations, reading, and other assignments, students are expected to become acquainted with theory and research findings from the behavioral sciences, behavioral epidemiology, public health,and other sources that are likely to contribute to: (1) a greater comprehension of the magnitude and complexities of violence and intentional injuries in American life and (2) advancements in our capacity to successfully confront this epidemic with public health and related measures.

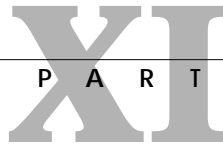
PMH 691-1 Program Research Project. I,II, and S. Semester course; 9 clinical hours. 3 credits. Focuses on practice and research roles within public health. Provides students the opportunity to work collaboratively with state and local public health agencies and professionals in meeting specific population needs. Community health and issues pertaining to populations at risk are primary areas of interest for students enrolled.

PMH 691-2 Special Topics (Nutrition Research). I. Semester course; 2 lecture hours. 2 credits. This course consists of weekly discussions of selected topics in nutrition led by the faculty plus an assigned paper and presentation at the end of the semester by each student. The topics to be presented by the faculty include: Food Safety, The Aspartame Example; Diet, Nutrition and Cancer; Exercise and Nutrition; The Vitamin A Story; The FDA and Food Safety; Nutrition and GI Motility; Nutrition Assessment Techniques; Nutrition of the Critically Ill; The Vitamin D Story; Cholesterol Nutrition; Nutrition and Wound Healing; How Salty Taste Works; Stable Isotopes in Nutrition Studies.

Other Courses in the School of Medicine

Graduate Courses in Neuroscience (NEU)

NEU 891 Advanced Topics in Neuroscience. I, II. Semester course; 1 lecture hour. 1 credit. Prerequisite: Permission of instructor. Advanced topics in neuroscience with correlations to research and clinical applications. Interdisciplinary presentation of the relationship of principles of neuroscience to current areas of investigation.



School of Nursing

Nancy F. Langston, RN, PhD

Dean

W. Richard Cowling III, RN, PhD

Associate Dean for Graduate Programs

The School of Nursing originated in 1893 as part of the University College of Medicine. Since then, the educational program has evolved from a basic diploma program to multiple programs at the baccalaureate, master's, and doctoral degree levels. Additionally, the School of Nursing offers post-master's certificate programs. Continuing education, research, and outreach programs are included. The School of Nursing takes pride in its long history of service to the profession of nursing and continues to be a leader in nursing education in Virginia.

Master's Program in Nursing

The graduate program in nursing is based on the goals and the philosophy of the University and the School of Nursing. Differentiation between the undergraduate and the graduate programs is reflected in the philosophy and purpose of graduate education, the characteristics of the graduates, and the program objectives. The graduate program is designed to respond to national nursing needs through creative, flexible approaches to graduate nursing education.

Graduate education is professionally oriented and has three major thrusts: (1) integration of three processes including transmission, utilization, and development of knowledge in an advanced practice area; (2) development of increased skill in application of knowledge to advanced practice; and (3) development of an awareness of the interaction between sociopolitical and economic forces which have an impact on nursing practice in complex health care delivery systems. Advanced study emphasizes analysis and synthesis of knowledge from nursing and related disciplines with systematic investigation of underlying concepts. Graduates of this program should integrate this new knowledge into nursing practice. Graduates should occupy pivotal roles to improve health care and influence health policy in

political arenas. With these three thrusts, graduates of this program have a knowledge base for further research and doctoral study.

Graduate education is directed toward professional practitioners who are self-directed in setting educational goals and in determining learning strategies best suited for their cognitive styles. With guidance and direction, adult learners should be able to integrate past experiences with current learning situations to expand their approaches to problem solving. Graduate education permits greater autonomy in more diverse environments for learning and practice including the political arena, all levels of the health care delivery system, and community agencies whose missions are directed towards meeting the health needs of their clients. The graduate program in nursing:

- prepares nurses for advanced practice in an area of specialization utilizing their own conceptual framework, constructed through advanced study;
- prepares nurses for advanced practice in an increasingly technological society;
- develops leadership skills in an advanced practice area; and
- provides a foundation for further research and scholarly study.

The School of Nursing offers programs of study leading to the Master of Science degree. Concentrations combining major study in advanced practice nursing are:

	<i>Credits</i>
Adult Health (Acute Care)	47-49
Adult Health (Primary Care)	47-79
Adult Health (Immunocompetence)	48-52
Child Health	41
Family Health	52
Nursing Administration (Clinical Nurse Manager)	44
Nursing Administration (Nurse Executive)	42
Psychiatric Mental Health	41
Women's Health	45

Admission Requirements and Procedures

The purpose of the following admission requirements and procedures is to encourage applications from competent students and to ensure selection of those whose ability, education, and motivation qualify them to pursue successful graduate study in nursing.

To be considered for admission, an applicant must have:

- A Bachelor of Science in Nursing from an NLN accredited school or a baccalaureate degree in another field with a lower division nursing education (associate degree or diploma). Applicants who hold a baccalaureate degree in another field who are not registered nurses are eligible for admission to the Accelerated Second Degree Program (entry-level master's program). In addition to the requirements for traditional BSN students, applicants to this option must fulfill the following: (1) submit a graduate application (in lieu of an undergraduate application), and (2) submit GRE scores. Applicants for this track are admitted to the graduate program and pay graduate fees.
- Transcripts reflecting completion of undergraduate courses in statistics and health assessment. In addition, all Nursing Administration students are required to have undergraduate courses in financial and economics or microeconomics. Nurse Executive Track students must have one year of experience in a management position. These courses may be taken after admission for students enrolled in part-time study.

Prerequisites for the Accelerated Second Degree option are five to eight semester hours of anatomy and physiology, three semester hours of statistics, three semester hours of developmental psychology, and six semester hours of English composition (or satisfactory completion of writing requirements of the student's undergraduate program).

- Acceptable scores on the Graduate Record Examination (GRE), including all three components (verbal, quantitative, and analytical). Scores cannot be older than five years.
- TOEFL scores of greater than 550 for international students.
- Current license to practice as a registered nurse who holds a current unrestricted license in another state, the District of Columbia, or a United States possession or territory, or a nurse who holds an equivalent credential in another country. For Accelerated Second Degree students, license is required prior to enrollment in courses with a clinical component.
- Graduates of foreign nursing schools who are licensed outside of the United States, are required to pass the Qualifying Exam of the Commission on Graduates of Foreign Nursing Schools (CGFNS) prior to application and include the exam report in the application materials.
- Professional liability insurance is highly recommended.
- References from the applicant's undergraduate program in nursing and from employers.
- A personal interview may be requested.

Applications can be obtained from the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051.

Additional program information and advisement can be obtained through the Office of Enrollment and Student Services, 1220 East Broad Street, P.O. Box 980567, Richmond, VA 23298-0567; phone (804) 828-5171; fax (804) 828-7743; e-mail vcu_nurse@vcu.edu; Web site <http://views.vcu.edu/son/son.html>.

Applications are reviewed by the School of Nursing. Applicants will be notified of action by the dean of the School of Graduate Studies. Applicants who are granted provisional admission are responsible for satisfying the provision or may be subject to dismissal. Applicants should accept an admission offer in writing and submit a tuition deposit as instructed in their admission letters. The tuition deposit is not refundable, but will be applied to tuition during the first semester of enrollment in courses.

Graduation Requirements

To be a candidate for the degree of Master of Science in nursing, students must be recommended by the faculty and must:

- meet academic requirements of the School of Graduate Studies;
- complete all requirements for the prescribed curriculum within five calendar years of the first registration for work to be credited toward the degree;
- earn at least a "B" or pass grade in all nursing courses;
- earn at least a cumulative average of 3.0 in all work presented for graduation; and
- conform to School of Nursing policies in respect to pass/fail grading for course work or thesis study;
- complete a Final Synthesis Product meeting the following standards:
 - A scholarly paper synthesizing knowledge development and practice application. The thesis may be used to meet the standard.
 - Public presentation of a scholarly product at least at the concentration level. The presentation may include invitations beyond the concentration level. Final thesis defense may be used to meet the standard.
 - Satisfactory evaluation of the public presentation and paper by department faculty.

The degree will be granted only after all requirements have been fulfilled, all fees to the University have been paid, and bound copies of the thesis have been submitted. Degrees are not granted in absentia unless written request is made to the dean and permission is granted.

Academic Requirements

- No student may proceed in the program with a GPA of less than 3.0 or with a grade of less than B or pass in any nursing course without the approval of the associate dean for graduate programs, School of Nursing.

- An adviser for each student is appointed by the department chair. That adviser will assist the student in program planning, registration procedures, and certification for graduation.
- The Final Synthesis Product requires successful completion of a scholarly paper and a presentation of the paper to faculty and peers.
- Following are the requirements for students electing the thesis option:
Committee formation:
 - With the approval of the department chair, the student selects a thesis committee of not fewer than three university faculty. One member must be outside the major department and may be outside the School of Nursing.
 - The student selects the committee chair from School of Nursing graduate faculty, but not necessarily from the student's major department.
 - The student provides each member of the committee with a copy of the thesis in accordance with the School of Graduate Studies Thesis and Dissertation Manual.

Committee responsibilities:

- The committee monitors the design and conduct of the research and the preparation of the thesis.
- The committee serves as the examining committee for the thesis.
- Committee members read and approve the thesis and participate in the final oral examination of the student. The final examination is open to faculty and students. The time and place, together with the candidate's name, department, and thesis title, shall be announced in the School of Nursing 10 days in advance of the examination.

Outcome:

- Each member of the examining committee will attend and cast a vote.
- A favorable vote of the examining committee with no more than one negative vote shall be required to pass the oral examination.

Master of Science Degree Program Requirements

Clinical Practice Concentrations

Core Courses	<i>Credits</i>
NUR 501 Advanced Professionalization I	1
NUR 502 Advanced Nursing Practice:Pharmacotherapeutics	3
NUR 503 Advanced Nursing Practice:Psychosocial	3
NUR 504 Advanced Nursing Practice:Biological	3
NUR 508 Advanced Nursing Practice:Systems*	3
NUR 509 Advanced Nursing Practice: Community**	3
NUR 511 Health Assessment for Advanced Nursing Practice	3
NUR 512 Advanced Nursing Science ^Δ	3
NUR 601 Advanced Professionalism II	1

* Women's Health students select either 508 or 509
 ** Child Health students substitute IDS 600 Interdisciplinary Studies in Developmental Disabilities: Teamwork in Serving Persons with Developmental Disabilities
^Δ Prerequisite of passing score on Research Competency Examination

Concentration Courses (varies by concentration)	
NUR 672 Child Practicum I	1-3
NUR 673 Child Practicum II	1-3
NUR 674 Child Practicum III	1-4
NUR 675 Adult Immunocompetence Practicum I	1-3
NUR 676 Adult Primary Practicum I	1-6
NUR 677 Adult Primary Practicum II	1-4
NUR 678 Adult Acute Practicum I	1-6
NUR 679 Adult Acute Practicum II	1-4
NUR 682 Women's Practicum I	1-4
NUR 683 Women's Practicum II	1-4
NUR 684 Family Practicum	1-4

Administration Practice Concentration

Core Courses	<i>Credits</i>
NUR 501 Advanced Professionalization I	1
NUR 503 Advanced Nursing Practice:Psychosocial*	3
NUR 504 Advanced Nursing Practice:Biological**	3
NUR 508 Advanced Nursing Practice:Systems	3
NUR 509 Advanced Nursing Practice:Community	3
NUR 511 Health Assessment for Advanced Nursing Practice	3
NUR 512 Advanced Nursing Science ⁺	3
NUR 601 Advanced Professionalism II	1

* Clinical Nurse Manager track students select either NUR 503 or NUR 504
⁺ Nurse Executive track students are not required to take these courses

Concentration Courses	
Clinical Nurse Manager and Nurse Executive Tracks	
NUR 681 Nursing Administration I	3
NUR 685 Nursing Administration II	3
NUR 687 Using Technology to Monitor Quality/Outcomes of Nursing Practice	3
BUS 637 Advanced Human Resource Management	3
HAD 624 Health Economics	3

Clinical Nurse Manager Track Only	
Electives (must include minimum of 3 credits of clinical)	9

Nurse Executive Track Only

HAD 606 Financial Management in Health Organization I	3
HAD 614 Health Care Marketing and Entrepreneurship	4
HAD 631 Managed Care	3

Practicum Course

Clinical Nurse Manager and Nurse Executive Tracks	
NUR 689 Integrative Practicum in Nursing Administration	3

Clinical Facilities

A variety of urban and rural agencies, including community, medical centers and state hospitals, public health services, private clinics and offices, federal and state centers and departments, are available for clinical study. These facilities provide generalized and specialized inpatient and ambulatory services. Selection of specific facilities for student experience is based upon the needs of the individual student and the services available within the facility.

Post-Master's Certificate Program

This program is available in six concentrations: adult health (acute care, primary care, and immunocompetence), child health, family health, nursing administration, psychiatric mental health nursing, and women's

health. Applicant's previous master's course work will be evaluated individually to determine the number of credits required to meet overall program requirements.

Curriculum Design

The School of Nursing recognizes that a number of applicants to the post-master's program bring a background of a nursing master's degree, a doctoral degree, years of post-masters professional experience or are currently enrolled in the doctoral program. For those individuals who hold at least a master's degree in nursing from an NLN accredited school and who are admitted to the School of Nursing in competition with other applicants, an alternative to the basic curriculum plan is provided that builds upon the previous graduate course work. The courses in the basic curriculum have multiple purposes that include the following: 1) development of advanced practice nursing knowledge, 2) development of master's level research and scholarship competency, 3) development of competency in the assessment, diagnosis, treatment and long-term management of commonly occurring illnesses; and 4) meeting the requirements for certification as a nurse practitioner or clinical nurse specialist leading to licensure in the State of Virginia, with the exception of nursing administration. The alternative curriculum plan is designed as a continuation of previous graduate work and assumes that most applicants have documented competency in at least the first two purposes listed above. In addition, some applicants may already be licensed as nurse practitioners or clinical specialists in the State of Virginia and may choose only to pursue additional competencies or certification.

The alternative curriculum plan, therefore, is predicated upon the use of the variable-credit option for most of the courses. This mechanism should allow students and faculty to focus their attention largely on purposes 3 and 4 listed previously and omit experiences largely designed to produce other competencies that have already been attained. Thus, students are enrolled in each of the courses listed, but enroll for the amount of credit needed to supplement their previous work. The guidelines for that credit are as follows:

- Selection of the courses to be taken is based on master's preparation.
- Advanced placement will be determined by a transcript review, review of syllabi from master's courses taken, and demonstration of achievement of objectives and competencies of the courses required for the post-MS program.
- Challenge examinations may be employed.
- Successful completion of the program is achieved when the student completes all course work and has a satisfactory evaluation of advanced clinical competence.
- Students applying to adult, child, family, and women's health concentrations are required to have a graduate Health Assessment and Pharmacotherapeutics course.
- It is unlikely that a student will complete the program by taking the minimum number of credits. In each case, the amount of credit taken should include sufficient time to accomplish the

classroom and clinical learning objectives. If additional time is needed, it cannot be accomplished by the use of the grade Incomplete. The student must enroll for additional variable credit instead.

When applicants are admitted, an evaluation of the transcript is conducted. Each required course in the relevant concentration is compared to the applicant's transcript and a judgment is made whether those course objectives have been fully or partially completed in prior master's or doctoral work. Prior courses that are accepted as evidence of full or partial completion are listed on the program plan. This form will be signed by the student, the student's adviser, and the associate dean for graduate programs before the student actually enrolls in the program. Thus, the program of study is agreed upon in advance.

The following are sample curriculum plans showing the minimum and maximum credits:

Family Health	<i>Credits</i>
NUR 502 Advanced Nursing Practice:Pharmacotherapeutics	0 or 3
NUR 511 Health Assessment for Advanced Nursing Practice	0 or 3
NUR 633 Common Health Problems of Women	0 - 2
NUR 637 Perinatal Nursing	0 - 2
NUR 647 Health Promotion and Disease Prevention in Children	0 - 2
NUR 648 Management of Acute Problems of Children/Adolescents	0 - 3
NUR 661 Advanced Adult Health II	0 - 4
NUR 670 Primary Care of Families	0 - 3
NUR 672 Child Practicum I	0 - 3
NUR 676 Adult Primary Practicum I	0 - 3
NUR 682 Women's Practicum I	0 - 3
NUR 684 Family Practicum	0 - 4
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Women's Health*	<i>Credits</i>
NUR 502 Advanced Nursing Practice: Pharmacotherapeutics	0 or 3
NUR 511 Health Assessment for Advanced Nursing Practice	0 or 3
NUR 632 Health Promotion in Women	0 - 2
NUR 633 Common Health Problems of Women	0 - 2
NUR 637 Perinatal Nursing	0 - 2
NUR 638 High Risk Perinatal Nursing	0 - 2
NUR 661 Advanced Adult Health II	0 - 4
NUR 676 Adult Primary Practicum I	0 - 2
NUR 682 Women's Practicum I	0 - 4
NUR 683 Women's Practicum II	0 - 4
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* Students who have had a women's health or maternal child major may exempt selected courses after transcript review.

Child Health*	<i>Credits</i>
NUR 502 Advanced Nursing Practice: Pharmacotherapeutics	0 or 3
NUR 511 Health Assessment for Advanced Nursing Practice	0 or 3
NUR 633 Common Health Problems of Women	0 - 1
NUR 647 Health Promotion and Disease Prevention in Children	0 - 2
NUR 648 Management of Acute Problems of Children/Adolescents	0 - 3
NUR 649 Chronic Illness and Disability in Child	0 or 2
NUR 672 Child Practicum I	0 - 3
NUR 673 Child Practicum II	0 - 3
NUR 674 Child Practicum III	0 - 4
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* Students who have had a pediatric or maternal child major may exempt selected courses after transcript review.

Adult Health*	<i>Credits</i>
NUR 502 Advanced Nursing Practice: Pharmacotherapeutics	0 or 3
NUR 511 Health Assessment for Advanced Nursing Practice	0 or 3
NUR 633 Common Health Problems of Women	0 - 1
NUR 660 Advanced Adult Health I	0 - 3
NUR 661 Advanced Adult Health II	0 - 4
NUR 663 Advanced Adult Health III	0 - 3
NUR 675 Adult Immunocompetence Practicum I	0 - 3
NUR 676 Adult Primary Practicum I	0 - 6
NUR 677 Adult Primary Practicum II	0 - 4
NUR 678 Adult Acute Practicum I	0 - 6
NUR 679 Adult Acute Practicum II	0 - 4
NUR 682 Women's Practicum I	0 - 1
	7 - 26

Psychiatric Mental Health	<i>Credits</i>
NUR 650 Advanced Practice of Psychiatric Mental Health Nursing	3
NUR 651 Models of Brief Treatment	3
NUR 652 Family Theory and Therapy	3
NUR 653 Advanced Psychiatric Mental Health Nursing: Target Populations	3
Elective master's-level course*	3
	12 - 15

* Students who have had a master's level group course will not be required to take this course.

Nursing Administration	<i>Credits</i>
NUR 508 Advanced Nursing Practice: Systems	3
NUR 681 Nursing Administration I	3
NUR 685 Nursing Administration II	3
NUR 687 Using Technology to Monitor Quality/Outcomes of Nursing Practice	3
NUR 689 Integrated Practicum in Nursing Administration	3
	9 - 15*

* Required credits dependent upon evaluation of applicant's prior experience and educational preparation.

- The curriculum plan varies according to clinical focus.
- It would be very unlikely to have a student requiring as few as seven or to have one requiring the maximum credits, unless the student is changing clinical focus area.
- Sufficient clinical hours to assure competency and to meet certification requirements are assumed in any plan.
- When a student is admitted, a transcript and professional experience evaluation is done. The number of credits to be taken in each of the required courses in the sequence is then written on the program plan and the sheet is signed.

Admission Requirements

All present requirements for admission to the master's program include:

- a master's degree or doctoral degree in nursing;
- graduate degree within the last five years or two years of post-master's clinical practice;
- acceptable GRE scores;
- foreign applicants must have a TOEFL score of greater than 550;

- current license to practice as a registered nurse in Virginia (Professional liability insurance is recommended.);
- three references from the applicant's graduate program and from employers;
- a personal interview may be requested; and
- a complete graduate application must be filed with the School of Graduate Studies. Applications may be requested from the School of Graduate Studies Office at Ginter Hall, 901 West Franklin Street, Room B-1, Richmond, VA 23284-3051; (804) 828-6916.

Academic Requirements

- No students may proceed in the program with a GPA of less than 3.0 or with a grade of less than "B" in any nursing course without the approval of the associate dean for graduate programs, School of Nursing.
- An adviser for each student is appointed by the department chair. That adviser will assist the student in program planning, registration procedures and certification for graduation.
- The departments of Adult Health Nursing and Maternal Child Health Nursing will assist respective students with advanced practice certification.

Graduation Requirements

To be a candidate for the post-master's certificate, students must be recommended by the faculty and must:

- meet academic requirements of the School of Graduate Studies;
- complete all requirements for the prescribed curriculum within five calendar years of the first registration for work to be credited toward the certificate;
- earn at least a "B" or pass grade in all nursing courses;
- earn at least a cumulative average of 3.0 in all work presented for graduation;
- conform to School of Nursing policies in respect to pass/fail grading for course work.

The Doctoral Program in Nursing

The goal of the doctoral program in nursing is the preparation of scholars to develop knowledge in the discipline of nursing. The program examines knowledge development in nursing through an understanding of the impact of a wide range of historical influences on the discipline, and through analysis of how emerging societal issues influence knowledge development. Knowledge in the humanities and social sciences and an understanding of knowledge development in other disciplines is viewed as foundational to a full understanding of knowledge development in nursing. Methodologic competency (i.e., knowledge of research designs, methodologies and tools) is also essential to a full understanding of the scope, range, and path of

knowledge development and the relevance to nursing practice. Substantive areas of study are human health and illness, nursing systems, and the biology of health and illness.

Program Outcomes

At the completion of the doctoral program, the student will be able to:

- apply, transmit and generate knowledge in the discipline of nursing;
- construct, test, and modify theories for nursing in the context of social, scientific, cultural, and economic influences;
- analyze and synthesize knowledge from related disciplines for use in nursing; and
- exhibit scientific integrity.

Curriculum

	<i>Credits</i>
Core Content (all students)	15
Theory Development	
NUR 701 Theory Development in Nursing I	
NUR 702 Theory Development in Nursing II	
Research Methods and Statistics	
NUR 770 Advanced Nursing Research	
EDU 711 Qualitative Methods and Analysis	
Selected Advanced Statistics Course	
Advanced Methodological Focus	6
Selected courses for program of research may include, but is not limited to:	
NUR 772 Advanced Qualitative Research	
NUR 771 Instrument Development	
HAD 762 Health Services Research Methods II	
BUS 643 Applied Multivariate Methods	
SOC 623 Causal Analysis	
Primary Concentration (select one)	9-12
Human Health and Illness	
NUR 706 Human Responses in Health and Illness	
NUR 707 Transitions Across the Lifespan	
NUR 708 Design and Analysis of Nursing Interventions	
Nursing Systems	
NUR 780 Patient Care Systems and Patient Outcomes	
NUR 781 Organizational Analysis in Nursing	
NUR 782 Analysis of Health Care Policy as a Factor in Nursing Practice	
HAD 624 Health Economics (students in Nursing Systems will have one less elective course)	
Biology of Health and Illness	
Biochemistry - required of all students	
Students then select from:	
A. Genetics Concentration:	
1. Introduction to Human Genetics	
2. Medical Genetics or	
B. Microbiology and Immunology Concentration:	
1. Molecular Genetics	
2. Advanced Molecular Genetics or	
1. Immunobiology	
2. Advanced Immunobiology or	
C. Physiology Concentration:	
1. Mammalian Physiology	

Complimentary Concentration 6

Students may use courses from one of the listed primary concentration areas or may select courses to create a complementary concentration based on consultation with their advisers.

Proseminar	4
Electives, Directed Study, Directed Research	9-12
Dissertation	12

Each student will work with an adviser who will individualize the plan for the student's career and research needs. The credits indicated above are after any course prerequisites have been met. This curriculum structure requires the student to make several choices:

- The selection of a primary concentration
- The selection of a complementary concentration
- The choice of an advanced methodological focus in either qualitative or quantitative methods

Admission Requirements

- Applicants must have both a bachelor's and a master's degree, one of which must be in nursing. The degree in nursing must be from an NLN accredited school.
- Official transcripts of all undergraduate and graduate work, with a grade-point average of 3.0 on a 4.0 scale.
- Letters of recommendation from three individuals judged by the applicant to be able to evaluate the student's potential for advanced graduate study.
- Satisfactory scores on the verbal, quantitative, and analytic sections of the GRE.
- International applicants must have TOEFL score of greater than 550.
- A typed, personal letter from the applicant summarizing professional and academic experience, immediate and long-range professional goals, and rationale for pursuing advanced study.
- A personal interview is required.

Prerequisites

- A graduate-level statistics course is required of all students prior to beginning course work.
- For Nursing Systems students, an upper division undergraduate economics course is required prior to enrolling in HAD 624.
- Biology of Health and Illness students must have a minimum of three credits in upper-level undergraduate organic chemistry.
- Nursing systems students without a master's degree in nursing administration must have the equivalent of NUR 508, 681, and 685. These courses may be taken after admission to the program.

Admission to Candidacy

Before admission to candidacy for the doctorate, students must have (1) satisfied the language requirement, if applicable; (2) completed all required course work; (3) successfully completed the comprehensive examination; and (4) fulfilled any additional requirements.

Comprehensive Examinations

Upon satisfactory completion of all required formal course work, the student takes written comprehensive examinations. The purpose of the Comprehensive Examination is to test synthesis of foundational knowledge in preparation for launching a program of scholarship as a beginning scientist. Three knowledge domains are critical: (1) knowledge of knowledge development, (2) knowledge of primary and complementary concentrations, and (3) knowledge of methodological approaches. The decision that a student is ready to sit for comprehensive examinations is made between the student and his/her adviser. The Comprehensive Examination Committee will be appointed from faculty with expertise in theory, research, and the concentration. The Committee will develop and evaluate the comprehensive examination. Students who successfully complete the examination are advanced to candidacy. Students who fail the examination may be required to engage in remedial work prior to retaking the examination. In the event of failure, the student may be permitted to retake the comprehensive examination one time only. Students who do not pass the second examination are discontinued from the program.

Dissertation

The student must conduct a substantial independent investigation and prepare a dissertation reporting the results of this research and analyzing its significance in relation to existing scientific knowledge. Satisfactory completion of the comprehensive examination and a satisfactory oral defense of the dissertation proposal are required prior to commencement of actual work outlined in the proposal. Once approved, the dissertation proposal is similar to a formal contract between the student and dissertation committee about the nature of the dissertation. The dissertation committee must consist of a minimum of four members. Any member of the graduate faculty of the School of Nursing may chair the dissertation committee. Other committee members must include one faculty member from the student's concentration and one member from outside the School of Nursing. An oral defense of the dissertation is conducted by the student's dissertation committee. The student is responsible for preparing the dissertation in accordance with the most current version of the *School of Graduate Studies Thesis and Dissertation Manual*.

Nondegree-Seeking Students

Students who have not been admitted to a graduate program in nursing may be permitted, at the discretion of the School of Nursing, to enroll in individual courses. Only six credits earned as a nondegree-seeking student can be applied to the master's degree or doctor of philosophy degree. Only three credits earned as a nondegree-seeking student can be applied to the post-master's certificate.

Enrollment

Students may begin study during fall semester only. Students will have an academic adviser appointed and should plan a program of study upon admission. Once admitted, students are expected to abide by enrollment policies of the School of Graduate Studies.

Transfer Credit

Students may take 12 of the required credits for the respective program at another institution and transfer them to VCU. The School of Nursing will determine the acceptability of courses for transfer credit.

Scholarships, Grants, Loans

Applications for financial assistance must be filed for all forms of financial assistance, including traineeships. An application for financial assistance is included in the graduate application or may be obtained from the Financial Aid Department, Virginia Commonwealth University, Richmond, VA 23298-0244.

Limited financial assistance is available through traineeships and scholarships administered by the School of Nursing. An application for financial assistance from the School of Nursing sources will be made available to applicants and enrolled students. The school form must be completed in addition to the form for financial assistance from the Financial Aid Department.

Graduate Faculty

- Corley, Mary C. *Associate Professor, Nursing Systems, Community and Psychiatric Mental Health Nursing* PhD, University of Kentucky; ethical work environment, moral distress, patient participation in decision making, transplant issues.
- Cowling, W. Richard, III *Associate Professor, Nursing Systems, Community and Psychiatric Mental Health Nursing and Associate Dean for Graduate Programs* PhD, New York University; despair and depression, transformation in midst of despair, unitary-transformative theory and methods.
- Grap, Mary Jo *Assistant Professor, Adult Health Nursing* PhD, Georgia State University; optimizing pulmonary function in critically ill adults, improving outcomes after cardiac surgery.
- Gray, Patricia D. *Associate Professor and Chair, Adult Health Nursing* PhD, University of Utah; critical qualitative approaches; coping with HIV; end-of-life issues.
- Henry, JoAnne K. *Associate Professor, Maternal/Child Nursing* EdD, University of Virginia; stress in high-risk pregnancy; analysis of health policy.
- Langston, Nancy F. *Professor and Dean* PhD, Georgia State University; quality of life with institutionalized elderly, educational administration-facilitators of scholarly productivity.
- Lewis, Judith A. *Associate Professor and Director, Instructional Technology* PhD, Brandeis University; pregnancy after infertility, health policy analysis, regionalization of perinatal care, application of information technology to higher education.
- Mark, Barbara A. *Professor, Nursing Systems, Community and Psychiatric Mental Health Nursing* PhD, Case Western Reserve University; organization theory; technology, structure, effectiveness relationships, outcomes research.
- McCain, Nancy L. *Associate Professor, Adult Health Nursing* DNS, University of Alabama at Birmingham; psychoneuroimmunology, immunocompetence, psychosocial aspects of chronic illness, HIV disease.
- Munjas, Barbara A. *Professor, Nursing Systems, Community and Psychiatric Mental Health Nursing* PhD, University of Pennsylvania; AIDS, chronic mental illness behavior and intervention, quality of life for institutionalized adults; nursing diagnosis.

Munro, Cindy L. *Assistant Professor, Adult Health Nursing* PhD, Virginia Commonwealth University; interaction of host/microorganism in infectious processes, molecular genetics, genetic technology and society.

Pickler, Rita H. *Associate Professor, Maternal/Child Nursing* PhD, University of Virginia; high risk infants, children and families, health promotion and optional development of at-risk children, care giving contexts.

Raines, Deborah A. *Assistant Professor, Maternal/Child Nursing* PhD, Virginia Commonwealth University; values, moral decision making and ethical issues; perinatal issues.

Sawin, Kathleen *Associate Professor, Maternal/Child Nursing* DNS, Indiana University; chronic illness/disability in childhood/adolescents and impact on their families; women with disabilities; health outcomes in children/adolescents with spina bifida.

Sayler, Jeanne *Assistant Professor, Adult Health Nursing* PhD, Virginia Commonwealth University; nursing systems, instrument development, cardiac transplantation.

Tesh, Esther M. *Associate Professor, Maternal/Child Nursing* PhD, University of North Carolina at Chapel Hill; quality of mother-infant interaction in groups with parenting risks, imprisoned mothers, chronically ill mothers, mothers with medically-fragile infants.

Thorton, Karen A. *Assistant Professor, Nursing Systems, Community and Psychiatric Mental Health Nursing* PhD, University of Texas at Austin; access to mental health services; family coping with mental illness.

Tuck, Inez *Associate Professor and Chair, Nursing Systems, Community, and Psychiatric Mental Health Nursing* PhD, University of North Carolina at Greensboro; coping responses to chronic illness, transformative and healing experiences including spirituality.

Waters, Haidee F. *Assistant Professor, Adult Health Nursing* DNS, Catholic University of America; clinical oncology, stress and coping.

Younger, Janet B. *Professor, Maternal/Child Nursing, and Associate Dean for Undergraduate Programs* PhD, University of Virginia; mastery of stress, response to illness.

Graduate Courses in Nursing (NUR)

The course descriptions provided here are for the major in nursing and are restricted to students in this major. See other sections of this *Bulletin* for courses in other schools and departments. Lecture hours may be used as seminar hours in which case the hours are doubled.

NUR 501 Advanced Professionalization I. 1 lecture hour. 1 credit. No prerequisites. Focuses on socialization to the responsibilities and accountabilities of Advanced Practice Nursing. Explores issues for practice and legal, professional and societal regulation of Advanced Practice Nursing.

NUR 502 Advanced Nursing Practice: Pharmacotherapeutics. 3 lecture hours. 3 credits. Prerequisites: Graduate status or permission of the instructor. Focuses on the knowledge, principles and application of pharmacotherapeutics for the management of common primary care health problems by the nurse practitioner.

NUR 503 Advanced Nursing Practice: Psychosocial. 3 lecture hours. 3 credits. Prerequisites: NUR 201 or RN license. Examines and analyzes selected psychosocial theories and research, relating them to advanced practice nursing. Derives nursing strategies for phenomena of concern associated with specialty areas.

NUR 504 Advanced Nursing Practice: Biological. 3 lecture hours. 3 credits. Focuses on the biological changes underlying selected health risks and health problems as a framework for critically appraising health assessment data and for understanding advanced nursing therapeutic strategies.

NUR 505 Clinical Teaching in Nursing. 3 lecture hours. 3 credits. Focuses on theories and principles related to teaching and evaluation for patients, nursing staff, and students. Explores multiple teaching strategies and learning styles and application of teaching and evaluation methods to the clinical situation.

NUR 508 Advanced Nursing Practice: Systems. 3 lecture hours. 3 credits. Provides an understanding of the context in which health services are managed and delivered. Explores social, ethical, and political

issues affecting current and future nursing care delivery systems. Examines cost effectiveness of nursing care in a variety of settings.

NUR 509 Advanced Nursing Practice: Community. 3 lecture hours. 3 credits. Emphasizes target populations in the community as a perspective for advanced nursing practice. Introduces small area analysis to diagnose and prioritize health needs/problems and to plan, provide, and evaluate care for individuals, families, and population groups. Uses advanced nursing practice skills to examine the need for risk reduction and health promotion, health preservation and rehabilitation among community populations.

NUR 510 Nursing Ethics. 3 lecture hours. 3 credits. Identifies and examines moral dilemmas encountered in professional nursing practice. Examines personal value systems, applies ethical theory and principles to dilemmas in clinical nursing practice: patient's rights, informed consent, confidentiality, quality of life and death and dying. Examines relationships between professional nursing and resolution of moral dilemmas.

NUR 511 Health Assessment for Advanced Nursing Practice. 1 lecture and 2 laboratory hours. 3 credits. Prerequisite: Undergraduate or graduate health or physical assessment course (3 credits). Provides the framework for holistic, culturally relevant assessment of individuals. Focuses on advancing students' knowledge and assessment in health history, risk appraisal, health promotion, psychosocial, developmental and functional assessment and physical examination techniques. Emphasizes the application of diagnostic reasoning skills in assessing deviations from normal in selected content in specialty areas. Includes supervised experiences with advanced clinical assessment skills.

NUR 512 Advanced Nursing Science. 3 lecture hours. 3 credits. Prerequisite: Successful completion of research methods competency exam. Focuses on theory and research in advanced practice with aim of critique and utilization of current theories and findings/outcomes. Emphasizes analysis and synthesis of nursing science in the context of relevant programs, practice problems, issues, and concerns.

NUR 571/PMH 571 Principles of Epidemiology. I. Semester course; 2 lecture hours and 1 seminar. 3 credits. Offers the theoretical foundation for understanding the health problems and needs of American society and uses scientific and social knowledge to examine factors that cause and alter the course of health problems in selected populations.

NUR 591 Special Topics. Semester course; 1-3 credits. Explores specific topics in nursing theory and practice.

NUR 592 Directed Study in Nursing. 1-3 credits. Prerequisite: Permission of instructor. Independent study in a specific area of nursing developed under the supervision of a member of the graduate faculty.

NUR 601 Advanced Professionalization II. 1 lecture hour. 1 credit. Prerequisite: Advanced Professionalization I. Focuses on enactment of the Advanced Practice Nursing role through application of a framework for practice. Emphases are on critical thinking and inter- and intra-disciplinary collaboration and delineation of solutions or resolutions to practice based situations.

NUR 632 Health Promotion in Women. 1-2 lecture hours. 1-2 credits. Addresses issues that affect the health of women throughout the life cycle. Reflects the historical, developmental, political, psychological, and sociological perspectives of understanding the condition of women in our society and the impact on their health care needs. Emphasizes the advanced practice role in health promotion and early detection of health problems, sociopolitical variables that impact women's health, and the application of alternative paradigms in health care practice.

NUR 633 Common Health Problems of Women. 1-2 lecture hours. 1-2 credits. Prerequisites: NUR 504 Advanced Nursing Practice: Biological, NUR 511 Advanced Nursing Practice: Health Assessment. Provides content on common physical and psychosocial health and illness changes of women. Emphasizes health promotion and maintenance, as well as illness prevention, detection and management approaches. Includes current nursing, medical, and pharmacological diagnostic and management modalities. Reinforces essential content and clinical judgment application for advanced nursing practice through case study discussions.

NUR 637 Perinatal Nursing. 1-2 lecture hours. 1-2 credits. Prerequisites:NUR 501 Advanced Professionalization, NUR 503 Advanced Nursing Practice: Psychosocial,NUR 504 Advanced Nursing Practice:Biological,NUR 511 Advanced Nursing Practice: Health Assessment. Focuses on management of potential and actual health problems of women as members of families and their newborns during the perinatal period;pregnancy, labor, delivery, the postpartum and neonatal periods. Emphasizes the integration of theories and research in perinatal health care and the role of the advanced practice nurse in caring for these clients.

NUR 638 High-Risk Perinatal Nursing. 1-2 lecture hours. 1-2 credits. Prerequisites/Corequisites:NUR 501 Advanced Professionalization, NUR 502 Advanced Pharmacotherapeutics, NUR 503 Advanced Nursing Practice:Psychosocial, NUR 511 Advanced Nursing Practice: Health Assessment,NUR 512 Advance Nursing Science, NUR 632 Health Promotion in Women,NUR 637 Perinatal Nursing. Focuses on the high-risk family during pregnancy, labor, and delivery, neonatal, and postpartum periods. Nursing assessment,diagnosis, and intervention related to health promotion,treatment,and prevention of perinatal problems are addressed.

NUR 647 Health Promotion and Disease Prevention in Children. 1-2 lecture hours. 1-2 credits. Prerequisites/Corequisites: NUR 501 Advanced Professionalization,NUR 503 Advanced Nursing Practice:Psychosocial,NUR 511 Advanced Nursing Practice:Health Assessment. Focuses on health needs of well children from infancy through adolescence, and their families. Emphasizes health promotion and disease prevention strategies, integrating the concepts of development,family systems, and individual and family adaptation to change. Develops a student's skills in pediatric screening and developmental assessment.Stresses collaborative decision making with children and families.

NUR 648 Management of Acute Problems of Children and Adolescents. 1-3 lecture hours. 1-3 credits. Prerequisites:NUR 504 Advanced Nursing Practice:Biological, NUR 511 Advanced Nursing Practice:Health Assessment. Focuses on management of advanced nursing practice related to the management of common developmental, health and illness changes of children and adolescents. Includes pathophysiological, pharmacological,and nutritional management implications. Emphasizes the development of diagnostic reasoning and critical thinking skills in the management of common health problems, using selected organizing frameworks.

NUR 649 Chronic Illness and Disability in Children. 1-2 lecture hours. 1-2 credits. Prerequisites:NUR 501 Advanced Professionalization,NUR 503 Advanced Nursing Practice:Psychosocial, NUR 504 Advanced Nursing Practice:Biological, NUR 511 Advanced Nursing Practice:Health Assessment, NUR 512 Advanced Nursing Science, NUR 647 Health Promotion and Disease Prevention in Children,NUR 648 Management of Acute Problems of Children and Adolescents, NUR 693 Practicum,NUR 694 Advanced Practicum (can be corequisite with or permission of instructor). Prepares the student to manage the care of children and adolescents with chronic illness/disability across health care settings. Integrates well child care with the management of the chronic conditions.

NUR 650 Advanced Practice of Psychiatric Mental Health Nursing. 3 lecture hours. 3 credits. Prerequisites/Corequisites: NUR 501 Advanced Professionalization, NUR 503 Advanced Nursing Practice:Psychosocial. Provides an overview of the art and science of the advanced practice of psychiatric mental health nursing. Focuses on conceptual models/theories for assessment and practice, on the need to work collaboratively with clients and their families and the health care team,and upon the variety of practice sites. Reflects practice trends and issues. Describes direct and indirect advanced practice roles. Explores present status of psychiatric nursing research.

NUR 651 Models of Brief Treatment. 2 seminar; 6 clinical hours. 3 credits. Prerequisites/Corequisites: NUR 501 Advanced Professionalization,NUR 503 Advanced Nursing Practice:Psychosocial, NUR 650 Advanced Practice of Psychiatric Mental Health Nursing or permission of instructor. Addresses philosophy underlying brief models of treatment.Uses conceptual frameworks from systems, communications, and change theories in planning interventions. Provides super-

vised clinical practice using brief therapy models with individuals and families. Extends advanced practice skills in psychiatric mental health nursing. Identifies research strategies used to study/evaluate effectiveness of brief treatment.

NUR 652 Family Theory and Therapy. 2 seminar and 6 clinical hours. 3 credits. Prerequisites:NUR 501 Advanced Professionalization, NUR 503 Advanced Nursing Practice:Psychosocial,NUR 650 Advanced Practice of Psychiatric Mental Health Nursing or permission of instructor. Addresses family theory and therapy principles and issues. Identifies issues in family systems, social systems, and systems of health care. Provides supervised clinical practice with families selected to meet course and students' objectives and extends advanced practice skills in psychiatric mental health nursing. Identifies appropriate research methodologies to evaluate practice.

NUR 653 Advanced Psychiatric Mental Health Nursing: Target Populations. 2 seminar and 6 clinical hours. 3 credits. Prerequisites/Corequisites:NUR 650 Advanced Practice of Psychiatric Mental Health Nursing, NUR 652 Family Theory and Therapy, NUR 651 Models of Brief Treatment or permission of instructor. Addresses psychiatric mental health nursing services needs for target populations such as children,other adults, persons with Aids and/or substance abuse. Focuses on primary, secondary, and tertiary levels of prevention and target populations. Provides supervised clinical practice with individuals, families, or groups selected to meet course and students' objectives and to extend advanced practice skills in psychiatric mental health nursing. Explores models of program evaluation.

NUR 660 Advanced Adult Health I. 1-3 lecture hours. Variable;1-3 credits. Pre or corequisite: NUR 511 Advanced Health Assessment I, NUR 501 Advanced Professionalization, NUR 504 Advanced Nursing Practice:Biological. Focuses on advanced nursing assessment and therapeutics with selected potential or actual health alterations common in adulthood with special consideration given to the aging process. Applies theories, concepts, and research findings related to health promotion and acute and chronic illness as a basis for clinical decision-making with adult patients and their families within a variety of care settings.

NUR 661 Advanced Adult Health II. 1-4 lecture hours. Variable;1-4 credits. Prerequisite:NUR 511 Advanced Health Assessment I,NUR 501 Advanced Professionalization,NUR 504 Advanced Nursing Practice:Biological.Provides content on selected common health and illness changes encountered in primary/ambulatory care settings using clinical simulations. Focuses on increasing students' knowledge and clinical decision-making skills in order to promote health,accurately diagnose, prevent and manage these common problems.

NUR 663 Advanced Adult Health III. 1-3 lecture hours. Variable; 1-3 credits. Prerequisites:NUR 511 Advanced Nursing Practice:Health Assessment,NUR 501 Advanced Professionalization I, NUR 507 Advanced Nursing Practice:Biological,NUR 661 Advanced Adult Health II.Provides content on selected common health and illness changes encountered in acute care settings using clinical simulations. The focus of this course is on increasing students' knowledge and decision-making skills in order to accurately diagnose, prevent,and manage these common acute and chronic problems.

NUR 667 Biologic Basis for Advanced Practice in Immunocompetence Nursing. 1-2 lecture hours. Variable; 1-2 credits. Prerequisite:NUR 504 Advanced Nursing Practice: Biological. Focuses on the biological basis for immunocompetence. Discusses concepts and factors related to the phenomenon of immunocompetence. Examines selected clinical problems such as infection,malignancy, hypersensitivity, autoimmunity, transplantation,and HIV infection.

NUR 668 Advanced Nursing Therapeutics for Altered Immunocompetence. 1-3 lecture hours. Variable;1-3 credits. Prerequisite:NUR 667 Biologic Basis for Advanced Practice in Immunocompetence Nursing. Examines clinical phenomenon related to altered immune function that are common or troubling for persons cared for by the advanced practice nurse in a variety of roles. Evaluates clinical problems associated with altered immune function related to cancer, HIV infection,and transplant from both a theoretical and clinical perspective that incorporates biologic, psychosocial,ethical,cultural,

and health systems aspects. Focuses on sensitivity and appropriateness for specific vulnerable populations.

NUR 670 Primary Care of Families. 1-3 lecture hours. 1-3 credits. Prerequisites: NUR 501 Advanced Professionalization, NUR 503 Advanced Nursing Practice: Psychosocial, NUR 504 Advanced Nursing Practice: Biological, NUR 511 Advanced Nursing Practice: Health Assessment, NUR 512 Advanced Nursing Science, NUR 647 Health Promotion and Disease Prevention in Children, NUR 648 Management of Acute Problems of Children and Adolescents, NUR 633 Common Health Problems of Women, NUR 637 Perinatal Nursing, NUR 693 Practicum (9 credits - part may be taken as corequisite). Addresses the synthesis of theoretical and research bases for advanced nursing practice with families. Focuses on the care of the individual and their family throughout the life span and across the health continuum, with special emphasis on the advanced evaluation of families and their health needs.

NUR 672 Child Practicum I. 1-3 clinical hours. 1-3 credits. Prerequisites: NUR 501, NUR 503, NUR 504, NUR 511. Pre or corequisites: NUR 647, NUR 648. Focuses on the synthesis of theory and application and evaluation of knowledge related to the primary care of children. Emphasis on beginning skill in assessment and management of well children and common acute problems of children and adolescents. Major focus on assessment. Student expected to be able to deliver well child care in most situations using standards of care and close preceptor involvement. Expected to develop skill in pediatric history taking, developmental assessment and physical assessment and beginning skill in management of selected conditions. Develops beginning skill in management of common well child and behavioral issues. Clinical placements with preceptor(s) made by faculty based on area of role preparation declared by student. May be repeated.

NUR 673 Child Practicum II. 1-3 clinical hours. 1-3 credits. Prerequisites: NUR 501, NUR 503, NUR 504, NUR 511, NUR 647, NUR 648, NUR 672. Pre or corequisite: NUR 502. Focuses on the synthesis of theory and application and evaluation of knowledge related to the primary care of children; builds on previously developed assessment skills. Adds assessment of adolescent gynecology and sexuality. Student increases ability to manage more complex behavioral and well child issues. Student is expected to manage a wide variety of acute pediatric conditions with moderate preceptor input. Clinical placements with preceptor(s) made by faculty based on area of role and preparation declared by student.

NUR 674 Child Practicum III. 1-4 clinical hours. 1-4 credits. Prerequisites: NUR 501, NUR 502, NUR 503, NUR 504, NUR 511, NUR 647, NUR 648, NUR 672, NUR 673. Pre or corequisites: NUR 508, NUR 512, NUR 601, NUR 649. Focuses on advanced clinical management of children in a variety of care settings. Student refines both assessment and management skills, requiring minimal preceptor input by the end of the semester. Extends skills to the management of children and their families dealing with chronic illness. Manages a wide range of complex well child and behavioral issues as well as children with a wide variety of acute illnesses. Clinical placements with preceptor(s) made by faculty based on area of role preparation declared by student.

NUR 675 Adult Immunocompetence Practicum I. 1-3 clinical hours. 1-3 credits. Pre or corequisites: NUR 661, NUR 511, or with permission of instructor. Focuses on the synthesis, application, and evaluation of knowledge for providing primary and/or acute health care to a target population of adults with actual or potential problems associated with alternations in immunocompetence. Emphasis is on the development of research and theory based advanced nursing practice. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised clinical experiences with a preceptor. Practicum is planned in relationship to the student's area of interest and role preparation. Practicum is repeated in order to address the achievement of competencies with a designated adult population and at a more advanced level. May be repeated.

NUR 676 Adult Primary Practicum I. 1-6 clinical hours. 1-6 credits. Pre or corequisites: NUR 661, NUR 511, or with permission of instructor. Focuses on the synthesis, application, and evaluation of knowledge for providing primary health care to a target population of adults. Emphasis is on the development of research and theory based advanced nursing practice. Provides opportunities for achievement of competencies

in advanced nursing practice through faculty supervised clinical experiences with a preceptor. Practicum is planned in relationship to the student's area of interest and role preparation. Practicum is repeated in order to address the achievement of competencies with a designated adult population and at a more advanced level. May be repeated.

NUR 677 Adult Primary Practicum II. 1-4 clinical hours. 1-4 credits. Prerequisite: NUR 676. Focuses on advanced clinical management of an adult patient population in a variety of primary care settings. Provides opportunities for achievement of advanced clinical competencies through faculty supervised clinical experiences with a preceptor. Practicum is planned in relation to the student's clinical area of interest and role preparation. Final course in concentration.

NUR 678 Adult Acute Practicum I. 1-6 clinical hours. 1-6 credits. Pre or corequisites: NUR 661, NUR 511, or with permission of instructor. Focuses on the synthesis, application, and evaluation of knowledge for providing acute health care to a target population of adults. Emphasis is on the development of research and theory based advanced nursing practice. Provides opportunities for achievement of competencies in advanced nursing practice through faculty supervised clinical experiences with preceptor. Practicum is planned in relationship to the student's area of interest and role preparation. Practicum is repeated in order to address the achievement of competencies with a designated adult population and at a more advanced level. May be repeated.

NUR 679 Adult Acute Practicum II. 1-4 clinical hours. 1-4 credits. Prerequisite: NUR 678. Focuses on advanced clinical management of an adult patient population in a variety of acute care settings. Provides opportunities for achievement of advanced clinical competencies through faculty supervised clinical experiences with a preceptor. Practicum is planned in relation to the student's clinical area of interest and role preparation. Final course in concentration.

NUR 681 Nursing Administration I. 3 lecture hours. 3 credits. Explores individual and organizational factors that influence nursing administrative practice; analyzes relationships between organizational variables and their impact on the design and management of a department of nursing.

NUR 682 Women's Practicum I. 1-4 clinical hours. 1-4 credits. Prerequisite: NUR 511. Pre or corequisites: NUR 632, NUR 633, NUR 637. Focuses on the beginning synthesis of theory and application of advanced nursing practice and evaluation of knowledge in the care of women clients, including well-women gynecologic and health promotion care, management of uncomplicated acute gynecologic needs/problems of women, and diagnosis and management of uncomplicated prenatal and postnatal care. Care of commonly encountered needs/problems of women is based on standards of AWHONN and ACOG. Provides opportunities for achievement of beginning competencies in advanced nursing practice with women through supervised clinical experiences with a qualified women's health care preceptor. Allows for the practicum to be planned in relation to the student's area of interest in women's health and role preparation (nurse practitioner or clinical nurse specialists). May be repeated.

NUR 683 Women's Practicum II. 1-4 clinical hours. 1-4 credits. Prerequisites: NUR 682, NUR 676, NUR 632, NUR 633, NUR 637. Pre or corequisite: NUR 638. Focuses on the intermediate and advanced synthesis of theory and application of advanced nursing practice and evaluation of knowledge in the care of women with more complex reproductive and gynecologic and more general nonreproductive needs/problems. Care for commonly encountered conditions of women is based on standards of AWHONN and ACOG. Provides opportunities for achievement of intermediate and advanced competencies in advanced nursing practice with women through supervised clinical experiences with a qualified women's health care preceptor. Allows for the practicum to be planned in relation to the student's area of interest in women's health and role preparation (nurse practitioner or clinical nurse specialist). Selected experiences will be explored focusing on teaching, case management, and leadership.

NUR 684 Family Practicum. 1-4 clinical hours. 1-4 credits. Prerequisites: NUR 647, NUR 648, NUR 633, NUR 661, NUR 502, NUR 672, NUR 676, NUR 682, NUR 670. Pre or corequisite: 2 credits of this practicum can be taken in the summer immediately preceding

NUR 670 with the consent of the student's adviser. The remaining 2 credits must be taken concurrent with 670 in the following fall semester. Focuses on the achievement of final clinical objectives for the concentration. Provides opportunities for achievement of these competencies as an advanced nursing practice in the family concentration through faculty supervised clinical experiences with a preceptor.

NUR 685 Nursing Administration II. 2 lecture hours and 2 computer laboratory hours. 3 credits. Examines methods of measuring nursing productivity in a variety of settings; describes use of automated systems to enhance nursing productivity; concentrates on those systems that can be applied to management of patient care in a clinical nursing division; uses computer-based systems as decision-support systems.

NUR 687 Using Technology to Monitor Quality/Outcomes of Nursing Practice. 2 lecture hours and 1 fieldwork/computer laboratory. 3 credits. Prerequisites: NUR 508 Advanced Nursing Practice: Systems, NUR 681 Nursing Administration I (or corequisite), NUR 685 Nursing Administration II. Focuses on the process of evaluating the quality of nursing and patient outcomes using information technology. Examines issues related to obtaining and organizing clinical and administrative data to support decision-making. Includes fieldwork and supervised computer laboratory exercises with microcomputer and mainframe database management systems.

NUR 689 Integrated Practicum in Nursing Administration. 2 lecture hours and 1 practicum. 3 credits. Focuses on the integration of administrative theory and nursing administrative practice in health care institutions. Provides students the opportunity to critically evaluate the management of human, material, and financial resources in health care institutions.

NUR 691 Nursing Research Practicum. 3 laboratory hours. 3 credits. Prerequisite: NUR 570. Participates in ongoing research. Implements research with faculty direction and supervision. Permission of instructor required.

NUR 701 Theory Development in Nursing I. 3 lecture hours. 3 credits. Prerequisite: Admission to the doctoral program or permission of associate dean and course faculty. Explores the structure of nursing knowledge by contrasting, analyzing and critiquing concepts, theories, and conceptual models of nursing to determine their contribution to nursing knowledge. Using selected concepts, conceptual-theoretical-empirical structures to answer research questions will be developed. Examines the emergence of nursing as a scholarly discipline.

NUR 702 Theory Development in Nursing II. 3 lecture hours. 3 credits. Prerequisite: NUR 701 or permission of associate dean and course faculty. Explores various philosophies of science and examines factors influencing the development of nursing theory and emergence of nursing as a discipline. Analyzes the impact of economic, social, political, and scientific factors on nursing.

NUR 706 Human Responses in Health and Illness. 3 lecture hours. 3 credits. Explores selected human responses to health conditions and examines related nursing theory and research. Compares research methodologies for studying human responses. Addresses topics that include behavioral, psychological, social, and physiological responses to health and illness.

NUR 707 Transitions Across the Lifespan. 2 lecture and 1 fieldwork hour. 3 credits. Views transitions as life processes from both individual and family systems perspectives. Presents range of potential responses from crisis and loss to growth and opportunity. Develops longitudinal assessment/intervention strategies. Identifies research issues related to life transitions.

NUR 708 Design and Analysis of Nursing Interventions. 3 lecture hours. 3 credits. Pre or corequisite: NUR 770, SOC/STA 508 or 608 (or equivalent). Analyzes theoretical and empirical bases underlying interventions. Focuses on issues related to the design and testing of clinical nursing interventions. Evaluates strategies for effective research dissemination.

NUR 770 Advanced Nursing Research. 3 lecture hours. 3 credits. Prerequisites: NUR 701, 702 (concurrent), SOC/STA 508 (or equivalent); SOC/STA 608 (or equivalent) (concurrent). Examines the relationship between theory, research, and the logic of causal inference. Focuses on quantitative methodologies to investigate problems of interest in nursing research. Examines research design, data collection and analysis and ethical issues in the conduct of nursing research.

NUR 771 Instrument Development. 2 lecture and 1 laboratory hour. 3 credits. Prerequisites: SOC/STAT 508 or 608 (or equivalent). This course is open to non-nursing students with permission of the instructor. Focuses on theoretical foundations underlying development and psychometric evaluation of instruments measuring psychosocial phenomena. Provides simulated experiences scale construction as well as in PC- and main-frame based computer-aided evaluation of relevant measurement properties.

NUR 772 Advanced Qualitative Research. 3 lecture hours. 3 credits. Prerequisite: EDU 771. Provides advanced knowledge and skills for critical decision making in the design and implementation of qualitative health care research. Explores ontology, epistemology and consequences of programs of qualitative inquiry through a process of reflective conversation. Provides a context for the study of phenomena of concern to the individual and discipline through scholarly debate, dialogue and reflection. Presents range of strategies and substantive knowledge for scientists to launch programs of scholarly inquiry.

NUR 780 Patient Care Systems and Patient Outcomes. 3 lecture hours. 3 credits. Prerequisites: NUR 508, equivalent or permission of instructor. Examines administration concepts relevant to systems of patient care. Focuses on the approaches, including program evaluation, for measuring patients outcomes affected by nursing and multidisciplinary collaboration.

NUR 781 Organizational Analysis in Nursing. 3 lecture hours. 3 credits. Prerequisite: NUR 508, 681 or equivalent (i.e., graduate course in organizational theory); or permission of instructor. Analyzes current paradigms guiding nursing systems research. Evaluates concepts and theoretical models that attempt to explain organizational functioning and that are of particular usefulness in developing a substantive body of knowledge.

NUR 782 Analysis of Health Care Policy as a Factor in Nursing Practice. 3 lecture hours. 3 credits. Analyzes global and national issues in health care policy. Applies traditional and emerging models to policy issues. Examines policies having implications for nursing practice research and administration. Focuses on the environment of health care policy development, the agencies and leadership of policy development and implementation, and nursing's role in policy development, implementation, and evaluation.

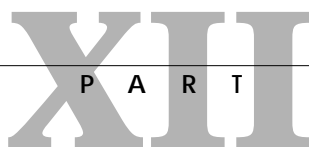
NUR 791 Special Topics. 1-3 credits. Prerequisites: Admission to doctoral program and permission of instructor. Explores specific topics in nursing administration.

NUR 792 Directed Study in Nursing. 1-6 credits. Prerequisites: Admission to doctoral program and permission of instructor. Independent study in a specific area of nursing developed under the supervision of a member of the graduate faculty.

NUR 797 Directed Research in Nursing. 1-6 credits. Prerequisites: 12 credits of doctoral level course work and permission of instructor. Supervised investigation of selected problems in nursing research.

NUR 798 Thesis. 6 credits. The master's thesis constitutes carefully planned and executed research under the supervision of an adviser and in conjunction with a thesis committee. The student writes and presents the required thesis in the area of clinical nursing interest.

NUR 898 Dissertation. 1-12 credits. Prerequisite: Admission to candidacy. Original research.



School of Pharmacy

Victor A. Yanchick, BS, MS, PhD
Dean

Thomas Karnes, BS, MS, PhD
Associate Dean for Research and Graduate Studies

Thomas P. Reinders, BS, PharmD
Associate Dean for Student Affairs

William E. Smith, PharmD, PhD
Associate Dean for Administrative Affairs

The School of Pharmacy was established officially in 1898; the University College of Medicine had a school of pharmacy when it opened in 1893. The two-year curriculum gave way to a three-year program in 1925, and in 1932 the school required four years of college work and a BS degree was awarded. In 1960, the program lengthened to a five-year course leading to a Bachelor of Science in Pharmacy degree. In 1975, authority was granted to offer to selected students a six-year program leading to the Doctor of Pharmacy degree and this degree program was adopted as the only professional offering by the school in 1995.

The authority to award graduate degrees in the pharmaceutical sciences was granted by the Graduate Council in 1952. Departments in the school have the responsibility for administering a graduate program leading to the MS and PhD in Pharmaceutical Sciences degrees. This program includes areas of specialization in medicinal chemistry, pharmaceuticals, and pharmacy administration. These programs provide the preparation and research experience for academic, governmental, and industrial careers.

Facilities

The School of Pharmacy is located in the Robert Blackwell Smith Jr., Building on the Medical College of Virginia Campus. It shares this building with the Department of Pharmacology of the School of Medicine. Location in a major health sciences center provides excellent opportunities for interdisciplinary research and access to clinical facilities. The school is well equipped for graduate research and provides leadership to the Institute for Structural Biology and Drug Discovery at the Biomedical Research Park. The

Institute makes use of synthetic medicinal chemistry, X-ray crystallography, NMR, protein and nucleic acid chemistry, bacterial enzymology, and molecular pharmacology to promote drug development. Several businesses have been spawned through the institute and two new drugs have entered clinical trials.

Specialization in Medicinal Chemistry

The Department of Medicinal Chemistry offers programs leading to the MS and PhD in Pharmaceutical Sciences degrees. All students will complete the following core courses:

Medicinal Chemistry	PHC 591 and 601
Advanced Medicinal Chemistry	PHC 610 and 620
Research Techniques	PHC 526 and 641
Seminar (each semester)	PHC 690
Biochemistry	BIC 503
Pharmacology	PMC 591
Advanced Organic Chemistry	CHE 604

In addition, elective courses may be deemed necessary to the student's program. These electives may include courses outside the department.

At the present time, the research interests of the department include synthesis and biological evaluation of new compounds; molecular-graphics assisted drug design; determination of relationships between chemical structure and biological activity; studies of drug action; receptor binding studies; theoretical studies on structure-activity relationships of drugs, including the use of molecular orbital theory, x-ray crystallography, computational chemistry, and molecular connectivity; and rational design of new drugs and studies on drug metabolism.

Specialization in Pharmaceutics and Pharmacy Administration

The Department of Pharmacy and Pharmaceutics offers programs leading to the MS and PhD in Pharmaceutical Sciences degrees. A master's degree is not required for admission to the PhD program. Advanced degrees in pharmaceutics and pharmacy administration do not provide eligibility for licensure as a pharmacist. Persons interested in programs leading to licensure as a pharmacist or in advanced professional programs in pharmacy are referred to the School of Pharmacy section of the *Undergraduate and Professional Programs Bulletin* where the Doctor of Pharmacy (PharmD) program is described.

Students may elect to pursue a joint PharmD-PhD program. Such students must apply to, and be accepted by, both programs separately.

Graduate students majoring in pharmaceutics may select programs and courses emphasizing biopharmaceutics, pharmacokinetics, pharmaceutical analysis, or clinical sciences. These students also may take suitable courses outside the department in the areas of basic sciences, mathematics, statistics, computer use, and chemistry. The selection and scope of the external courses will depend on student needs and research interests.

Graduate students majoring in pharmacy administration may select programs emphasizing practice management or the drug selection process. Suitable outside courses may include statistics, computer use, hospital and health care management, and business management.

At the present time, the research interests of the department include bioavailability studies, macromolecule drug delivery, cell transport mechanisms, clinical pharmacokinetics including computer modeling of pharmacokinetics in man and use of individual pharmacokinetic parameters in optimizing dosage regimens, drug delivery, targeting and transport of macromolecules, chromatographic, electrophoretic, and spectroscopic approaches for analysis of drugs, pharmacodynamics, biotechnology, dosage form design, aerosol and inhalation technology, pharmaceutical marketing, geriatric pharmacokinetics, design and management of pharmacy-related health services systems, drug prescribing, health ethics and utilization studies.

Admission Requirements

General requirements pertaining to the graduate program in pharmaceutical sciences follow the same guidelines as described in Part I of this *Bulletin*. Additional requirements concerning undergraduate education are imposed upon applicants to graduate specialties in the School of Pharmacy.

Admission to the graduate program in pharmaceutical sciences is open to students having a doctor of pharmacy degree, a bachelor's degree in pharmacy, chemistry, biochemistry, biology, pre-med, engineering, or a related science. Acceptance is based upon undergraduate performance, satisfactory scores on the Graduate Record Examination (GRE), letters of recommendation, and where applicable, TOEFL scores.

Our current requirement is that all applicants should take the package of General Test Measures containing the Mathematical Reasoning Test for all specializations except Pharmacy Administration. Applicants to the Pharmacy Administration area of specialization should take the package of General Test Measures containing the Quantitative Reasoning Test.

Applications for admission, as specified in Part I of this *Bulletin*, should be sent to the School of Graduate Studies, Virginia Commonwealth University, P.O. Box 843051, Richmond, VA 23284-3051.

Registration

While most students register for the first semester beginning in August, arrangements may be made to initiate graduate work at other times during the academic year.

Financial Assistance

Graduate students in the pharmaceutical sciences may receive support via teaching assistantships, research assistantships, or fellowships. The American Foundation for Pharmaceutical Education provides support to eligible applicants for graduate study in the pharmaceutical sciences. All students, regardless of the level or the source of support, are required, as a part of their graduate education, to obtain teaching experience in lecture and laboratory. Students pursuing the master's degree will not be supported by University teaching assistantships.

The Student's Adviser and the Advisory Committee

The departmental graduate program director will advise students until a permanent adviser has been chosen. During their first semester, new graduate students are required to arrange interviews with each graduate faculty member of their major department to discuss research projects. The selection of an adviser and a research project are made in accordance with the rules and procedures of the student's department. The adviser will arrange for the appointment of the student's advisory committee. The responsibilities of the adviser and the advisory committee are described in the School of Medicine section of this *Bulletin*.

Requirements for Graduate Degrees

Graduate students in the pharmaceutical sciences must satisfy the graduate degree requirements described in the School of Medicine section of this *Bulletin*. In some cases, more stringent requirements are imposed. These are described in detail in departmental graduate student rules which are issued to all students.

All graduate students are required to attend seminars in their own discipline and are encouraged to attend seminars of interest in other departments. Students are

required to present seminars satisfactory to the faculty. Normally, students will present one seminar per year.

Graduate students are expected to devote maximum effort to the pursuit of their education. During normal working hours, graduate students are expected to be working on their research projects when they are not in class. Graduate students who are progressing satisfactorily may be granted permission by the chair of their department to take outside employment during evenings or weekends.

Organizations

Rho Chi, the national honorary pharmaceutical society, has a chapter at VCU. Membership in this society is open to graduate students in pharmaceutical sciences who meet the society's scholastic standards.

The Society of Sigma Xi Chapter at VCU brings in outstanding scholars for its lecture program. Graduate students who have demonstrated a marked aptitude for research in the field of pure or applied science may be elected to associate membership in the society.

Professional associations that meet locally include the Virginia Pharmaceutical Association and the Virginia Section of the American Chemical Society.

Pharmacy fraternities with chapters at VCU are Kappa Epsilon, Kappa Psi, and Phi Delta Chi.

Department of Medicinal Chemistry

Abraham, Donald J. *Professor and Chair* PhD, Purdue University; X-ray crystallography and molecular modeling in drug design.

Dukat, Malgorzata *Assistant Professor* PhD, Nicolaus Copernicus Academy of Medicine, Poland; synthetic medicinal chemistry of nicotinic cholinergic and serotonergic systems.

Glennon, Richard A. *Professor and Associate Chair* PhD, State University of New York at Buffalo; synthetic medicinal chemistry, medicinal chemistry of the central nervous system.

Kellogg, Glen E. *Assistant Professor* PhD, University of Arizona; molecular graphics, computational chemistry.

Kier, Lemont B. *Professor* PhD, University of Minnesota; theoretical medicinal chemistry, dynamic simulation of complex systems.

May, Everette L. *Professor (Pharmacology)** PhD, University of Virginia; medicinal chemistry, drug abuse.

Reynolds, Kevin *Associate Professor* PhD, University of Southampton, England; genetic manipulation of pathways that produce clinically useful natural products.

Soine, William H. *Associate Professor and Assistant Chair* PhD, University of Kansas; analytical medicinal chemistry, drug metabolism.

Young, Richard *Assistant Professor* PhD, Virginia Commonwealth University, drug discrimination and behavioral pharmacology.

Westkaemper, Richard B. *Associate Professor* PhD, University of Kansas; enzyme inhibitors, molecular modeling.

* Department in parentheses indicates primary appointment.

Graduate Courses in Medicinal Chemistry (PHC)

PHC 526 Research Techniques in Medicinal Chemistry. Semester course; 0-2 lecture and 2-8 laboratory hours. 1-4 credits. The theory and application of classical, instrumental, and computer techniques used in medicinal chemistry research are presented.

PHC 531 Medicinal Chemistry for Nurse Anesthetists I. Semester course; 4 lecture hours. 4 credits. A review of the principles of organic

chemistry and bio-organic chemistry with emphasis on the concepts necessary for an understanding of PHC 532.

PHC 532 Medicinal Chemistry for Nurse Anesthetists. Semester course; 4 lecture hours. 4 credits. A review of the principles of organic chemistry and bio-organic chemistry presented as a series of lectures covering the structure-activity relationships, metabolism, and mechanism of action of selected agents.

PHC 591 Special Topics in Medicinal Chemistry. Semester course; 1-3 credits. An elective course in which students may choose to participate in individual or group study in one or more areas of medicinal chemistry. The course can take the form of formal lectures, informal group discussions, literature research, and/or laboratory research. Students must have the permission of the individual instructor before registering for this course.

PHC 601 Advanced Medicinal Chemistry I. Semester course; 1 lecture hour. 1 credit. Introduces the general concepts important in medicinal chemistry, including drug dynamics, drug macromolecule interactions, drug design and quantitative structure-activity relationships.

PHC 610 Advanced Medicinal Chemistry II. Semester course; 2 lecture hours. 2 credits. Prerequisites: PHC 601 or the permission of the instructor. Introduces concepts for understanding the medicinal chemistry of the central nervous system.

PHC 620 Advanced Medicinal Chemistry III. Semester course; 2 lecture hours. 2 credits. Prerequisite: PHC 601 or the permission of the instructor. Reviews the concepts necessary for enzyme inhibitor design. Emphasizes the design of new agents to treat disease states by enzyme inhibition.

PHC 630 Theoretical Methods in Drug Design. Semester course; lecture and laboratory hours. 2 credits. Prerequisites: PHC 601, PHC 610 or 620, or permission of instructor. A study of the theoretical methods of drug structure-activity analysis, including molecular orbital theory, topological indexes and physical property correlations. Computational chemistry problems will be emphasized in the laboratory.

PHC 641 Survey of Molecular Modeling Methods. Semester course; lecture and laboratory hours. 1 credit. Introduces computational chemistry and molecular graphics with the current software used for drug design and small molecule/large molecule interactions. Computational chemistry problems will be emphasized in the laboratory.

PHC 642 Nucleoside, Nucleotide, Carbohydrate and Peptide Chemistry. Semester course; 1 lecture hour. 1 credit. Surveys nucleoside, nucleotide, carbohydrate and peptide chemistry with emphasis on their synthesis.

PHC 643 Regioselective Drug Metabolism. Semester course; 1 lecture hour. 1 credit. Surveys drug biotransformation reactions. Emphasizes the molecular aspects of Phase I and Phase II drug metabolism.

PHC 644 Asymmetric Synthesis. Semester course; 1 lecture hour. 1 credit. Reviews the major asymmetric chemical transformations, including mechanisms, scope and synthetic utility.

PHC 645 Introduction to Heterocyclic Chemistry. Semester course; 1 lecture hour. 1 credit. Introduces the chemistry of heterocyclic compounds. Emphasizes heterocyclic nomenclature and the reactions/reactivity of heterocyclic systems.

PHC 670 Advanced Molecular Modeling Theory and Practice. Semester course; 3 lecture/laboratory hours. 3 credits. Prerequisite: PHC 641 or permission of instructor. Examines the principles and application of computational chemistry and molecular graphics to current problems in drug design. Lectures focus on the application of specific computational methods and techniques to solve problems in drug/molecular design. Workshop sessions provide hands-on experience using state-of-the-art hardware and software for molecular modeling.

PHC 690 Departmental Research Seminar. Semester course; 1 lecture hour. 1 credit. Reports presented by students, staff, and visiting

lecturers, current problems and developments in pharmaceutical and medicinal chemistry are discussed.

PHC 691 Special Topics in Medicinal Chemistry. Semester course; 1-4 lecture hours. 1-4 credits. Lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as a part of the research training.

PHC 697 Directed Research in Medicinal Chemistry. Semester course; 1-15 credits. Research leading to the MS or PhD degree.

Department of Pharmacy and Pharmaceutics

Barr, William H. *Professor and Chair* PharmD, PhD, University of California at San Francisco; clinical pharmacokinetics, mechanisms of absorption.

Byron, Peter R. *Professor* PhD, University of Manchester, Manchester England; physical chemistry, dosage form design, aerosol and inhalation technology.

Carroll, Norman *Professor* PhD, University of North Carolina; pharmaceutical marketing.

Garnett, William R. *Professor* PharmD, Philadelphia College of Pharmacy and Science; pharmacotherapeutics of epilepsy and geriatrics, pharmacokinetics, pharmacodynamics.

Hindle, Michael *Assistant Professor* PhD, University of Bradford, UK; aerosols and inhalation technology of novel aerosol delivery devices.

Holdford, David *Assistant Professor* PhD, University of South Carolina; outcomes research, assessment of customer satisfaction and loyalty.

Karnes, H. Thomas *Professor* PhD, University of Florida; drug analysis in biological systems.

Miederhoff, Patrick A. *Associate Professor* PhD, University of New Orleans; substance abuse education, health ethics, health services research.

Pearl, Joanne *Assistant Professor* PhD, University of Bath, UK; powder formulations for inhalation, electrostatic characteristics of aerosols and inhalation of drugs of abuse.

Polk, Ron *Professor* PharmD, University of Michigan; antibiotic metabolism, antibiotic drug-drug interactions, antibiotic resistance, antibiotic clinical trials.

Poynor, Wesley J. *Associate Professor, Graduate Program Director, Vice Chair, and School Director of Information Technology* PhD, University of Texas at Austin; liver dysfunction pharmacokinetics, pharmacodynamics, application of computer technology to pharmacy practice and data analysis.

Pyles, Michael A. *Assistant Professor* PhD, Virginia Commonwealth University; health services research, health policy, aging.

Smith, William E. *Associate Professor* PharmD, PhD, Auburn University; pharmacy services management, outcomes, quality and cost-benefit analysis.

Venitz, Jurgen *Associate Professor* MD, PhD, Universitat des Saarlandes, Homburg/Saar, West Germany; pharmacokinetics and pharmacodynamics.

Wood, John H. *Professor Emeritus* PhD, Ohio State University; biopharmaceutics, kinetics of saturable and competitive metabolism.

Wu-Pong, Susanna *Assistant Professor* PhD, University of California, San Francisco; drug delivery, transport and targeting, cell biology, biotechnology.

Graduate Courses in Pharmacy and Pharmaceutics (PHA)

PHA 502 Pharmacotherapeutics. 2 lecture hours. 2 credits. Prerequisite: PIO 501. Focus on the application of basic pharmacotherapeutic principles of drug categories to patient management.

PHA 504 Pharmacotherapeutics in Physical Therapy. 1 lecture hour. 1 credit. Introduces pharmacotherapeutics for physical therapy students. Emphasizes the safe and appropriate use of drugs in the prevention and treatment of disease. Focuses on the principles and concepts of drug action and therapeutic indications for drugs and drug classes in didactic presentations. Includes the effects of medications on physical functions when appropriate.

PHA 531 Pharmaceutical Product Development. 2 lecture and 4 laboratory hours. 4 credits. A study of the pharmaceutical, physicochemical, biopharmaceutical, and engineering principles and technology underlying the development of various pharmaceutical dosage forms for hospitals and industry.

PHA 532 Pharmaceutical Product Development. 2 lecture and 4 laboratory hours. 4 credits. A continuation of PHA 531.

PHA 601 Advanced Pharmaceutical Product Development. 3 lecture and 4-10 laboratory hours. 5-8 credits. An advanced study of the pharmaceutical, physicochemical, and engineering principles and technology underlying the development of various pharmaceutical dosage forms.

PHA 602 Advanced Pharmaceutical Product Development. 3 lecture and 4-10 laboratory hours. 5-8 credits. A continuation of PHA 601.

PHA 608 Clinical Radiopharmacy. 1 lecture and 2 laboratory hours. 2 credits. Students receive training in the safe use, preparation, calibration, quality control, and clinical diagnostic use of current and investigational radiopharmaceuticals in nuclear medicine practice. Emphasis will be placed on obtaining patient medication histories for the evaluation of agents capable of in-vivo and in-vitro radioisotopic test modification.

PHA 611 Advanced Physical Pharmacy. Semester course; 3 lecture and 0-4 laboratory hours. 3-5 credits. Detailed application of physicochemical principles to areas of pharmaceutical interest, including colloids, rheology, phase rule, complexation, kinetics, drug stability, and micromeritics.

PHA 612 Advanced Physical Pharmacy. Semester course; 3 lecture and 0-4 laboratory hours. 3-5 credits. A continuation of PHA 611.

PHA 621 Advanced Biopharmaceutics and Drug Disposition. Semester course; 3 lecture hours. 3 credits. Study at the advanced level of the relationships between the physicochemical properties of a drug and dosage form and the absorption, distribution, elimination, and pharmacological effects of the drug. Current theory and methodology involved in solving problems at the research level are emphasized.

PHA 622 Clinical Pharmacokinetics. Semester course; 2 lecture and 2 laboratory hours. 3 credits. The application of current pharmacokinetic theory to clinical problems involved in optimizing and monitoring drug use in patients. Particular attention is given to adjustment of drug dosage in individual patients with impaired drug elimination due to renal and hepatic dysfunction.

PHA 624 Pharmacokinetics. Semester course; 3 lecture hours. 3 credits. An advanced treatment of the kinetics of drug absorption, distribution, and elimination utilizing mathematical models, analog, and digital computers for analysis of linear and nonlinear biologic systems.

PHA 625 Pharmaceutical Analysis. Semester course; 1 lecture and 1 laboratory hour. 2 credits. Theory and practice of selected analytical techniques for the quantitative analysis of drugs in body fluids and other matrices. Emphasis is on method validation, and immunoassay methodologies. Laboratory sessions will provide "hands on" experience with modern methods of drug analysis.

PHA 626 Pharmaceutical Analysis Laboratory. 1 lecture hour. 1 credit. Prerequisite: PHA 625. A continuation of PHA 625 with emphasis on providing advanced topics for analysis of drugs and metabolites.

PHA 631 Advanced Hospital Pharmacy Management I. Semester course; 3 lecture hours. 3 credits. Classical, social, and systems views of management are introduced with emphasis on the uses of implicit control. The sociology of professions and the nature of professional work are explored; the management of the professional's work is discussed in detail. Design and operation of integrated drug information, drug distribution, and drug use control systems is explored.

PHA 632 Advanced Hospital Pharmacy Management II. Semester course; 3 lecture hours. 3 credits. The planning and development of a total program in institutional drug use control is stressed with emphasis

on modern human and fiscal resource management theories and applications. Current management problems unique to institutional pharmacy practice are stressed.

PHA 690 Pharmacy Research Seminar. Semester course; 1 lecture hour. 1 credit. Required of all graduate students in pharmacy. Research Seminar.

PHA 691 Special Topics in Pharmacy. Semester course; 1-5 lecture hours. 1-5 credits. Presentation of subject matter is by lectures, tutorial studies, and/or library assignments in selected areas of advanced study not available in other courses or as part of the research training.

PHA 697 Directed Research in Pharmacy. Semester course; 1-15 credits. Research leading to the MS, PharmD, or PhD degree.

XIII

P A R T

School of Social Work

Frank R. Baskind
Dean

Ann Nichols-Casebolt
Associate Dean and PhD Program Director

Marcia P. Harrigan
Director, MSW Program

Shirley Bryant
Director, Off-Campus Program

Jane Reeves
Director, Baccalaureate School Work Program

The School of Social Work was established in 1917 as the Richmond School of Social Economy. Later, renamed the School of Social Work and Public Health, it became the first unit of Richmond Professional Institute. The school developed initially in response to community needs to help World War I veterans with their social and health problems. Subsequent development of the school has expanded activity into all areas of human service. The School of Social Work is one of the oldest of its kind in the South. With the creation of Virginia Commonwealth University in 1968, the School of Social Work became a unit of the University's Academic Campus. The Raleigh Building at 1001 West Franklin Street houses faculty offices, a student lounge, and conference rooms.

Richmond provides a unique setting for social work education. The population of the metropolitan area is approximately 800,000 persons. As a community, Richmond is in a period of exciting economic and social growth permitting varied opportunities for community study and field instruction. As the capital of Virginia, Richmond offers educational opportunities in many state government agencies concerned with the development and provision of social services. In addition to its Richmond campus the VCU School of Social Work offers an off-campus program in Northern Virginia. Located in Arlington, its proximity to Washington, D.C. allows additional opportunities with federal agencies and national organizations. In both locations the school's access to a large number of social agencies permits students to participate in the delivery and development of a wide range of social services.

Graduate Faculty

Baskind, Frank R. *Professor and Dean* PhD, University of Connecticut; leadership in social work education.
Beckett, Joyce O. *Professor* PhD, Bryn Mawr College; mental health, gerontology, persons of color; family violence.

Bentley, Kia J. *Associate Professor* PhD, Florida State University; mental health, directed practice, psychopharmacology and social work, women's issues.
Biggerstaff, Marilyn A. *Professor* DSW, University of Southern California; social work credentialing, research methodology, severe mental illness, homelessness.
Bryant, Shirley *Associate Professor and Director, Off-Campus Program* DSW, Howard University; children and families, African-American women, community organization, social welfare policy.
Cox, A. Leavelle *Assistant Professor* PhD, Smith College; childhood adversity and resilient black adults.
Cramer, Elizabeth P. *Assistant Professor* PhD, University of South Carolina; domestic violence, gay and lesbian issues, group methods.
Dattalo, Patrick *Associate Professor* DPA, Virginia Commonwealth University; poverty policy, organizational behavior, social research methods.
Davis, King E. *Professor* PhD, Brandeis University; mental health policy, serious mental illness, managed care.
Dungee-Anderson, Elizabeth A. *Associate Professor* DSW, Howard University; ADHD, clinical case research, multiple personality disorder.
Fabelo, Humberto E. *Assistant Professor* PhD, Florida International University; child sexual abuse, child welfare, refugee resettlement.
Farmer, Rosemary *Assistant Professor* PhD, Virginia Commonwealth University; schizophrenia/neuropsychiatric impairment and psychosocial adaptation.
Fauri, David P. *Professor* PhD, The Maxwell School, Syracuse University; bereavement services, social administration and planning.
Gilson, Stephen F. *Assistant Professor* PhD, University of Nebraska Medical Center; disability and self image, disability theory.
Green, Robert G. *Professor* PhD, Virginia Polytechnic Institute and State University; family assessment, research methods.
Harrigan, Marcia *Associate Professor and Director, MSW Program* PhD, Virginia Commonwealth University; family measurement, nontraditional family structures.
Harris, Grace E. *Professor and Provost and Vice President for Academic Affairs* PhD, University of Virginia; organizational theory, social administration and planning.
Hutchison, Elizabeth D. *Associate Professor* PhD, State University of New York at Albany; human behavior theory, child welfare.
Koerin, Beverly B. *Associate Professor* PhD, University of Virginia; administrative issues in higher education and social work education, family and child welfare, women's issues.
Kovacs, Pamela *Assistant Professor* PhD, Florida International University; hospice and terminally ill patients, HIV/AIDS, volunteerism, health care social work.

Mason, Joseph *Assistant Professor* MSS, Bryn Mawr; welfare reform policy, social work education.

Miller, Jaclyn *Associate Professor and Director, Field Instruction* PhD, University of Texas; field instruction, social work education, clinical practice.

Naleppa, Matthias *Assistant Professor* PhD, State University of New York at Albany; practice evaluation, clinical case management.

Netting, F. Ellen *Professor* PhD, University of Chicago; gerontology, nonprofit organizations, case management.

Newton-Guest, Shirley *Assistant Professor* DSW, Howard University; children with disabilities, urban minority populations.

Nichols-Casebolt, Ann *Professor and Associate Dean* PhD, University of Wisconsin-Madison; social welfare policy, single-parent families and poverty, women's issues.

Peay, Robert W. *Assistant Professor* MSW, Virginia Commonwealth University; field instruction.

Reeves, Jane *Assistant Professor and Director, BSW Program* MS, Simmons College; field instruction.

Rodwell, Mary K. *Associate Professor* PhD, University of Kansas; family and child welfare, international social work, constructivist research.

Rosenblum, Amy *Assistant Professor and Assistant Director, Field Instruction* MSW, New York School of Social Work, Columbia University; field instruction.

Rosenblum, Phillip L. *Assistant Professor* MSW, University of Pittsburgh; clinical practice, field instruction.

Saunders, David N. *Associate Professor* PhD, Bryn Mawr College; alcohol and other drug policy, social and economic development.

Schneider, Robert L. *Professor* DSW, Tulane University; gerontology, long term care, state social policy advocacy.

Schwartz, Martin S. *Professor* EdD, Columbia University; gender issues, AIDS, male sex abuse.

Schwartz, Sanford *Associate Professor* PhD, Washington University; substance abuse, case management.

Seaberg, James R. *Professor* PhD, University of Wisconsin-Madison; research and statistics.

Sheridan, Michael *Associate Professor* PhD, Virginia Commonwealth University; substance abuse and families, role of spirituality in human behavior and social work practice.

Stoesz, David *Professor and Wurtzel Chair* PhD, University of Maryland; social welfare policy.

Walsh, Joseph *Assistant Professor* PhD, Ohio State University; serious mental illness, psychopharmacology, clinical social work.

Emeriti Faculty

Mrs. Alice Barber	Dr. David P. Beverly
Dr. Edward Carpenter	Dr. H. Otto Dahlke
Dr. Hans S. Falck	Mrs. Jean B. Jones
Dr. George T. Kalif	Dr. Lionel C. Lane
Dr. Edna F. Roth	Dr. Dojelo C. Russell
Mrs. Charlotte Schrieberg	Dr. C. Bernard Scotch
Mrs. Florence Z. Segal	Mr. Emanuel Tropp
Dr. Mabel G. Wells	

The Profession of Social Work

The goals of the profession of social work are to provide services to persons who experience vulnerability due to a lack of personal, social and/or institutional resources to meet their emotional, health, and economic needs. Social work practice is the application of professional knowledge, skills and values across a range of settings and populations. The focus of social work practice is on individuals, couples, families, groups and communities. In addition to direct clinical social work practice, social workers are involved in the administration of human service programs, social planning, the development of social policies, research and evaluation, and in teaching.

In order to achieve the goals of promoting social justice and enhancing well-being for individuals, families, groups and communities, social workers provide a variety of services primarily in public and nonprofit organi-

zational contexts. Examples of the range of settings in which social workers practice are: community centers, public social services, child welfare, residential treatment facilities, schools, community mental health agencies, family and children's service agencies, psychiatric and acute care hospitals, substance abuse treatment facilities, services for the elderly, court services, and adult and juvenile rehabilitation facilities.

The origins of the social work profession were in the settlement house and charity organization societies movements of the late nineteenth century. Professional education for social work practice dates to the early 1900s. The contributions of the profession are evidenced in health and mental health care, the well-being of children and families, the development and implementation of social policies, the planning, delivery and evaluation of human services, and a broad base of research on the human condition. The knowledge base of the profession, and integration of related social, behavioral, and biological sciences acquired through professional education facilitates the contributions of social workers in multidisciplinary contexts.

Social work practice is designed to enrich the quality of life by enabling individuals, groups, communities, and organizations to achieve their greatest potential development. The goal of the School of Social Work at VCU is to provide professional education in response to these needs.

Educational Programs

The School of Social Work offers three degree programs. These are an undergraduate curriculum leading to the Bachelor of Social Work degree, a graduate professional curriculum leading to the Master of Social Work degree, and a PhD program in social work. In addition, a wide range of continuing education offerings are made available to help social work practitioners remain current with practice knowledge and skills.

Baccalaureate Social Work Program

The four-year program leading to the Bachelor of Social Work degree is accredited by the Commission on Accreditation of the Council on Social Work Education. The objectives of the baccalaureate program are to prepare students for beginning-level professional social work practice and, in the case of students wishing to pursue additional social work education, for graduate study.

A description of the baccalaureate program may be found in the *Undergraduate and Professional Programs Bulletin*. A copy of the *Bulletin* may be obtained by writing to VCU Undergraduate Admissions, 821 West Franklin Street, Richmond, VA 23284-2526, by calling (800) 841-3638, or by visiting the World Wide Web at <http://www.vcu.edu/bulletins/>.

Master of Social Work Program

The school offers a graduate professional curriculum accredited by the Commission on Accreditation of the Council on Social Work Education leading to the Master

of Social Work degree. The MSW is offered at the main campus in Richmond and at an off-campus site in Northern Virginia.

The purpose of the MSW program at Virginia Commonwealth University is to educate persons for advanced practice in either clinical social work or planning and administration. The guiding principle in educating students is the promotion of a more just society which includes a commitment to the value of diversity and social work practice in a multicultural society. The VCU School of Social Work emphasizes critical thinking, self-awareness, data-based decision making, and ethical integrity.

Graduates of this program will be able to address personal and social problems; formulate, implement, and evaluate policies and programs; engage in knowledge development for the profession; and, influence community decision making. The educational program focuses on service to people who experience vulnerability due to lack of personal, social and/or institutional resources to meet their emotional, health, and economic needs.

Within this context, social work practice is defined as the application of professional knowledge, skills, and values across a range of settings and populations for the prevention and amelioration of personal and social problems. The interactions among persons and their environments are the primary targets of social work practice. Services provided by social workers include the restoration, rehabilitation, maintenance, and enhancement of optimal functioning of individuals, families, groups, communities, and organizations.

Knowledge for social work practice is based on an analysis and critical application of qualitative and quantitative research from within the profession and related social, behavioral, and biological sciences. Skill in professional practice is based on the differential application of theories and research findings about human behavior in its sociocultural and organizational contexts. Skill is developed by the social worker through the educational process, self-critical practice, and the use of supervision and consultation.

Admission to the Master's Degree Program

Full-time or structured part-time program applicants are admitted to begin study in the fall semester only. Advanced-standing program applicants are admitted for the summer semester only. At the time of application, applicants may apply for only one of the following: full-time on-campus Richmond, full-time off-campus Northern Virginia, part-time on-campus Richmond, part-time off-campus Northern Virginia, or Advanced Standing. Application deadlines are February 1 for full-time or part-time programs and December 1 for the advanced-standing program. Application forms are available from the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051.

General Admission Requirements

Within the policies established by the University Graduate Council, the School of Social Work has established the following minimum criteria for admission to the 60-credit full-time or part-time program:

- a bachelor's degree from an accredited college or university;
- a cumulative grade-point average of 2.7 ("B") on a 4.0 scale for all undergraduate course work and a 3.0 for the last 60 credits;
- a broad liberal arts background. Applicants must have completed a minimum of 30 semester credits in the liberal arts. Applicants must have completed at least one course in each of the following four areas:

Mathematics/Computer Sciences: math, logic, statistics, computer sciences

Humanities: English composition, literature, art history, music appreciation, philosophy, languages, religious studies, multicultural studies

Social and Behavioral Sciences: psychology, sociology, anthropology, history, political science, economics (with at least 3 credits in psychology and 3 credits in sociology)

Biology and Physical Sciences: anatomy/physiology, botany, general biology, zoology, chemistry, ecology, physics, geology, astronomy (with a minimum of 3 credits in human biology content)

Applicants who have not completed all the liberal arts prerequisites may be considered for admission but must have completed the prerequisite courses prior to enrolling in the MSW program and must provide official transcripts to document completion of liberal arts prerequisites. Courses may be completed at a community college or college; and

- demonstrate commitment to social welfare and social justice. This should be reflected in (1) the personal statement and by (2) the applicant's academic background, social work employment, internships, and volunteer work in community agencies serving vulnerable, at-risk, and/or oppressed populations.

General Admission Procedures

Applications will be reviewed when they are complete. This includes the application form, three letters of reference (such as from faculty, employers, colleagues who know the applicant's academic and work/volunteer abilities), official transcripts from all undergraduate and graduate colleges and universities attended, personal statement, and employment résumé. The applicant is responsible for ensuring that all materials are submitted prior to the application deadline, and applicants are encouraged to submit their materials well before the deadline.

Some early decisions will be made on very strong applications; the majority of decisions will be made within six to eight weeks after the application deadline when the entire applicant pool can be considered. The admission review process includes faculty, practitioner, and administrative review of the applications. Reviewers consider scholarship ability, academic background, writing skills, work and volunteer experience, and personal qualities that indicate potential to meet the requirements of the social work profession. The school is partic-

ularly committed to ensuring a student population that reflects the multicultural and diverse nature of the American society.

Advanced Standing Program

Advanced Standing admission is available to a select group of students with a bachelor's degree from an undergraduate social work program (BSW), accredited by the Commission on Accreditation of the Council on Social Work Education, completed no more than five (5) years prior to the date of application to the MSW program. The minimum requirement for admission to the Advanced Standing Program is a 3.2 grade-point average on a 4.0 scale for the last 60 semester hours of academic work and a 3.0 cumulative grade-point average. Exceptions may be made to the GPA requirements for applicants with exceptional circumstances.

As part of the application packet, applicants must submit their field practicum evaluation(s) and a reference letter from the field practicum faculty. Applicants who meet these criteria will be scheduled for a structured on-campus interview, which includes a written case assessment. Admission decisions will be based on application materials and faculty/administrative evaluation of applicant performance on the structured interview and written case assessment.

The Advanced Standing Program leads to a Master of Social Work degree upon completion of 39 credit hours. The program begins in early June, continues through the summer, and culminates with graduation the following May. The Advanced Standing Program is a full-time program only and cannot be pursued on a part-time basis.

Transfer Admits

Applicants transferring from other CSWE-accredited MSW programs must submit course syllabi, field practicum evaluations, and a Statement of Good Standing from the dean or director of the program from which the student is transferring. These materials must be submitted in addition to the required application form, transcripts, personal statement, resume, and reference letters. No more than 30 semester credits will be accepted in transfer, and transfer credit will be awarded in accordance with University policies governing transfer credit and time limits for degree completion.

Applicants from non-social work graduate programs must submit course syllabi for transfer evaluation. A maximum of six semester credits of elective course work may be accepted in transfer from non-social work graduate programs in accordance with University policies governing transfer credit and time limits for degree completion.

Special Admits

Special admission may be granted to applicants whose GPA does not meet the minimum requirements, but who have strong practice-related experience and other exceptional qualifications. Although the GRE is not required, applicants may submit GRE scores or transcripts

reflecting graduate course work completed to provide information on their capability for graduate study. Applicants admitted as provisional students (with grade-point averages below 2.7) must complete the first 12 credits in the program with a GPA of 3.0 or better.

Master of Social Work Degree Requirements

The MSW degree requires the completion of 60 credits of graduate study (two years of full-time study). The first 30 credits may be taken in one academic year on a full-time basis or may be extended to a maximum of two years in the structured part-time program in Richmond and Northern Virginia. Students select an area of concentration for the last 30 credits, which can be completed in one academic year on a full-time basis or extended to a maximum of two years in the structured part-time program. Students are usually in a field instruction practicum two days each week during the foundation curriculum and three days each week during the concentration curriculum. Students must complete all required course work for the MSW degree; however, modifications to the structure of the curriculum can be made for students with special learning needs.

MSW Curriculum

The purpose of the Master of Social Work program is to prepare graduate-level social workers with mastery of the knowledge, values, and skills essential for advanced social work practice in a multicultural society. The school accomplishes this purpose through its full- and part-time programs of study for the MSW degree in its on- and off-campus locations. The objectives of the MSW program are to:

- provide a foundation curriculum of the knowledge, skills, ethics and values essential for work with individuals, couples, families, groups, communities, and organizations;
- provide a concentration curriculum preparing students for advanced practice in either clinical social work practice or social work planning and administrative practice in a range of settings;
- offer classroom and field instruction experiences that promote students' adherence to the profession's values and their applications;
- offer learning experiences which sensitize students to the implications of diversity by helping them to identify and counteract individual and institutional prejudice, oppression and discrimination;
- enable students to analyze and critically evaluate professional practice, programs and service delivery systems; and
- provide a learning environment that instills in students a commitment to continued learning and self-critical practice.

A key assumption upon which MSW curriculum objectives rest is that there is a foundation of knowledge, skills, and values common to all social workers upon which education for concentration practice builds. The curriculum emphasizes the professional socialization of students, their development of self-awareness, self-discipline, and accountability, and their identification, under-

standing, and commitment to the perspective and values of the profession.

A second assumption is that graduate students, as future practitioners who will assume leadership roles in intricate social systems, must be able to assist clients through the application of specific methods of social work practice. The school defines these methods as being either clinical social work practice (intervention with individuals, families, and groups) or social work planning and administrative practice.

The Foundation

The foundation curriculum comprises the first 30 credits of the program. It includes the knowledge, skills, and values common to all social workers and provides a foundation for developing advanced analytical and practice skills during study in the concentration curriculum. The foundation curriculum includes courses in social work practice, human behavior, social policy, social justice, research, and field instruction.

Concentration Options

After completion of the foundational study, MSW students choose an advanced concentration in either clinical social work practice or social work planning and administrative practice. The concentration curriculum prepares graduates for active roles in practice and program evaluation and in the generation of knowledge for future practice, programs, and policy.

Both concentration options are available in the Richmond program. The clinical social work concentration is available in the Northern Virginia off-campus site, and the social work planning and administrative option is available in Northern Virginia when there is sufficient student enrollment.

Clinical Social Work Practice Concentration

Clinical social work practice involves a mutual problem solving process in which multidimensional assessment, goal setting, planned intervention and evaluation are prominent components, all of which are informed by current scientific knowledge. All clinical practice is grounded in the values and purposes of the social work profession. The goal of clinical social work is to promote effective coping with life challenges and transitions. This is achieved by helping people solve problems, change dysfunctional behavior, resolve emotional and interpersonal conflicts, develop and use social networks and resources and maintain achieved capacities and strengths. This goal rests on the fundamental belief in the dignity of all human beings and in communal responsibility for all members of the multicultural society.

Clinical social work practice takes place in the context of a purposeful relationship. The conscious use of the professional self is central in building and maintaining such relationships. Interventions may involve therapeutic, supportive, educational and resource management activities. These interventions are based on a process of strengthening and reordering of organizational struc-

tures in the lives of clients: intrapersonal (including intrapsychic), interpersonal, institutional and/or social.

Social Work Planning and Administrative Practice Concentration

The social work planning and administrative practice concentration prepares graduates for entering advanced social work practice through mid-level organizational and community program positions that call for knowledge and skills in system modification and system development. The program's approach to social work planning and administrative practice emphasizes the major themes of cultural diversity, social justice and change. In carrying out this purpose, students are exposed to and acquire information on current theory and research on organizations and communities, both in classroom and field based experiences.

Field Instruction

Field instruction courses are an integral part of the curriculum of the School of Social Work. Academic credit is awarded for field instruction hours completed in a community agency under professional supervision. In the first field placement, students are expected to demonstrate in practice the professional knowledge, values and skills studied in the total foundation curriculum.

In the concentration component of the curriculum, students are placed in agencies according to their chosen concentration (Clinical Social Work Practice or Social Work Planning and Administrative Practice) and their career interests. Examples of such agencies are: public social services, community mental health centers, hospitals, substance abuse treatment programs, schools, family and children's services, and correctional facilities.

Part-time students planning to take either foundation or concentration field instruction (two semester or block option) must request placement in writing one full semester prior to the semester or summer in which they plan to begin field instruction. Such requests are to be addressed to the director of field instruction. Only one placement (foundation or concentration) may be taken in a block and the block placement option is typically only for students in the structured part-time program. Exceptions are sometimes granted for students with special learning needs.

Field instruction placements are generally available throughout Virginia, the District of Columbia, and in neighboring states. Students residing in a community outside of Richmond may request field placement there. Granting of the request depends on availability of appropriate resources. Students are, however, placed in agencies for field instruction primarily on the basis of curriculum requirements. Therefore, students may be placed in agencies that are a distance from Richmond (or their residence). Arrangements for travel and accommodations must be made by students at their own expense.

Students may propose to complete one of their two field placements in their social work agency of employment. The proposal form may be obtained from the Field Department Office and must meet the school's educa-

tional requirements. This option is not available to Advanced Standing Program students who complete only one field placement during their three semesters in the program.

Credit for work or life experience is not granted in lieu of field instruction course credits.

Structured Part-Time Study for the Master of Social Work Degree

The school offers a structured part-time program leading to the MSW degree on the Richmond campus and at its off-campus site in Northern Virginia. Students applying for the structured part-time program must: meet the same criteria for admission as full-time students; be admitted to the University prior to enrolling in any courses in the structured part-time program; and begin the program in the fall semester only. Students in the structured part-time program must also complete six credits each fall and spring semester and are expected to complete all requirements for the degree within a four-year period. The structured part-time program cannot be completed entirely in night or weekend study, given field practicum requirements and the scheduling of some courses. With the exception of the field practicum, foundation courses required in the structured part-time program are available in the evening classes (4:00 and 7:00 P.M. classes). Students may take the concentration curriculum (last 30 credits) on a structured part-time or full-time basis at the Northern Virginia off-campus site or on-campus in Richmond.

Curriculum Exceptions

Students must complete all required course work for the MSW degree, however, modifications to the structure of the curriculum can be made for students with special learning needs. VCU has an Office of Services for Students with Disabilities. They work with students to determine academic adjustments that may be needed. They can be reached by calling (804) 828-2253 (VTDD). Students with disabilities may also call the director of student services in the School of Social Work, (804) 828-0703, to discuss their particular learning needs. The director of student services in the School of Social Work works with these students to determine potential curriculum options. There is also a Students with Disabilities organization in the School of Social Work that provides support and engages in advocacy activities on behalf of students with disabilities.

Special MSW Options

Study in the MSW program combined with study in other programs or subjects can lead to students earning special certificates or additional degrees. Options are offered for a certificate in aging, for school social work certification, for a certificate in interdisciplinary early childhood intervention, for dual degree study in law, and for dual degree study in Christian education. Dual degree options are available only in Richmond.

MSW and Certificate in Aging Studies

The School of Social Work in cooperation with the Department of Gerontology of the School of Allied Health Professions of VCU provides students with a unique educational opportunity in social work and gerontology. School of Social Work MSW students interested in work with the elderly or in gerontological programs may earn a Certificate in Aging Studies while completing the Master of Social Work degree requirements.

Students must meet the admission requirements of the MSW program of the School of Social Work and of the Certificate in Aging Studies of the Department of Gerontology in the School of Allied Health. Admission into one program does not guarantee admission into the other. In order to meet the requirements of the MSW degree and the Certificate in Aging Studies, students complete a total of 65 graduate credits. Students complete all foundation and concentration courses of the MSW program, and core courses (nine credits) of the Certificate in Aging Studies. Other requirements are met by (1) completion of MSW research courses with students undertaking a research project focused on aging; (2) completion of concentration field instruction practicum requirements (six credits) in a social work setting related to aging; and (3) completion of an independent study course in gerontology which integrates research and practicum courses.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 West Franklin Street, Richmond, VA 23284-2027, Attention: MSW-Gerontology Certificate Adviser.

Certificate for School of Social Work

Through a collaborative program with the VCU School of Education, students may meet State Department of Education standards for certification as school social workers in Virginia in addition to meeting requirements for the MSW degree. Students interested in certification in school social work should contact their adviser during the first semester of their program. In order to meet the requirements of the MSW degree and the School of Social Work certification option, students complete a total of 63 graduate credits including six (6) credit hours of approved graduate courses in education.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 West Franklin Street, Richmond, VA 23284-2027, Attention: Certificate for School Social Work Adviser.

Certificate in Interdisciplinary Early Childhood Intervention

This is a 10 to 13 credit competency based certificate that is offered by the Virginia Institute for Developmental Disabilities (VIDD) and the Schools of Allied Health, Education, Nursing, Social Work, and the Department of Psychology. Built on a strong base of advanced professional course and clinical work, students will be prepared to intervene with families and their

infants from zero to five years of age who are at risk or have been identified with developmental delays.

In this certificate program MSW students complete 63 credit hours of course work including specialized courses in interdisciplinary work and directed study seminars. The certificate requires that students complete a clinical concentration practicum placement in an approved infant/early childhood field site. The course offerings and practicum are taken during concentration study in the masters program. Interdisciplinary seminars provide opportunities for students to work with care providers in the helping disciplines to promote communication, coordination, advocacy, and referral activities.

Additional information may be obtained from the School of Social Work, Virginia Commonwealth University, 1001 West Franklin Street, Richmond, VA 23284-2027, Attention: Early Childhood Intervention Certificate Adviser.

Dual Degree Study in Law and Social Work

Through a cooperative arrangement with the T. C. Williams Law School, selected students in either school may pursue a combined four-year curriculum of graduate study leading to the degrees of Master of Social Work and Juris Doctor. The program is established in recognition of the role of public law in social and economic life. The dual degree program prepares professionals versed in the values, knowledge, and skills of both fields, bringing an integrated base of competency to the resolution of human and social problems.

Applicants must successfully meet the admission requirements of both schools, and upon admission are assigned an adviser in each school. Students in dual degree study may begin the course work in either school, with the sequence of courses being determined by the point of entry.

The time normally required for completion of the integrated four-year curriculum is one academic year less than if each degree were taken separately. Elective courses will enable students to select areas in law and in social work which meet their particular interests. Application for admission must be made to each institution separately. Those interested should write both the Admissions Office of the T. C. Williams Law School, University of Richmond, VA 23173 and the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23298-0568.

Cooperative Program with the Presbyterian School of Christian Education (PSCE)

This program has been developed to prepare social workers for service in church related institutions (children's homes, nursing homes, etc.), for planning and working in inner city settings, and for other ministries. Counseling, group work, and educational skills are components of both programs.

This program of study covers three continuous years and leads to a Master of Arts degree conferred by the PSCE and a Master of Social Work degree from VCU. Ordinarily, a student would complete the first year at PSCE and the succeeding year enroll in the graduate

School of Social Work at VCU and return to VCU for the third year of study. Both degrees are awarded at the end of the three years of study.

Application for admission must be made to each institution separately. Those interested should write both the School of Graduate Studies, Virginia Commonwealth University, Richmond, VA 23284-3051, and Director of Admissions, PCSE, 1205 Palmyra Avenue, Richmond, VA 23227.

Academic Status

A minimum grade-point average of 3.0 ("B") on a 4.0 scale over the entire period of study, a minimum of 60 credits in the two-year and part-time options, 39 credits in the advanced-standing program, demonstrated ability in social work practice, and acceptable professional behavior are required for graduation with a Master of Social Work degree.

Students must achieve a grade-point average of 3.0 or higher in the required foundation courses, exclusive of field instruction practicum, in order to continue into concentration study.

A student whose cumulative grade-point average is less than 3.0 at any point in the program at or after completion of the first 12 credits will be dropped from the program.

A student who receives any grade of "D" or "F" will be dropped automatically from the program without regard to GPA.

A student who earns a grade of "C" or below in more than six credits, exclusive of field instruction, will be dropped automatically and immediately from the program without regard to grade-point average.

Field practicum performance is graded on a pass/fail basis. The student must receive a grade of pass to continue in the program. The student who receives a grade of fail in the field practicum is dropped automatically and immediately from the program without regard to grade-point average.

A student who is dropped from the Master of Social Work program may petition the dean of the School of Social Work in writing for readmission to the program after a minimum absence of two semesters; readmission is not guaranteed. A student may be readmitted only once.

Course Requirements for the Master of Social Work Degree

All students complete the same course requirements for the foundation curriculum prior to entering concentration courses. Concentration study varies according to the student's choice of method.

Two-Year Program

Foundation

First Year, Fall Semester	<i>Credits</i>
SLW 601 Human Behavior in the Social Environment I	3
SLW 602 Social Welfare Policy, Community Planning and Organizational Practice I	3
SLW 603 Social Work and Social Justice	3

SLW 604 Social Work Practice with Individuals, Families, and Groups I	3
SLW 693 Foundation Field Instruction I	3
	15
First Year, Spring Semester	
SLW 605 Social Work Practice with Individuals, Families, and Groups II	3
SLW 606 Social Welfare Policy, Community Planning and Organizational Practice II	3
SLW 609 Foundations of Research in Social Work Practice	3
SLW 610 Human Behavior in the Social Environment II	3
SLW 694 Foundation Field Instruction II	3
	15

Clinical Concentration

Second Year, Fall Semester	
SLW 703 Clinical Human Behavior and the Social Environment	3
SLW 704 Clinical Social Work Practice I	3
SLW 706 Research for Clinical Social Work Practice I	3
SLW 793 Concentration Field Instruction	3
Elective	3
	15
Second Year, Spring Semester	
SLW 705 Clinical Social Work Practice II	3
SLW 707 Research for Clinical Social Work Practice II	3
SLW 710 Concentration Social Policy	3
SLW 794 Concentration Field Instruction	3
Elective	3
	15

Planning and Administrative Concentration

Second Year, Fall Semester	
SLW 711 Strategies for Social Work Planning and Administrative Practice	3
SLW 712 Social Work Planning and Administrative Practice I	3
SLW 714 Research for Social Work Planning and Administrative Practice I	3
SLW 793 Concentration Field Instruction	3
Elective	3
	15
Second Year, Spring Semester	
SLW 710 Concentration Social Policy	3
SLW 713 Social Work Planning and Administrative Practice II	3
SLW 715 Research for Social Work Planning and Administrative Practice II	3
SLW 794 Concentration Field Instruction	3
Elective	3
	15

Information on the required sequencing of courses for the Structured Part-Time Program is available upon request.

PhD Program in Social Work

The PhD in social work is designed to further the skills and expertise of individuals to contribute to the development and dissemination of knowledge for social work. Emphasis is placed on preparing individuals to gain competence in conducting independent inquiry, and in understanding, applying and formulating theory in social work. The program is focused on preparing scholars for careers as: (1) faculty members teaching in higher education; (2) researchers designing and conducting research on clinical and policy social work practice; and,

(3) practitioners who use research based interventions to solve social problems and promote social justice.

Admission to the PhD Program

Applicants to the program must have an earned master's degree in social work or a closely related discipline and professional or practice-related experience relevant to their career goals. It is highly recommended that applicants have an MSW and post-master's social work policy or clinical practice experience. The application process includes submission of a completed application form, transcripts for all undergraduate and graduate studies, three references, recent Graduate Record Examination scores, a written exercise, and a personal statement, describing the applicant's motivation for participation in the program and outlining the relevancy of the applicant's professional experience to her/his career objectives.

Potential applicants interested in testing their capacity for doctoral work or those whose application materials have not been completed for faculty review may take classes as nondegree-seeking students. Six credit hours in approved courses taken on this basis may be applied toward the degree. Satisfactory performance as a nondegree-seeking student does not assure admission as a regular degree-seeking student. While it is possible to combine a limited amount of course work with outside employment, participants are expected to commit themselves to one year of full-time study prior to beginning dissertation work.

For application materials, write to: Doctoral Program Director, School of Social Work, P.O. Box 842027, Virginia Commonwealth University, 1001 West Franklin Street, Richmond, VA 23284-2027.

Requirements for the PhD Degree

A minimum of 38 credit hours of course work beyond the master's degree plus a minimum of 16 credit hours of dissertation research is required. The course work includes 20 credit hours of content common for all students, and 18 credit hours of concentration content in a substantive area. The School of Graduate Studies' requirements for candidacy exams and dissertation committees apply to students in this program. Up to six credit hours may be granted for courses completed in a PhD program at another university. There is no foreign language requirement. Full-time participants ordinarily complete 18-20 credit hours per academic year. Other requirements are detailed below.

Common Curriculum. The common curriculum which is required of all students consists of the following courses (20 credits):

	<i>Credits</i>
SWD 701 Advanced Social Work Research Methods and Statistics I	4
SWD 702 Advanced Social Work Research Methods and Statistics II	4
SWD 703 Causal Relations and Theory Development in Social Work	3
SWD 708 Social and Behavioral Science Theory for Social Work Practice	3

SWD 710 Social Work, Social Welfare, and Social Thought	3
SWD 715 Development and Evaluation of Social Work Practice Theories	3

Most courses in the common curriculum are completed prior to moving onto more specialized concentration course work.

Concentration Curriculum. The concentration curriculum allows students to specialize in a substantive area with a micro- or macro-practice focus, and increase their relevant research skills. This concentration consists of at least 18 hours of course work including advanced statistics and research courses, and a directed research course designed to assist students in preparing for their dissertation research project. In addition to courses offered by the program, students are expected to enroll in appropriate courses in other schools and departments of the University with approval of their adviser.

Comprehensive Exam/Admission to Candidacy. Upon completion of all required course work, participants will take a comprehensive exam under the supervision of a Comprehensive Examination Core Committee. Through the comprehensive examination, students must demonstrate the ability to integrate the whole of their educational experience by adequately addressing complex questions pertinent to the current and developing knowledge base of the social service field. Successful completion of the comprehensive exam results in candidacy status for the PhD degree.

Dissertation. After admission to candidacy, participants proceed to propose, complete, and defend their dissertation. This is done under the supervision of a dissertation committee. Participants are generally required to maintain continuous enrollment of at least three credit hours per semester (excluding summer) until they have attained 12 hours of dissertation credit, after which they may enroll for as few as one credit per semester. The dissertation must represent independent research and should be based on an original question or hypothesis relevant to social work. Successful defense of the dissertation completes the requirements for the degree.

Financial Assistance for MSW and PhD Students

Although financial assistance is limited, some funds are available. No prospective student should refrain from seeking admission to the school for financial reasons alone.

Federally Guaranteed Loans and Work-Study Program. See Student Financial Assistance in Part I of this *Bulletin*.

Research and Teaching Assistantships for Doctoral Students. Research and teaching assistantships may be available to doctoral students. Additional information is available from the director of the PhD program.

School Based Awards/Endowed Scholarships. School of Social Work awards are available to full-time graduate students only and are generally made in the summer after the admissions process is complete. Scholarship resources and award amounts are very limited. Scholarships are awarded on the basis of the candidate's academic performance, financial status, and/or

qualifications for professional study in a particular practice area. Special MSW scholarships and stipends are available for minority students and students seeking to specialize in the areas of health, mental health and child welfare. Since funds available through the School of Social Work are limited, applicants are strongly urged to seek additional sources to finance their education.

Traineeships. States, through their departments of social services, mental health, corrections, and rehabilitation, may have programs to assist individuals in securing professional education. These may be consulted locally. The school at times administers and awards federal and University traineeships for qualified MSW students.

H. H. Hibbs Loan Fund. The H. H. Hibbs Loan Fund was established by the School of Social Work Alumni Association for **short-term emergency needs**. Alumni, faculty, and friends of the school are encouraged to contribute to it. Enrolled students who wish to apply for a loan should discuss this with their faculty adviser and the associate dean.

Continuing Education

Post-degree study is a vital part of professional work education. The School of Social Work offers a variety of lectures, institutes, and workshops as part of the school's commitment to enhance social work practice and broaden educational experiences for students, social workers, field instructors, and others in social service delivery systems.

State, regional, and local agencies and institutions frequently identify educational and training needs in content or skill areas for selected staff members. The school, through contractual arrangements, contributes expertise in designing and implementing short-term training courses and materials.

Offerings are planned throughout the year. For further information about specific continuing education courses, inquiry should be addressed to the Director of Continuing Education, School of Social Work, Virginia Commonwealth University, 1001 West Franklin Street, Richmond, VA 23284-2027.

Alumni Association

The School of Social Work Alumni Association actively supports the school, its students and faculty. The association sponsors different activities during the year, including a job-seeking skills workshop, a reception for graduating students and their families, and a welcome reception for new students at orientation. The association also cosponsors several workshops annually, offering continuing education opportunities for alumni which are often open to students as well. All graduates of the School of Social Work are members of the Alumni Association. The association falls under the umbrella of the VCU Alumni Association.

MSW Student Association

The Master of Social Work Student Association is the organization of MSW students enrolled in the school.

Established for the purposes of facilitating communication among students and between the student body and the school, the association provides a means by which student concerns and ideas can be formulated and acted upon. It also enables students to conduct a variety of social, civic, and educational activities throughout the year.

This organization plays a vital role in the educational process. Student contributions to the governance and curriculum of the school are of value to both the institution and the students. Participation in the decision-making process is accomplished through student representation on committees. Faculty and students work closely together throughout the year to meet the needs of graduate social work education. Students participate as full members of committees within the school.

Black Student Association

The Black Student Association was established to create and maintain an atmosphere of unity and support among black students in the School of Social Work. It serves to assist students in their personal and professional growth and development. Membership in this organization helps students to develop a keen awareness of the acute needs of the black community and the active role that must be assumed by the dedicated black professional social worker in promoting the general welfare of black citizens. To attain these goals, the organization utilizes the educational process and related experiences of students at the school and in fieldwork. Students are encouraged to participate in all phases of the academic environment. Black students are expected to maintain membership in and are members of the MSW Student Association of the school.

Students with Disabilities Association (SDA)

The Students with Disabilities Association (SDA) was formed by students within the VCU School of Social Work as an avenue of support for persons with disabilities, making it possible for them to identify and interact with others who cope with various disabilities. Support also comes with the opportunity to educate the student body, faculty, the University, and the community in regard to disability issues pertaining to access, social justice, and personal rights. The SDA draws its membership from students seeking BSW, MSW and PhD degrees. Additionally, the association welcomes students from other degree programs at VCU. All interested persons are invited to attend the meetings.

Sexual Minority Social Work Student Association

This organization provides support for sexual minority social work students. It strives to educate the University community on sexual minority issues in order to eliminate discrimination, and promotes ethical practice when working with the sexual minority population. All interested persons are invited to attend the meetings.

Part-time MSW Student Association

The part-time student association was developed to meet the special needs of MSW students who attend classes on a modified schedule. The association promotes communication and coordination among all students and assures opportunities for participation and inclusion of part-time students in all aspects of the MSW program.

Doctoral Student Association

The Doctoral Student Association is a collegial association available to all doctoral students regardless of full- or part-time status. Its primary purpose is to provide information, resources, advocacy and support to students throughout the doctoral program experience. Governance of the association is conducted on a rotating leadership and consensual basis. Doctoral student representatives to various committees of the school governance structure are provided by the Doctoral Student Association.

Master's Degree Courses in Social Work (SLW)

SLW 601 Human Behavior in the Social Environment I. Semester course; 3 lecture hours. 3 credits. First of two foundation courses on human behavior in the social environment, covering the life course from conception through late adolescence. Provides a multidimensional perspective on social work's person-in-environment focus, based on theory and research findings. Includes contributions of biological, psychological, physical, and sociocultural forces to adaptation and/or maladaptation. Examines problems of living; impacts of racial, ethnic, class, cultural, religious/spiritual and gender diversity on human behavior; role and contributing effects of the family system; and the reciprocal nature of interactions of persons, social groups, communities, organizations, and institutions in a multicultural society.

SLW 602 Social Welfare Policy, Community Planning and Organizational Practice I. Semester course; 3 lecture hours. 3 credits. Corequisite: SLW 601. First of two foundation courses on social welfare policy practice in communities and organizations focusing on social and economic policies in light of the principles of social and economic justice. Introduces the social work role of policy practitioner as a change agent in legislative, community, and organizational arenas. Uses social/behavioral knowledge and social work intervention models to create and apply analytical frameworks for assessing program, organizational and policy effectiveness. Surveys historical evolution of social welfare policy and contemporary provision of social welfare services. Establishes historical and current importance of values in policy formulation. Develops skills in identification of need, designing strategies for change, and policy analysis.

SLW 603 Social Work and Social Justice. Semester course; 3 lecture hours. 3 credits. Examines historical and current social welfare and social work issues related to oppressed groups in a multicultural society. Presents theoretical models for studying discrimination resulting from persistent social, educational, political, religious, economic, and legal inequalities. Addresses misuse of power and resulting oppression. Focuses on oppressed groups in the United States in order to understand their experiences, needs, and responses. Uses a strengths approach for the study of all people of color and other oppressed groups often distinguished by gender, age, sexual orientation, ability, and class. Enhances understanding of and appreciation for cultural, social, and spiritual diversity. Raises ethical dilemmas and decisions faced by social workers who practice in multicultural settings.

SLW 604 Social Work Practice with Individuals, Families and Groups I. Semester course; 3 lecture hours. 3 credits. Pre or corequisite: SLW 601. The first of two foundation courses on social work practice with individuals, families, and groups. Defines and describes the history, context, phases and processes of direct social work practice.

Introduces basic knowledge, skills, and values necessary to provide a range of restorative, rehabilitative, maintenance and enhancement services. Emphasizes the multidimensional context in which intervention occurs. Introduces selected practice theories and models to guide intervention with an emphasis on work with individuals.

SLW 605 Social Work Practice with Individuals, Families and Group II. Semester course; 3 lecture hours. 3 credits. Prerequisites: SLW 601 and 604. Pre or corequisites: SLW 610. Second of two foundation courses on social work practice with individuals, families, and groups. Extends application of beginning knowledge and skills to the phases of intervention with groups and families. Presents knowledge and skills of environmental intervention and termination. Introduces selected theories and models for social work practice with individuals, families and groups with attention to special population groups.

SLW 606 Social Welfare Policy, Community Planning and Organizational Practice II. Semester course; 3 lecture hours. 3 credits. Prerequisites: SLW 601 and 602. Corequisites: SLW 610. The second of two foundation courses focusing on social and economic policies in light of the principles of social and economic justice. Explores legislative/political processes. Examines values and ethical dilemmas facing professional social workers in organizations and communities. Presents effects of policy on social work practice. Develops skills in legislative lobbying, advocacy, design of change strategies and tactics, policy analysis, and task group leadership.

SLW 607 Social Work Practice with Individuals, Families, and Groups for Advanced Standing Students. Summer course; 2 lecture hours. 2 credits. Prerequisites: Admission to the Advanced Standing Program; concurrent enrollment in SLW 608, 611, 612. Reviews approaches, principles, techniques, and theories of social work practice with individuals, families, and groups. Emphasizes commonalities and differences among practice modalities, including differential assessment, intervention, and evaluation of outcomes. Focuses on the development of the professional self that incorporates the interplay of personal and professional values and social work practice with diverse populations.

SLW 608 Social Work Practice in Organizations and Communities for Advanced Standing Students. Summer course; 2 lecture hours. 2 credits. Prerequisites: Admission to the Advanced Standing Program; concurrent enrollment in SLW 607, 611, 612. Presents social work theory and practice focusing on social policy, communities, agencies, and interventions in light of principles of social and economic justice. Introduces and analyzes the social work role of policy practitioner with its specific skills and tasks. Demonstrates the importance of understanding the community and the agency in social work practice. Provides skill building in advocacy, planned change, and policy and organizational analysis.

SLW 609 Foundations of Research in Social Work Practice. Semester course; 3 lecture hours. 3 credits. Introduces the methods of social work research and the roles of the social worker as consumer and scientist/practitioner, including problem formulation, research designs, measurement, data collection, and sampling. Focuses on the application of critical thinking skills and research methods of clinical social work practice effectiveness research, the evaluation of social work programs and services, and developing the knowledge base for social work practice.

SLW 610 Human Behavior in the Social Environment II. Semester course; 3 lecture hours. 3 credits. Prerequisite: SLW 601. The second of two foundation courses on human behavior in the social environment, covering the life course from young adulthood through late adulthood and/or death. Provides a multidimensional perspective on social work's person-in-environment focus, based on theory and research. Includes contributions of biological, psychological, physical, and sociocultural forces to adaptation and/or maladaptation. Examines problems of living; impacts of racial, ethnic, class, cultural, religious/spiritual, and gender diversity on human behavior; role and contributing effects of the family system; and the reciprocal nature of interactions of persons, social groups, communities, organizations, and institutions in a multicultural society.

SLW 611 Social Work Research for Advanced Standing Students. 2 credits. Prerequisites: Admission to the Advanced Standing

Program; concurrent enrollment in SLW 607, 608, 612. Reviews approaches to scientific inquiry in the development of knowledge for social work practice; problem formulation; concepts and operational definitions; measurement validity and reliability; selected social work research designs; planned data collection strategies and procedures.

SLW 612 Advanced Standing Field Instruction. 3 credits. Prerequisites: Admission to the Advanced Standing Program; concurrent enrollment in SLW 607, 608, 611. Reviews foundation-level knowledge, attitudes, and skills acquired through social work education at the undergraduate level. Requires application, refinement, and the active use of content from the Advanced Standing Curriculum in supervised social work practice in a social agency.

SLW 693-694 Foundation Field Instruction I and II. Continuous course; 2 days/14 hours per week. 3-3 credits. Pre or corequisites: SLW 601, 602, 604, 605, 606, 610. Provides opportunities to master essential social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the foundation curriculum. Grade of "PR" required for continuation from SLW 693 to SLW 694. Final grade of "P" required to continue in the program.

SLW 695 Block Foundation Field Instruction. Five days a week for one semester. 6 credits. Prerequisites: SLW 601, 602, 603, 604, 605, 606, 609, 610. Option for part-time students only. Provides opportunities to master essential social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes the integration of content from all areas of the foundation curriculum. Grade of "P" required to continue in the program.

SLW 703 Clinical Human Behavior and the Social Environment. Semester course; 3 lecture hours. 3 credits. Prerequisites: SLW 601, SLW 610 and MSW concentration standing. Provides conceptualization that informs advanced biopsychosocial perspective of human behavior with particular emphasis on challenges and transitions of life. Presents latest research and theory development that undergirds understanding of problems in living. Assesses universal application of principles and assumptions of theories and perspectives to diverse human experience (gender, socioeconomic status, sexual orientation, ethnicity/race, age). Develops a descriptive and analytical understanding of dysfunctional behaviors, problems of living, and emotional and interpersonal conflicts affecting individuals, couples, families and small groups. Uses specific problems in living in such domains as physical health, mental health, substance abuse and addictions, social deviance and trauma exemplars.

SLW 704 Clinical Social Work Practice I. Semester course; 3 lecture hours. 3 credits. Pre and/or corequisites: Completion of Foundation MSW concentration standing or permission of instructor. Prerequisite or corequisite: SLW 703. First of two courses on advanced clinical practice with individuals, families, couples, and groups. Extends knowledge and skills obtained in foundation courses. Continues a multitheoretical orientation to intervention across fields of practice with emphasis on contemporary psychodynamic and cognitive behavioral approaches and their empirical support. Emphasizes multidimensional assessment and the differential application of therapeutic, supportive, educational, and resource management strategies to complex problems of children, youth, and adults. Examines the interdisciplinary context of practice and the impact of diversity on clinical practice.

SLW 705 Clinical Social Work Practice II. Semester course; 3 lecture hours. 3 credits. Prerequisite: SLW 704. Second of two courses on advanced clinical practice with individuals, families, couples, and groups. Continues a multitheoretical orientation to intervention across fields of practice with emphasis on integrated family systems theory and multidimensional family assessment. Focuses on differential application of psychodynamic, cognitive-behavioral, and family systems theories to a range of complex client problems and concerns with attention to diversity of socioeconomic status, race, ethnicity, age, poverty, gender, and sexual orientation. Introduces knowledge of pharmacology related to social work intervention.

SLW 706 Research for Clinical Social Work Practice I. Semester course; 3 lecture hours. 3 credits. Prerequisites: SLW 609 and MSW

concentration standing. Emphasizes further development of knowledge and skills for the scientific, analytic approach to clinical social work practice. Focuses on two parallel learning tracks: 1) application of research principles from SLW 609 to the development of a feasible research proposal relevant to clinical social work practice; and 2) review of statistical inference and decision making, introduction to computer applications of univariate and bivariate analyses, presentation of visual and statistical techniques for single-system designs, and introduction to qualitative analytical approaches. Reviews ethical standards of scientific inquiry.

SLW 707 Research for Clinical Social Work Practice II. Semester course; 3 lecture hours. 3 credits. Prerequisites: SLW 706. Focuses on completion of the research project approved in SLW 706, including data collection, development of computer program files, data analysis, preparation of final report, and presentation of findings. Provides overview of multivariate statistical analyses. Emphasizes integrating project findings into knowledge base for clinical social work.

SLW 710 Concentration Social Policy. Semester course; 3 lecture hours. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Integrates social work clinical and administrative practice in the analysis of social policies through an in-depth focused examination of a particular social policy area or population. Extends basic knowledge and skills of policy formation, development and impact analysis/evaluation, as these affect clinical and administrative practice on behalf of clients. Examines: diversity of policy sources; value, political, and economic determinants; policy formation processes; the policy basis for current services; a broad range of potential need domains; and current programs and laws. Integrates knowledge of human behavior and the social environment relevant to the focal policy areas and pays special attention to issues of social economic justice.

SLW 711 Strategies for Social Work Planning and Administrative Practice. Semester course; 3 lecture hours. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Presents problem-solving strategies for management of social service agency resources. Emphasizes person/professional, fiscal and personnel areas.

SLW 712 Social Work Planning and Administrative Practice I. Semester course; 3 lecture hours. 3 credits. Prerequisites: MSW concentration standing or permission of instructor. Presents knowledge and skills for social work leadership in systems modification and development. Examines rational, political and value consideration in social service planning at the community level. Presents knowledge of organizational theory and analyzes the political context of problem solving in the internal and external environments of social agencies and programs. Focuses on social planning theory and models of intervention in problem identification and definition, needs assessment, decision making, and goal setting. Emphasizes development of critical thinking about role responsibilities and ethical positions for social service agency and community leadership.

SLW 713 Social Work Planning and Administrative Practice II. Semester course; 3 lecture hours. 3 credits. Prerequisites: MSW concentration standing and SLW 712 or permission of instructor. Continues development of knowledge and skills begun in SLW 712. Emphasizes social service program design and implementation including social service administrative functions and responsibilities. Examines organizational behavior and change, social service agency representation, and interorganizational relationships in social service delivery. Focuses on financial and human resource acquisition and management, service monitoring accountability, evaluation, and strategic planning.

SLW 714 Research for Social Work Planning and Administrative Practice I. Semester course; 3 lecture hours. 3 credits. Prerequisites: SLW 609 and second-year MSW concentration standing. Emphasizes further development of knowledge and skills for the scientific, analytic approach to social work planning and administrative practice. Focuses on two parallel tracks: 1) application of research principles from SLW 609 to the development of a feasible research proposal relevant to social work planning and administrative practice; and 2) review of statistical inference and decision making, introduction to computer applications of univariate and bivariate analyses, presentation of visual and statistical techniques for cross-sectional and time-series designs, and introduction

to qualitative analytical approaches. Reviews ethical standards of scientific inquiry.

SLW 715 Research for Social Work Planning and Administrative Practice II. Semester course; 3 lecture hours. 3 credits. Prerequisites: SLW 609, 709, and MSW concentration standing. Focuses on completion of the research project approved in SLW 709, including data collection, development of computer program files, data analysis, preparation of final report, and presentation of findings. Provides overview of multivariate statistical analyses. Emphasizes integrating project findings into knowledge base for social work planning and administrative practice.

SLW 716 Normal and Problem Family Behavior. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Focuses on the family as a biopsychosocial unit with emphasis on stages of family development across the life cycle. Analyzes the utility of selected family theories. Investigates various family assessment tools based on family theories to understand family interaction. Explores developmental stages in family life with emphasis on developmental tasks, potential strengths, and normative and nonnormative family behaviors.

SLW 717 Social Work Practice in the School Setting. 3 lecture hours. 3 credits. Prerequisite: MSW program standing or permission of instructor. Emphasizes knowledge and skills of school social work practice with diverse populations in urban and rural settings. Presents historical context of social work practice and relevancy to current social work practice models. Uses an ecological perspective to conceptualize the interdependence of school, family, and community as complex interdependent systems. Addresses social justice concerns related to the social worker's response to contemporary issues such as violence, racism, sexism, poverty and their impact on children and youth in educational settings. Critically analyzes current federal and state laws that under-gird service delivery to schools.

SLW 718 Social Work Practice in Child Welfare. Semester course; 3 lecture hours. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Provides an overview of the history of child welfare practice in the United States. Identifies the major social, demographic, and economic changes in society that impact children and families today. Focuses on the knowledge and skills of direct social work practice across a continuum of child welfare services including early intervention, family preservation, child protection, and permanency planning within the context of current practice issues. Critiques current child welfare practices and identifies the roles of a practitioner in direct child welfare service delivery.

SLW 723 Child Neglect and Abuse: Protective Service. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Focuses on theoretical and practical knowledge of the causes, definitions and identification, reporting and investigation, and treatment of child neglect and abuse, and child sexual abuse. Analyzes family dynamics involved in physical and emotional child neglect, abuse, and sexual abuse. Emphasizes development and enhancement of skills and the use of differential therapeutic measures.

SLW 726 Social Work Practice in Health Settings. Semester course; 3 lecture hours. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Provides identification and in-depth analysis for the resolution of health care system issues. Focuses on social work practice in a range of health care settings. Examines the roles of social workers in clinical, planning, and administrative health care practice settings. Examines the influence of economics, political decisions, and cultural, social, and spiritual/religious experiences on individual health care decisions, general access to health care, and definitions of health and illness.

SLW 728 The Interdisciplinary Team in Social Work Practice. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Explores definitions and analyzes interdisciplinary team approaches. Studies the roles and functions of participants on interdisciplinary teams. Emphasizes similarities and differences between social work and other disciplines as members of teams. Explores opportunities for, and obstacles to, effective service delivery by teams.

SLW 739 Social Work and the Law. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Overview of funda-

mental principles of Anglo-American law; structure and function of the legal system and its professional membership. Lawyers and their working relationship with social workers. Emphasis on client-centered problems encountered in confrontation with the legal community and the role social workers can play in helping clients deal with those encounters. Explores issues relative to client needs as welfare rights, consumer protection, mental health treatment, family-related law, and discrimination relative to education, housing, employment, health care. Discusses legal issues confronting social work, such as confidentiality, licensing, advocacy, witnessing.

SLW 740 Social Work Crisis Intervention and Planned Short-Term Treatment. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. The social work practice of crisis intervention and planned short-term treatment. Examines conceptual and theoretical aspects of the differential use of crisis intervention and planned short-term social work intervention. Explores direct interventions, consultation, collaboration, and service delivery issues.

SLW 741 Emotional Disorders. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Defines the concepts of mental health, mental illness, and mental retardation, with a view of mental health and mental illness as a continuum. Presents etiology of emotional disorders and social deviance, traditional classification systems and newer approaches in use of clinical practice. Examines alcoholism and other substance abuse in terms of the physiological, psychological, and sociological components of causation, behavior, and treatment. Impact of racial and ethnic differences on emotional disorders and social deviance. Analyzes effect of mental health and the larger community on the behavior of the person.

SLW 745 Social Work Practice in Community Mental Health. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Addresses the specialized knowledge, values, and skills needed by social workers in community mental health settings. Builds on a biopsychosocial model of mental health/illness. Focuses on up-to-date psychotherapeutic, psychoeducational, and skill training approaches used with individuals, families and groups experiencing or affected by a range of mental health problems. Examines roles in interdisciplinary teamwork, case management, advocacy and medication management.

SLW 747 Social Work Intervention with Children and Adolescents. Semester course; 3 lecture hours. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Provides students with an opportunity for concentrated study and application of a range of specific models and techniques of intervention with children, adolescents and their families. Special attention will be given to diverse practice settings, as well as providing services to children and adolescents from diverse racial, ethnic, social, and sexual orientation backgrounds.

SLW 748 Group Methods in Social Work Practice. Semester course; 3 lecture hours. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Examines various approaches used by practitioners in their interventions with social work groups. Presents several models of groups, including treatment, educational, and mutual aid/self-help. Reviews topics including: agency conditions affecting practice with groups, planning a new group service, the multiple phases of work with groups, achieving individual change through the group process, tasks and techniques for working with persons from at-risk populations in groups, and the evaluation of change effort. Builds on the content in the foundation practice course SLW 605 Social Work Practice with Individuals, Families and Groups II.

SLW 749 Social Work Intervention in Substance Abuse. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Explores major theoretical contributions to the field of substance abuse. Introduces and explores pharmacology of drugs and alcohol including stimulants, depressants, and opiates. Examines alcoholism from the disease concept as well as specific knowledge of substance abuse from the mental health point of view. Sensitizes students to controversial issues of substance abuse with emphasis on implications for practice. Presents background information on history, theories, definitions, areas of controversy, research findings, and treatment modalities as related to social work intervention in substance abuse.

SLW 751 Social Work Practice and AIDS. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Focuses on information, knowledge and skills needed to provide social work services to persons with ARC and AIDS and their families. Emphasizes epidemiological material, psychological and psychosocial aspects of AIDS and ARC for understanding the context of social policies and social work intervention. Addresses differential application of social work roles and functions.

SLW 760 Family Theory and Therapy. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Presents a conceptual base for the practice of family therapy. Extends knowledge and practice for family specialists and provides a theoretical base and practice applications of family therapy for other interested students.

SLW 761 Interpersonal Violence. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Focuses on social worker's integral part in society's response to all forms of interpersonal violence at the policy and practice levels. Examines both theoretical and applied responses to rape, child abuse, spouse abuse and elder abuse and is intended to give students knowledge about the definitions, etiology and interventive processes with both victims and perpetrators. Investigates the social work role with the other major actors in the family violence field, such as police, attorneys, judges and other mental health professionals.

SLW 765 Supervision. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Explores task components and responsibilities in supervision of the social worker. Emphasizes a conceptual framework for supervision, including knowledge base, methods, and skill in supervision. Attention to affirmative action programs in social service delivery systems.

SLW 769 Women's Issues and Social Work Practice. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Explores new perspectives on women and their changing roles as these affect social work practice; direct and indirect ways sexist attitudes are acquired and conveyed; effects of changing female roles of human behavior theory and its application, development of new life styles; social work theories and their relevance to today's world; current women's issues; and the social worker's role as counselor and advocate.

SLW 773 Program Evaluation. 3 credits. Prerequisite: MSW concentration standing or permission of instructor. Methods, problems, and research findings related to the evaluation of social welfare programs. Examines research design options and methodologies available for program evaluation. Explores organizational and administrative contexts in which evaluation activities are initiated, supported, disseminated, and utilized. Presents data processing and the roles of data analysis and the computer in the evaluation of social welfare programs.

SLW 791 Topical Seminar. 1.5-3 credits. Prerequisite: MSW concentration standing or permission of instructor. Presents and analyzes current social work practice issues in specialized areas of interest to social work.

SLW 792 Independent Study. 1-4 credits. Prerequisite: MSW concentration standing or permission of instructor. The student will be required to submit a proposal for investigating some area or problem in social work not ordinarily included in the regular social work curriculum. The results of the student's study will be presented in a report. Open with faculty approval. A maximum of four independent study courses may be included in a student's educational program.

SLW 793-794 Concentration Field Instruction. Continuous course; 21 hours per week. 3-3 credits. Prerequisite: MSW Concentration standing; pre or corequisites: SLW 703, 704-705, 706-707, 710 or SLW 711, 712-713, 714-715, 710. Provides opportunities to master advanced social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the concentration curriculum. Grade of "P" required for graduation. Grade of "PR" required for continuation in second semester of the practicum.

SLW 795 Concentration Block Field Instruction. Semester field-work; block field instruction (option for part-time students only) five

days a week for one semester. 6 credits. Prerequisite: MSW Concentration standing; pre or corequisites: SLW 703, 704-705, 706-707, 710 and electives, or SLW 711, 712-713, 714 -715, 710 and electives. Provides opportunities to master advanced social work knowledge, values and skills through practice under the direction of an agency-based field instructor, monitored by a faculty field liaison. Emphasizes integration of content from all areas of the concentration curriculum. Grade of "P" required for graduation.

Doctoral Courses in Social Work (SWD)

SWD 701 Advanced Social Work Research Methods and Statistics I. Semester course; 4 credits. Prerequisite: Masters level course work in research methods and introduction to statistics; graduate standing in social work or permission of program director. First semester of a two semester course sequence focused on concentrated study of principles of the scientific method for knowledge testing, practice and policy research including quantitative and qualitative social work research designs. Research procedures including sampling, measurement, data collection, and the application of descriptive inferential and noninferential statistical techniques will be considered within the context of applied social work research.

SWD 702 Advanced Social Work Research Methods and Statistics II. Semester course; 4 lecture hours. 4 credits. Prerequisite: Successful completion of SWD 701 or permission of program director. Concentrated study in the application of a range of statistical techniques for social work research; qualitative and quantitative research designs, including quasi-experimental, single-system and program evaluation, for social work practice and policy research; and developing a research proposal employing quantitative and/or qualitative research methods in social work.

SWD 703 Causal Relations and Theory Development in Social Work. Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to PhD in social work or permission of program director. This seminar focuses on assisting seminar participants to develop and refine their understanding of the logical foundations and the underlying meta-framework for modes of inquiry in science. Of particular focus will be the social sciences including social work. Using a paradigm perspective, the seminar will investigate the epistemological, ontological and methodological implications for knowledge building for social work.

SWD 708 Social and Behavioral Science Theory for Social Work Practice. Semester course; 3 lecture hours. 3 credits. Prerequisite: Admission to the PhD in Social Work program or permission of the program director. This doctoral level seminar focuses on theories and conceptual approaches used as the knowledge base for social work practice (clinical & policy). Emphasis will be given to developing the abilities of the students to understand significant questions related to theory development, knowledge building and utilization, and to enhancing their reasoning skills with respect to articulating a rationale for selecting a theoretical perspective for social work practice. Critical variables related to behavioral science theory will be identified, assumptions assessed, values examined and empirical evidence analyzed. Theories covered will be drawn from sociological, sociocultural, psychological, biomedical, and philosophical perspectives.

SWD 710 Social Work, Social Welfare, and Social Thought. Semester course; 3 credits. Prerequisite: Doctoral program admission or permission of instructor. Required seminar for social work doctoral stu-

dents. Examines social work and its roles and functions in relation to contemporary social problems, social policy and social work practice interventions that provide solutions to these problems. Analysis of issues of social welfare and the social work profession relating to structure, functions and history from the perspective of social work values, ethics, professional standards and concern for social justice. Designed to foster a critical perspective on the profession in its environment and provide grounding in the historical and cultural traditions and major streams of social thought influencing the profession, its development, and the American system of social welfare.

SWD 715 Development and Evaluation of Social Work Practice Theories. A required seminar for first year doctoral students that is sequential to and builds upon prerequisite first year theory and research courses. It focuses on the nature of theories and perspectives that guide social work practice. It includes historical and philosophical foundations of practice theories and frameworks to evaluate practice theory through the lens of social justice. Practice theories include all social work theories whose aim is change. The focus of change may be at the individual, family, group, community, organizational, policy, and systems levels. Criteria for the selection of the level of the focus of change will be explored.

SWD 723 Social Work Education: Issues in Teaching. Semester course; 3 lecture hours. 3 credits. Prerequisite: Graduate standing in social work or permission of the program director. Focus is on two central and integrated components of professional education: (1) examination of the development and dimensions of social work education and (2) exploration of theories of learning and teaching within the framework of professional social work education.

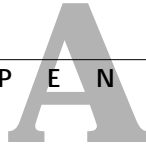
SWD 724 Social Work Models for Social Policy Analysis and Implementation. Fall semester. 3 credits. Prerequisite: Completion of core curriculum. Selected social work models for social policy analysis. Examination of social work roles and functions in relation to social policy formulation, administration, and evaluation. Examination of historical and current social policy issues in selected social problem areas from the perspective of social work values, ethics, and professional standards.

SWD 791 Topical Seminar. Semester course; 3 lecture hours. 3 credits. Prerequisite: Permission of instructor. Study of the current state of knowledge and research within a specialized area of concern to social policy and social work. May be repeated for credit.

SWD 792 Independent Study. Semester course; 1, 2, or 3 credits. May be repeated for a maximum of six credits, that count toward the 36 required credits. Prerequisite: Permission of the program director. Independent reading and study in selected areas under the supervision of a member of the faculty. May then be taken for an additional 1-12 credits to accommodate the need for continuous enrollment required of all students between completion of required course work and passage of the comprehensive examinations.

SWD 797 Directed Research. Semester course; 3 credits. Pre-dissertation research project under faculty supervision.

SWD 898 Dissertation Research. Semester course; 1-18 credits. May be repeated for credit. May be taken for additional credits until dissertation is accepted formally. Prerequisite: Successful completion of comprehensive examinations or permission of program director. Students are required to complete 18 credit hours.



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Rights of Students Under the Family Educational Rights and Privacy Act

Pursuant to a federal statute enacted to protect the privacy rights of students (Family Educational Rights and Privacy Act of 1974, as amended, enacted as Section 438 of the General Education Provisions Act), eligible students of Virginia Commonwealth University are permitted to inspect and review education records of which the student is the subject. A list of education records maintained by the University is available from the Office of Records and Registration. A statement of University policy concerning inspection and disclosure of education records has been formulated in compliance with the federal statute. Copies of the policy are also available from the Office of Records and Registration.

Generally, the Act provides that no personally identifiable information will be disclosed without the student's

consent, except for directory information and information to other school officials with a legitimate educational interest. When personally identifiable information, other than directory information, is disclosed, a record will be maintained of these disclosures. This record is also available for inspection and review by the student.

If an eligible student feels that his or her education record is inaccurate, misleading, or otherwise in violation of the student's privacy or other rights, the student may request an amendment to the record.

Should the University fail to comply with the requirements of the Act, the student has the right to file a complaint with the Family Policy and Regulations Office, U.S. Department of Education, Washington, D.C. 20202.

Determination of Student Classification for In-State Tuition Purposes

Section 23-7.4, of the *Code of Virginia*, governs eligibility for in-state tuition. Effective for students enrolling on or after July 1, 1996, the statute provides:

§ 23-7.4. Eligibility for in-state tuition charges. –

A. For purposes of this section and §§ 23-7.4:1, 23-7.4:2 and 23-7.4:3, the following definitions shall apply:

“Date of the alleged entitlement” means the first official day of class within the term, semester or quarter of the student’s program.

“Dependent student” means one who is listed as a dependent on the federal or state income tax return of his parents or legal guardian or who receives substantial financial support from his spouse, parents or legal guardian. It shall be presumed that a student under the age of twenty-four on the date of the alleged entitlement receives substantial financial support from his parents or legal guardian, and therefore is dependent on his parents or legal guardian, unless the student (i) is a veteran or an active duty member of the U.S. Armed Forces; (ii) is a graduate or professional student; (iii) is married; (iv) is a ward of the court or was a ward of the court until age 18; (v) has no adoptive or legal guardian when both parents are deceased; (vi) has legal dependents other than a spouse; or (vii) is able to present clear and convincing evidence that he is financially self-sufficient.

“Domicile” means the present, fixed home of an individual to which he returns following temporary absences and at which he intends to stay indefinitely. No individual may have more than one domicile at a time. Domicile, once established, shall not be affected by mere transient or temporary physical presence in another jurisdiction.

“Domiciliary intent” means present intent to remain indefinitely.

“Emancipated minor” means a student under the age of eighteen on the date of the alleged entitlement whose parents or guardians have surrendered the right to his care, custody and earnings and who no longer claim him as a dependent for tax purposes.

“Full-time employment” means employment resulting in, at least, an annual earned income reported for tax purposes equivalent to fifty work weeks of forty hours at minimum wage.

“Independent student” means one whose parents have surrendered the right to his care, custody and earnings, do not claim him as a dependent on federal or state income tax returns, and have ceased to provide him substantial financial support.

“Special arrangement contract” means a contract between a Virginia employer or the authorities controlling a federal installation or agency located in Virginia and a public institution of higher education for reduced rate tuition charges as described § 23-7.4:2 G.

“Substantial financial support” means financial support in an amount which equals or exceeds that required to qualify the individual to be listed as a dependent on federal and state income tax returns.

“Unemancipated minor” means a student under the age of eighteen on the date of the alleged entitlement who is under the legal control of and is financially supported by either of his parents, legal guardian or other person having legal custody.

“Virginia employer” means any employing unit organized under the laws of Virginia or having income from Virginia sources regardless of its organizational structure, or any public or nonprofit organization authorized to operate in Virginia.

B. To become eligible for in-state tuition, an independent student shall establish by clear and convincing evidence that for a period of at least one year immediately prior to the date of the alleged entitlement, he was domiciled in Virginia and had abandoned any previous domicile, if such existed.

To become eligible for in-state tuition, a dependent student or unemancipated minor shall establish by clear and convincing evidence that for a period of at least one year prior to the date of the alleged entitlement, the person through whom he claims eligibility was domiciled in Virginia and had abandoned any previous domicile, if such existed.

In determining domiciliary intent, all of the following applicable factors shall be considered: continuous residence for at least one year prior to the date of alleged entitlement, state to which income taxes are filed or paid, driver’s license, motor vehicle registration, voter registration, employment, property ownership, sources of financial support, military records, a written offer and acceptance of employment following graduation, and any other social or economic relationships with the Commonwealth and other jurisdictions.

Domiciliary status shall not ordinarily be conferred by the performance of acts which are auxiliary to fulfilling educational objectives or are required or routinely performed by temporary residents of the Commonwealth. Mere physical presence or residence primarily for educational purposes shall not confer domiciliary status. A matriculating student who has entered an institution

and is classified as an out-of-state student shall be required to rebut by clear and convincing evidence the presumption that he is in the Commonwealth for the purpose of attending school and not as a bona fide domiciliary.

Those factors presented in support of entitlement to in-state tuition shall have existed for the one-year period prior to the date of the alleged entitlement. However, in determining the domiciliary intent of active duty military personnel residing in the Commonwealth, or the domiciliary intent of their dependent spouse or children who claim domicile through them, who voluntarily elect to establish Virginia as their permanent residence for domiciliary purposes, the requirement of one year shall be waived if all other conditions for establishing domicile are satisfied.

C. A married person may establish domicile in the same manner as an unmarried person.

An emancipated minor may establish domicile in the same manner as any other independent student. A non-military student whose parent or spouse is a member of the armed forces may establish domicile in the same manner as any other student.

Any alien holding an immigration visa or classified as a political refugee shall also establish eligibility for in-state tuition in the same manner as any other student. However, absent congressional intent to the contrary, any person holding a student or other temporary visa shall not have the capacity to intend to remain in Virginia indefinitely and, therefore, shall be ineligible for Virginia domicile and for in-state tuition charges.

The domicile of a dependent student shall be rebuttably presumed to be the domicile of the parent or legal guardian claiming him as an exemption on federal or state income tax returns currently and for the tax year prior to the date of the alleged entitlement or providing him substantial financial support.

For the purposes of this section, the domicile of an unemancipated minor or a dependent student eighteen years of age or older may be either the domicile of the parent with whom he resides, the parent who claims the student as a dependent for federal and Virginia income tax purposes for the tax year prior to the date of the alleged entitlement and is currently so claiming the student, or the parent who provides the student substantial financial support. If there is no surviving parent or the whereabouts of the parents are unknown, then the domicile of an unemancipated minor shall be the domicile of the legal guardian of such unemancipated minor unless there are circumstances indicating that such guardianship was created primarily for the purpose of conferring a Virginia domicile on the unemancipated minor.

D. It is incumbent on the student to apply for change in domiciliary status on becoming eligible for such change. Changes in domiciliary status shall only be granted prospectively from the date such application is received.

A student who knowingly provides erroneous information in an attempt to evade payment of out-of-state fees shall be charged out-of-state tuition fees for each term, semester or quarter attended and may be subject to dismissal from the institution. All disputes related to the

veracity of information provided to establish Virginia domicile shall be appealable through the due process procedure required by § 23-7.4:3. (1984, c. 422; 1985, cc. 179, 572; 1988, c. 124; 1989, c. 371; 1990, c. 680; 1991, c. 590; 1996, cc. 931, 981.)

The 1996 amendments. – The 1996 amendments by cc. 931 and 981 are identical, and rewrote this section.

§ 23-7.4:1. Waiver of tuition and required fees for certain students. – A. 1. All sums appropriated by law for the purpose of effecting the provisions of this subsection shall be used for the sole purpose of providing for free tuition and required fees at the state-supported institutions and institutional charges, general or college fees, or any charges by whatever term referred to, board and room rent, and books and supplies at any education or training institution of collegiate or secondary grade in the Commonwealth of Virginia approved in writing by the Director of the Department of Veterans' Affairs for the use and benefit of the children not under sixteen and not over twenty-five years of age either of whose parents was killed in action, is missing in action or a prisoner of war in any armed conflict subsequent to December 6, 1941, while serving in the Army, Navy, Marine Corps, Air Force or Coast Guard of the United States, or was or is or may hereafter become totally and permanently disabled due to service during such periods if such parent (i) was a citizen of Virginia at the time of entering such service; (ii) is and has been, for at least ten years immediately prior to the date on which application was submitted by or on behalf of such child for admission to any education or training institution of collegiate or secondary grade in this Commonwealth, a citizen of Virginia; (iii) if such parent is deceased, was a citizen of Virginia on the date of his or her death and had been a citizen of Virginia for at least ten years immediately prior to his or her death; or (iv) if such parent is deceased and the surviving parent had been, at some time previous to marrying the deceased parent, a citizen of Virginia for at least ten years and is and has been a citizen of Virginia for at least ten years immediately prior to the date on which application was submitted by or on behalf of such child for admission to any education or training institution of collegiate or secondary grade in this Commonwealth.

2. Such children, upon recommendation of the Director of the Department of Veterans' Affairs, shall be admitted to state institutions of secondary or higher education, free of tuition and all required fees. Each state-supported institution shall include in its catalogue or equivalent publication a statement describing the benefits provided by this subsection.

3. The amounts that may be or may become due by reason of attendance at any such educational or training institution, not in excess of the amount specified in subdivision 5, shall be payable on vouchers approved by the Director of the Department of Veterans' Affairs.

4. The Director of the Department of Veterans' Affairs shall determine the eligibility of the children who may make application for the benefits provided for in this subsection and shall satisfy himself of the attendance

and satisfactory progress of such children at such institution and of the accuracy of the charge or charges submitted on account of the attendance of any such children at any such institution. However, neither the Director nor any employee of the Department of Veterans' Affairs shall receive any compensation for such services.

5. To carry out the provisions of this subsection, there may be expended such funds as shall be appropriated for the purpose in the general appropriation acts. However, the maximum amount to be expended for each such child shall not be more, when combined with any federal allowance which may be made for such tuition, charges, fees, rent, books and supplies, than the actual amount of the benefits provided for in this subsection.

6. For the purposes of this subsection, user fees, such as room and board charges, shall not be included in this authorization to waive tuition and fees. However, all required fees, educational and auxiliary, shall be waived along with tuition.

B. Any child between the ages of sixteen and twenty-five whose parent or any person whose spouse has been killed in the line of duty while employed or serving as a law-enforcement officer, firefighter, member of a rescue squad, sworn law-enforcement officer, special agent of the Department of Alcoholic Beverage Control, state correctional, regional or local jail officer, regional jail or jail farm superintendent, sheriff, deputy sheriff, or member of the Virginia National Guard while such member is serving in the Virginia National Guard or as a member of the United States Armed Forces, shall be entitled to free undergraduate tuition and required fees at any public institution of higher education in Virginia under the following conditions:

1. The chief administrative officer of the Alcoholic Beverage Control Board, emergency medical services agency, law-enforcement agency, or other appropriate agency or the Superintendent of State Police certifies that the deceased parent or spouse was employed or serving as a law-enforcement officer or a firefighter or member of a rescue squad or in any other capacity as specified in this section and was killed in the line of duty while serving or living in the Commonwealth; and

2. The child or spouse shall have been offered admission to a public institution of higher education. Any child or spouse who believes he is eligible shall apply to the public institution of higher education to which he has been admitted for the benefits provided by this subsection. The institution shall determine the eligibility of the applicant for these benefits and shall also ascertain that the recipients are in attendance and are making satisfactory progress. The amounts payable for tuition and required fees for the applicants shall be waived by the institution accepting the students.

For the purposes of this subsection, user fees, such as room and board charges, shall not be included in this authorization to waive tuition and fees. However, all required fees, educational and auxiliary, shall be waived along with tuition.

C. Senior citizens shall be entitled to free tuition and required fees pursuant to the provisions of Chapter 4.5 (§ 23-38.54 et seq.) of Title 23.

D. Tuition and required fees may be waived for a student from a foreign country enrolled in a public institution

of higher education through a student exchange program approved by such institution, provided the number of foreign students does not exceed the number of students paying full tuition and required fees to the institution under the provisions of the exchange program for a given three-year period. (1996, cc. 931, 981.)

§ 23-7.4:2. Eligibility for in-state or reduced tuition for students not domiciled in Virginia; members of the National Guard of the Commonwealth of Virginia. – A. A nonmilitary student whose parent or spouse is a member of the armed forces may establish domicile in the same manner as any other student. However, a nonmilitary student, not otherwise eligible for in-state tuition, whose parent or spouse is a member of the military residing in the Commonwealth pursuant to military orders and claiming a state other than Virginia on their State of Legal Residence Certificate, shall be entitled to in-state tuition charges when the following conditions are met: (i) if the student is a child of a member of the armed forces, then the nonmilitary parent shall have, for at least one year immediately prior to the date of alleged entitlement for in-state tuition charges, resided in Virginia, been employed full time and paid individual income taxes to Virginia. Such student shall be eligible for in-state tuition charges only if the nonmilitary parent claims him as a dependent for Virginia and federal income tax purposes, as evidenced by claiming him as a dependent on an individual or joint return; or (ii) if the student is the spouse of a member of the armed forces, then such student shall have, for at least one year immediately prior to the date of alleged entitlement for in-state tuition, resided in Virginia, been employed full time and paid individual income taxes to Virginia; or (iii) if the student is the child or the spouse of a member of the armed forces, then the student shall be entitled to in-state tuition charges for a maximum of one year during the period that the military parent or spouse is residing in the Commonwealth. Any student whose spouse or parent is a member of the armed forces shall be eligible for in-state tuition charges for so long as the conditions of clauses (i) and (ii) of this subsection continue to be met. Military dependents provided in-state tuition for one year during the period the military parent or spouse is residing in Virginia shall be counted as out-of-state students for admissions, enrollment and tuition and fee revenue policy purposes.

B. Students who live outside this Commonwealth and have been employed full time inside Virginia for at least one year immediately prior to the date of the alleged entitlement for in-state tuition shall be eligible for in-state tuition charges if such student has paid Virginia income taxes on all taxable income earned in this Commonwealth for the tax year prior to the date of the alleged entitlement. Students claimed as dependents for federal and Virginia income tax purposes who live outside this Commonwealth shall become eligible for in-state tuition charges if the nonresident parents claiming them as dependents have been employed full time inside Virginia for at least one year immediately prior to the date of the alleged entitlement and paid Virginia income taxes on all taxable income earned in this

Commonwealth for the tax year prior to the date of the alleged entitlement. Such students shall continue to be eligible for in-state tuition charges for so long as they or their qualifying parent is employed full time in Virginia, paying Virginia income taxes on all taxable income earned in this Commonwealth and the student is claimed as a dependent for Virginia and federal income tax purposes.

C. Any person who (i) is a member of the National Guard of the Commonwealth of Virginia and has a minimum remaining obligation of two years, (ii) has satisfactorily completed required initial active duty service, (iii) is satisfactorily performing duty in accordance with regulations of the National Guard, and (iv) is enrolled in any state institution of higher education, any private, accredited and nonprofit institution of higher education in the Commonwealth whose primary purpose is to provide collegiate or graduate education and not to provide religious training or theological education, any course or program offered by any such institution or any public vocational or technical school shall be eligible for a grant in the amount of one-half of the tuition not exceeding \$500 per term, semester or quarter. No person shall receive grants totaling more than \$1,000 in any one year. Application for a grant shall be made to the Department of Military Affairs. Grants shall be awarded from funds available for the purpose by such Department.

D. Notwithstanding the provisions of § 23-7.4 or any other provision of the law to the contrary, the governing board of any state institution of higher education or the governing board of the Virginia Community College System may charge the same tuition as is charged to any person domiciled in Virginia pursuant to the provisions of § 23-7.4 to:

1. Any person enrolled in one of the institution's programs designated by the State Council of Higher Education who is domiciled in and is entitled to reduced tuition charges in the institutions of higher learning in any state which is a party to the Southern Regional Education Compact which has similar reciprocal provisions for persons domiciled in Virginia;

2. Any student from a foreign country who is enrolled in a foreign exchange program approved by the state institution during the same period that an exchange student from the same state institution, who is entitled to in-state tuition pursuant to § 23-7.4, is attending the foreign institution; and

3. Any high school or magnet school student, not otherwise qualified for in-state tuition, who is enrolled in courses specifically designed as part of the high school or magnet school curriculum in a community college for which he may, upon successful completion, receive high school and community college credit pursuant to a dual enrollment agreement between the high school or magnet school and the community college.

E. The governing board of the Virginia Community College System may charge reduced tuition to any person enrolled in one of the System's institutions who lives within a thirty-mile radius of a Virginia institution, is domiciled in, and is entitled to in-state tuition charges in the institutions of higher learning in any state which is contiguous to Virginia and which has similar recipro-

cal provisions for persons domiciled in Virginia. This subsection shall expire on July 1, 1998.

F. The advisory board of Clinch Valley College and the board of visitors of the University of Virginia may charge reduced tuition to any person enrolled at Clinch Valley College who lives within a fifty-mile radius of the College, is domiciled in, and is entitled to in-state tuition charges in the institutions of higher learning in Kentucky, if Kentucky has similar reciprocal provisions for persons domiciled in Virginia.

Any out-of-state students granted in-state tuition pursuant to this subsection and subsection E shall be counted as out-of-state students for the purposes of determining admissions, enrollment, and tuition and fee revenue policies.

G. Public institutions of higher education may enter into special arrangement contracts with Virginia employers or authorities controlling federal installations or agencies located in Virginia. The special arrangement contracts shall be for the purpose of providing reduced rate tuition charges for the employees of the Virginia employers or federal personnel when the employers or federal authorities are assuming the liability for paying, to the extent permitted by federal law, the tuition for the employees or personnel in question and the employees or personnel are classified by the requirements of this section as out-of-state.

Special arrangement contracts with Virginia employers or federal installations or agencies may be for group instruction in facilities provided by the employer or federal authority or in the institution's facilities or on a student-by-student basis for specific employment-related programs.

Special arrangement contracts shall be valid for a period not to exceed two years and shall be reviewed for legal sufficiency by the Office of the Attorney General prior to signing. All rates agreed to by the public institutions shall be at least equal to in-state tuition and shall only be granted by the institution with which the employer or the federal authorities have a valid contract for students for whom the employer or federal authorities are paying the tuition charges.

All special arrangement contracts with authorities controlling federal installations or agencies shall include a specific number of students to be served at reduced rates.

Nothing in this subsection shall change the domiciliary status of any student for the purposes of enrollment reporting or calculating the proportions of general funds and tuition and fees contributed to the cost of education. (1996, cc. 931, 981.)

§ 23-7.4.3. Determinations of eligibility; appeals and guidelines.

– A. Each public institution of higher education shall establish an appeals process for those students who are aggrieved by decisions regarding eligibility for in-state or reduced tuition charges pursuant to §§ 23-7.4 and 23-7.4:2. The Administrative Process Act (§ 9-6.14:1 et seq.) shall not apply to these administrative reviews.

An initial determination shall be made. Each appeals process shall include an intermediate review of the initial determination and a final administrative review.

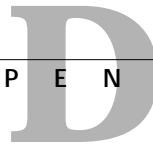
The final administrative decision shall be in writing. A copy of this decision shall be sent to the student. Either the intermediate review or the final administrative review shall be conducted by an appeals committee consisting of an odd number of members. No person who serves at one level of this appeals process shall be eligible to serve at any other level of this review. All such due process procedures shall be in writing and shall include time limitations in order to provide for orderly and timely resolutions of all disputes.

Any party aggrieved by a final administrative decision shall have the right to review in the circuit court for the jurisdiction in which the relevant institution is located. A petition for review of the final administrative decision shall be filed within thirty days of receiving the written decision. In any such action, the institution shall forward the record to the court, whose function shall be only to determine whether the decision reached by the institution could reasonably be said, on the basis of the

record, not to be arbitrary, capricious or otherwise contrary to law.

B. To ensure the application of uniform criteria in administering this section and determining eligibility for in-state tuition charges, the State Council of Higher Education shall issue and from time to time revise guidelines, including domiciliary status questions to be incorporated by all state institutions of higher education in their admissions applications. These guidelines shall not be subject to the Administrative Process Act.

An advisory committee, composed of at least ten representatives of institutions of higher education, shall be appointed by the Council each year to cooperate with the Council in developing the guidelines for determining eligibility or revisions thereof. The Council shall consult with the Office of the Attorney General and provide opportunity for public comment prior to issuing any such guidelines. (1996, cc. 931, 981.)



1998 - 1999 Graduate Curriculum Requirements

Revised August 1998 – Supercedes All Previous Curricula and Deadlines

When completing an application to graduate study, refer to this chart for the type of degree awarded, terms of entry, application deadline dates, test and other special admission requirements. Transfer to the application the exact titles of curriculum, specialization, track (if applicable), and degree. Applicants are encouraged to contact the school/department sponsoring the intended program of study at the numbers listed in the chart. Other important phone numbers are listed in the Directory on the inside back cover. Refer to the inside front cover for additional information on how to contact the School of Graduate Studies.

Curriculum (In bold type) Specialization and Track(s) (If Applicable)	Department/ Phone (Area Code 804)	Degree	Terms of Entry	Deadline Dates	Test Requirements	Special Requirements
Advertising Indicate specialization: Account Management, Art Direction, and Copywriting	Adcenter (828-8384)	MS	Fall only	March 2		Contact the Adcenter for specific admissions requirements
Administration and Supervision Administration, Supervision, Dual Major in Administration and Supervision (See Principalship Certification or Supervisory Endorsement)	Educational Studies (828-1332)	MEd	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Adult Education and Human Resource Development (See Human Resource Development Certificate Program)	Educational Studies (828-1332)	MEd	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Aging Studies	Gerontology (828-1565)	Certificate	All terms			
Anatomy	Anatomy (828-9623)	MS, PhD Certificate	Fall preferred	May 1 No Deadline	GRE, *MCAT, or DAT	
Anatomy/Physical Therapy Doctoral Program	Anatomy (828-9623) Physical Therapy (828-0234)	PhD	Fall	May 1	GRE	BS or MS in Physical Therapy Contact PT or Anatomy for specific admission requirements
Applied Social Research	Sociology (828-1026)	Certificate	Fall	August 1		
Art (See Art Education, Art History, Design, Fine Arts, Music, and Theatre)						
Art Education	Art Education (828-1996)	MAE	Fall Spring Summer	March 1 November 1 May 1		**Portfolio
Art History Indicate specialization for MA: Architectural History, Historical Studies, Museum Studies	Art History (828-2265)	MA, PhD	Fall Spring Summer	July 1 (March 15 for financial assistance) December 1 (Nov. 1 for financial assistance) May 1	GRE	
Biochemistry	Biochemistry and Molecular Biophysics (828-9762)	MS, PhD, Certificate	Fall preferred	May 1	GRE, *MCAT, or DAT	
Biology	Biology (828-1562)	MS	Fall Spring Summer	July 1 November 15 May 1	GRE-General and Subject	
Biomedical Engineering	Biomedical Engineering (828-7263)	MS, PhD	Fall preferred	April 15 (for support)	GRE	Contact department for Biomedical Engineering brochure

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Curriculum (In bold type) Specialization and Track(s) (If Applicable)	Department/ Phone (Area Code 804)	Degree	Terms of Entry	Deadline Dates	Test Requirements	Special Requirements
Biostatistics	Biostatistics (828-9824)	MS, PhD	Fall preferred	Applications received prior to February 15 given priority consid- eration	GRE,*MCAT, or DAT	Contact department for Biostatistics brochure
Business (See Business – MS, Business – PhD, Business Administration – MBA, Economics, and Taxation)						
Business – MS Indicate specialization: Decision Sciences, Finance, Human Resource Management and Industrial Relations, Information Systems, Marketing, Real Estate Valuation	Business (828-1741)	MS	All terms	8 weeks prior to beginning of term	GMAT	
Business – PhD Select one major specialization: Accounting, Information Systems, or Management, and one minor track: Decision Sciences, Economics, Finance, Human Resource Management and Industrial Relations, International Business, Marketing, and other related areas of study approved by the School of Business	Business (828-1741)	PhD	Fall Spring	February 15 October 15	GMAT	
Business Administration – MBA Indicate specialization: MBA General, MBA with a concentration, or Fast Track MBA For MBA with a concentration, indicate track: Accounting, Decision Sciences, Economics, Finance, Human Resource Management/Industrial Relations, Information Systems, Marketing, Real Estate and Urban Land Development, Risk Management and Insurance	Business (828-4622)	MBA	All terms (Fast Track MBA Fall only)	8 weeks prior to beginning of term	GMAT	
Chemistry Indicate specialization: Analytical, Inorganic, Organic, Physical, Chemical Physics (PhD only)	Chemistry (828-1298)	MS, PhD	Fall Spring	March 15 November 15	GRE	
Clinical Laboratory Sciences (formerly Medical Technology) Indicate specialization: Advanced Master's Program; Categorical Master's Program	Clinical Laboratory Sciences (828-9469)	MS	Fall Spring	July 1 November 15	GRE	Contact department for list of institutions with guaranteed admis- sions agreements
Clinical Research and Biostatistics (For professionals holding terminal degree)	Biostatistics (828-9824)	MS	Fall preferred	Applications received prior to February 15 given priority consid- eration	GRE,*MCAT or DCAT	MD, DDS, RN, PharmD, or equivalent health science professional degree
Computer Science	Mathematical Sciences (828-1301)	MS and Certificate	Fall Spring	July 1 November 15	GRE-General	Contact director of graduate studies for specific requirements
Counselor Education Indicate specialization: Guidance and Counseling, Dual Certification in Counselor and Visiting Teacher	Educational Studies (828-1332)	MEd	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Creative Writing Indicate specialization: Fiction, Poetry, or both genres	English (828-1329)	MFA	Fall	March 1	GRE-General	Portfolio
Criminal Justice Indicate specialization: Forensic Science, Justice	Criminal Justice (828-1050)	MS	Fall (Forensic Science and Justice) Spring (Justice)	April 1 November 1	GRE	

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Curriculum (In bold type) Specialization and Track(s) (If Applicable)	Department/ Phone (Area Code 804)	Degree	Terms of Entry	Deadline Dates	Test Requirements	Special Requirements
Criminal Justice	Criminal Justice (828-1050)	Certificate	Fall Spring	May 1 November 1	GRE	
Curriculum and Instruction Indicate specialization:Early Education, Gifted and Talented, Middle Education, Secondary Education, or Instructional Technology (including Library/Media)	Teacher Education (828-1305)	MEd	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Design For specialization in Interior Environments, Photography, and Film For specialization in Visual Communications	Interior Design (828-1713) Photography and Film (828-1695) Communication Arts and Design (828-1709)	MFA	Fall Spring Fall No Spring Admissions	July 1 (March 15 for financial assistance) December 1 (Nov. 1 for financial assistance) March 1		**Portfolio Interview recommended for Visual Communications
Economics Indicate specialization:General or Financial	Business (828-1741)	MA	All terms	8 weeks prior to beginning of term	GRE-General (GMAT acceptable for financial track)	
Education (See Administration and Supervision, Adult Education and Human Resource Development, Counselor Education, Curriculum and Instruction, Human Resource Development Certification, Library Media, Physical Education, Principalship Certification, Reading, Reading Specialist, Special Education, Teaching, and Urban Services)						
English Indicate specialization:Literature; Writing and Rhetoric	English (828-1329)	MA	Summer, Fall Spring	April 1 November 15	GRE-General	
Environmental Studies (See Interdisciplinary Studies)						
Fine Arts Indicate specialization in Ceramics, Fibers, Furniture Design, Glassworking, Jewelry/Metalworking, Painting, Printmaking, or Sculpture	Painting and Printmaking (828-1696) Other Fine Arts Specializations (828-1511)	MFA MFA	Fall Spring Fall Spring	February 15 October 1 (on available space basis) March 5 October 15		**Portfolio **Portfolio
Forensic Science (See Criminal Justice)						
Genetic Counseling (See also Human Genetics)	Human Genetics (828-9632)	MS	Fall preferred	February 1	GRE, *MCAT, or DAT	
Gerontology	Gerontology (828-1565)	MS	All terms		GRE or GMAT	
Health Administration Executive Program	Health Administration (828-0719)	MSHA	Summer	March 15	GRE or GMAT	
Health Related Sciences	Allied Health 828-3273	PhD	Fall	March 15	GRE or MAT	Contact Dean's Office for specific admission requirements
Health Services Administration	Health Administration (828-0719)	MHA	Fall	March 15	GRE or GMAT	
Health Services Organization and Research	Health Administration (828-5220)	PhD	Fall preferred		GRE	Contact the department for specific admission requirements
History	History (828-2211)	MA	Fall Spring Summer	August 1 January 4 May 1	GRE	
Human Genetics (See also Genetic Counseling)	Human Genetics (828-9632)	MS, PhD, Certificate	Fall preferred	February 15	GRE, *MCAT, or DAT	International applicants must score 600 or greater on the TOEFL

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Curriculum (In bold type) Specialization and Track(s) (If Applicable)	Department/ Phone (Area Code 804)	Degree	Terms of Entry	Deadline Dates	Test Requirements	Special Requirements
Human Resource Development Certification Program (Post-Baccalaureate)	Educational Studies (828-1332)	Certificate	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Immunology (See Microbiology/Immunology)						
Interdisciplinary Studies Indicate specialization:Arts (off-campus program),Environmental Studies, or other individual tracks as developed with coordinator	School of Graduate Studies (828-6916)	MIS	Fall Spring Summer	July 1 December 1 May 1	GRE	Essay required (request topics from the School of Graduate Studies, if not included with application)
Library Media (See Curriculum and Instruction) List Curriculum and Instruction as curriculum,Instructional Technology as specialization,and Library and Media as track	Teacher Education (828-1305)	MEd	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	Teacher Certification
Mass Communications Indicate specialization: Core Program or Adcenter (see Adcenter for requirements)	Mass Communications (828-2660)	MS	Fall Spring	July 1 November 15	GRE	
Mathematical Sciences Indicate specialization:Applied Mathematics, Mathematics, Operations Research,Statistics	Mathematical Sciences (828-1301)	MS	Fall Spring	July 1 November 15	GRE-General	Contact director of graduate studies for specific admission requirements
Medical Technology (See Clinical Laboratory Sciences)						
Microbiology/Immunology	Microbiology/ Immunology (828-9728)	MS, PhD, Certificate	Fall preferred		GRE or *MCAT	Combined GRE Verbal and Analytical Score of 1200 or greater;MCAT score of 26 or greater International applicants must score 600 or greater on the TOEFL
Molecular Biology and Genetics	MBG Program (828-9023)	PhD	Fall preferred	March 1	GRE or *MCAT	Contact program director for specific admission requirements
Music Indicate specialization:Composition; Music Education; Performance, including conducting	Music (828-1165)	MM	Fall Spring Summer	July 1 (March 15 for financial assistance) December 1 (Nov. 1 for financial assistance) May 1	See special requirements	**Audition or audition tapes and department exam or GRE Subject Music exam are required.(Request department exam from School of Graduate Studies, if not included with application.) **Composition also requires a portfolio.
Neuroscience	Neuroscience Program (828-7823)	PhD	Fall preferred		GRE	Contact Dr. L.Satin (828-7823)
Nurse Anesthesia	Nurse Anesthesia (828-9808)	MSNA	Fall only	January 12	GRE	Contact department for specific admission requirements
Nurse Anesthesia, Post-Graduate Certified Registered Nurse Anesthetist Program (Atrack in the Nurse Anesthesia program for those students who are already certified nurse anesthetists) List Nurse Anesthesia as curriculum, CRNA as specialization, and MS as degree	Nurse Anesthesia (828-9808)	MSNA	Fall only	January 12	GRE	Contact department for specific admission requirements

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Curriculum (In bold type) Specialization and Track(s) (If Applicable)	Department/ Phone (Area Code 804)	Degree	Terms of Entry	Deadline Dates	Test Requirements	Special Requirements
Nursing – MS (Entry-level program for qualified non-RN students who have earned a bachelor's degree in another discipline) Indicate specialization:Adult Health (Indicate Acute, Primary, or Immunocompetence as track);Child Health; Family Health (indicate Regular or Weekend as format); Nursing Administration (indicate Clinical Nurse Manager or Nurse Executive as track) Psychiatric Mental Health; Women's Health.List Accelerated Second Degree as track	Nursing (828-5171)	MS	Summer only	Applications received by February 1 given priority consideration	GRE	See <i>Graduate Bulletin</i> or contact the school for specific admission requirements
Nursing – MS Indicate specialization:Adult Health (Indicate Acute, Primary, or Immunocompetence as track);Child Health; Family Health (indicate Regular or Weekend as format); Nursing Administration (indicate Clinical Nurse Manager or Nurse Executive as track) Psychiatric Mental Health; Women's Health	Nursing (828-5171)	MS	Fall only	Applications received by February 1 given priority consideration	GRE	See <i>Graduate Bulletin</i> or contact the school for specific admission requirements
Nursing – Post-Master's Certificate (For master's prepared nurses who need courses for additional certification for advanced practice) Indicate specialization:Adult Health (Indicate Acute, Primary, or Immunocompetence);Child Health; Family Health;Nursing Administration;Psychiatric Mental Health; Women's Health	Nursing (828-5171)	Post-Master's Certificate	Fall only	Applications received by February 1 given priority consideration	GRE requested by not required	See <i>Graduate Bulletin</i> or contact the school for specific admission requirements
Nursing – PhD Indicate specialization:Biology of Health and Illness;Human Health and Illness;Nursing Systems	Nursing (828-5171)	PhD	Fall – even years only	April 1	GRE	See <i>Graduate Bulletin</i> or contact the school for specific admission requirements
Occupational Therapy – Professional (For the qualified student who has earned a bachelor's degree in a related field) List OT as curriculum, Professional as specialization,and MSOT as degree. Leave track blank.	Occupational Therapy (828-2219)	MSOT	Summer only	February 1	GRE	See <i>Graduate Bulletin</i> or contact department for specific admission requirements. Also, complete supplemental program information sheet (Request from School of Graduate Studies, if not included with application) Note:Entering class begins second Monday in June each year
Occupational Therapy – Post-Professional (An advanced master's program for registered occupational therapists) List OT as curriculum, Post-Professional as specialization,and MS as degree Indicate track: Pediatrics, Geriatrics	Occupational Therapy (828-2219)	MS	Fall preferred		GRE	Contact department for specific admission requirements Note:Intended start date is Fall 1998
Pathology	Pathology (828-5092)	PhD	Fall	March 1	GRE or *MCAT	See the Department of Pathology Web site
Patient Counseling Indicate specialization: Extern Program Residency Program Summer Intern Program	Patient Counseling (828-0540)	Certificate	Fall and Spring Fall preferred Summer only			See <i>Graduate Bulletin</i> for description of each program.Contact department for specific admission requirements.

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Curriculum (In bold type) Specialization and Track(s) (If Applicable)	Department/ Phone (Area Code 804)	Degree	Terms of Entry	Deadline Dates	Test Requirements	Special Requirements
Pharmacology	Pharmacology/ Toxicology (828-8400)	MS, PhD, Certificate	Fall preferred	April 15 (Submission of appli- cation by March 1 highly recommended)	GRE, *MCAT, or DAT	
Pharmaceutical Sciences Indicate specialization: Medicinal Chemistry, Pharmaceutics or Pharmacy Administration	Medicinal Chemistry (828-8483) Pharmacy and Pharmaceutics (828-8334)	MS, PhD	Fall preferred	June 1	GRE	International appli- cants must complete the TOEFL
Physical Education	Health and Physical Education (828-1948)	MS	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Physical Therapy – Entry-Level (A 3-year professional program based on 3 years of previous college work. Applicant may or may not have a bach- elor's degree) List PT as curriculum and Entry-Level as specialization. Leave track blank.	Physical Therapy (828-0234)	MS	Fall	February 1	GRE	See <i>Graduate Bulletin</i> or contact department for specific admission requirements. Also, complete supplemental program information sheet. (Request from the School of Graduate Studies, if not included with application)
Physical Therapy – Advanced (An advanced master's program for licensed physical therapists who have graduated from a PT program approved by the APTA) List PT as curriculum, Advanced as specialization, and indi- cate track: Musculoskeletal PT, Neurological PT	Physical Therapy (828-0234)	MS	Fall preferred Spring	August 1 December 1	GRE	See <i>Graduate Bulletin</i> or contact department for specific admissions requirements
Physical Therapy/Anatomy Doctoral Program	Anatomy/Physical Therapy (828-0234)	PhD	Fall	May 1	GRE	Contact Physical Therapy or Anatomy for specific admissions requirements
Physical Therapy/Physiology Doctoral Program	Physical Therapy (828-0234)	PhD	Fall	May 1	GRE	Contact Physical Therapy or Physiology for specific admissions requirements
Physics Indicate specialization: Instrumentation, Physics of Materials, Physics Research	Physics (828-1818)	MS	Fall Spring	August 1 December 1	GRE	
Physiology	Physiology (828-9756)	MS, PhD, Certificate	Fall preferred		GRE, *MCAT, or DAT	
Physiology/Physical Therapy Doctoral Program	Physical Therapy (828-0234)	PhD	Fall	May 1	GRE	BS or MS in Physical Therapy
Planning Information Systems	Urban Studies and Planning (828-2489)	Certificate	Fall Spring	June 1 December 1	GRE	
Pre-Medical Basic Health Science Indicate specialization: Anatomy, Biochemistry, Human Genetics, Microbiology and Immunology, Pharmacology and Toxicology, or Physiology	Anatomy (828-9512) Biochemistry (828-4117) Human Genetics (828-9632) Microbiology/ Immunology (828-2311) Pharmacology/ Toxicology (828-8902) Physiology (828-9557)	Certificate	Fall		GRE, *MCAT, or DAT	

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Curriculum (In bold type) Specialization and Track(s) (If Applicable)	Department/ Phone (Area Code 804)	Degree	Terms of Entry	Deadline Dates	Test Requirements	Special Requirements
Principalship	Educational Studies (828-1332)	Post- Master's Certificate	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Psychology Clinical Counseling General	Psychology (828-1193)	PhD	Fall only	January 15 January 15 February 15	GRE-General and Subject	Applicants should apply to the PhD pro- gram only. Psychology does not offer a termi- nal master's degree. Personal interview may be required for the clin- ical program.
Public Administration	Political Science and Public Administration (828-1046)	MPA	All terms	March 30 (for finan- cial aid consideration)	GRE, GMAT, LSAT, or MAT	
Public Health	Preventive Medicine and Community Health (828-9785)	MPH MD/MPH	Fall Spring Fall	April 1	GRE, *MCAT, DAT, or GMAT	Contact department for specific information
Public Management	Political Science and Public Administration (828-1046)	Certificate	All terms			
Public Policy and Administration	Center for Public Policy (828-6837)	PhD	Fall only	March 15	GRE, GMAT, LSAT, or MAT	
Reading	Teacher Education (828-1305)	MEd	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Reading Specialist	Teacher Education (828-1305)	Post- Master's Certificate	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Recreation, Parks and Tourism	Recreation, Parks and Tourism (828-1948)	MS	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Rehabilitation Counseling	Rehabilitation Counseling (828-1132)	MS	Fall Spring Summer	August 1 December 1 May 1	GRE or MAT	
Rehabilitation Counseling/ Professional Counseling	Rehabilitation Counseling 828-1132	Post- Master's Certificate	Fall Spring Summer	August 1 December 1 May 1	GRE or MAT	Personal interview required
Social Work	Social Work (828-1044)	PhD	Full-time – Fall only; Part-time – Fall and Spring	Applications received by March 1 given pri- ority for financial aid	GRE	Written exercise required
Social Work – Advanced Standing Indicate specialization: Clinical Social Work Practice Concentration; Social Work Planning and Administrative Practice Concentration	Social Work (828-0703)	MSW	Summer only – Richmond campus	December 1		If applying for off-cam- pus program for con- centration year, indi- cate location in item 6 on application
Social Work – Regular Standing (A 2-year program for full-time students and a 4-year program for part-time stu- dents); Indicate specialization: Clinical Social Work Practice Concentration; Social Work Planning and Administrative Practice Concentration	Social Work (828-0703)	MSW	Full-time – Fall Part-time – Fall	February 1 February 1		If applying for off-cam- pus program, indicate location in item 6 on application
Sociology	Sociology (828-1026)	MS	Fall Spring	July 1 November 15	GRE	

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Curriculum (In bold type) Specialization and Track(s) (If Applicable)	Department/ Phone (Area Code 804)	Degree	Terms of Entry	Deadline Dates	Test Requirements	Special Requirements
Special Education Indicate specialization:Early Childhood Special Education, Emotional Disturbance, Learning Disabilities, Mental Retardation, Severe Disabilities	Teacher Education (828-1305)	MEd	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	
Supervisory Endorsement	Educational Studies (828-1332)	Endorsement				With the appropriate course work,a student may receive supervisory certification from the Commonwealth of Virginia
Taxation Indicate specialization:Academic or Professional	Business (828-1741)	MTax	All terms	8 weeks prior to beginning of term	GMAT (waived for professional track)	
Teaching - MT (A 5-year program combining undergraduate and graduate study) Indicate specialization: Early Education NK-4, Middle Education 4-8, Secondary Education 8-12, or Special Education	Teacher Education (828-1305)	MT	Fall Spring Summer	May 15 November 15 March 15	GRE or MAT	Contact Division of Teacher Education for further information
Teaching - Certificate Indicate specialization:Secondary Education (Available only in current shortage areas)	Teacher Education (828-1305)	Certificate	Fall Spring Summer	March 1 October 15 March 1	GRE or MAT	Contact Division of Teacher Education for further information
Theatre Indicate specialization:Acting, Costume Design,Directing, Scene Design, Theatre Education	Theatre (828-1514)	MFA	Fall only for Acting Fall, Spring, and Summer for Directing, Theatre Education, Costume and Science Design	May 1 for Acting June 1 for Directing, Scene and Costume Design		*Audition or portfolio and personal interview required.Contact department for additional admission requirements. There are a limited number of acting and directing students admitted each year. Early applicants will be given first priority.
Toxicology (See Pharmacology/Toxicology)						
Urban and Regional Planning Indicate specialization:Economic Development,Environmental Planning, Housing and Com Scene Design, Plannind Urban Revitalization	Urban Studies and Planning 828-2489	MURP	Fall Spring	April 15 November 15	GRE or LSAT	
Urban Revitalization	Urban Studies and Planning (828-2489)	Certificate	Fall Spring	June 1 December 1		
Urban Services Indicate specialization:Adult Education and Human Resource Development;Educational Leadership; Instructional Leadership;Urban Services Leadership;or Research and Evaluation	Education (828-6530)	PhD	Summer, Fall	March 15	GRE	Personal interview and writing sample required.Also, supplemental work experience and educational goals statements (Request from the School of Graduate Studies, if not included with application),a professional vita (résumé),and current supervisor contact information.

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