West Virginia University is a land-grant, research institution founded in 1867. WVU is a student-centered learning community meeting the changing needs of West Virginia and the nation through teaching, research, service, and technology.

West Virginia University is an Equal Opportunity/Affirmative Action Institution. The University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color, or national origin in the administration of any of its educational programs or activities, or with respect to admission or employment. Further, faculty, staff, students, and applicants are protected from retaliation for filing complaints or assisting in an investigation under the University’s Equal Opportunity/Affirmative Action Plan. Inquiries regarding the University’s nondiscrimination policy may be directed to the director, Affirmative Action/Equal Employment Programs, West Virginia University.

—Office of the President
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Correspondence

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P.O. Box 6411
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[www.wvu.edu/~studlife](http://www.wvu.edu/~studlife)
Part 1 Governance and Organization of WVU*

University System of West Virginia Board of Trustees

The Board of Trustees consists of seventeen persons, including a representative for staff, faculty, and students of the University System. Twelve trustees are appointed by the governor to overlapping terms of six years. Other members include the chancellor and the state superintendent of schools who are not entitled to vote. The campus representatives are elected by their respective constituents. The classified representative term is two years and they are eligible to succeed themselves.

The Advisory Council of Classified Employees to the University System of West Virginia is created to provide classified employees of the University System a means of conveying their concerns and recommendations on employee-employer relations to the Board of Trustees.

The University System includes Marshall University, Marshall University Graduate College, Potomac State College of West Virginia University, Charleston Division of the West Virginia University Robert C. Byrd Health Sciences Center, West Virginia Network for Educational Telecomputing, West Virginia School of Osteopathic Medicine, West Virginia University, West Virginia University at Parkersburg, and West Virginia University Institute of Technology. Authority of and for the Advisory Council of Classified Employees (ACCE) is granted by the WV Code 18B-6-4.

WVU Board of Advisors

The Board of Advisors reviews and provides advice upon all University proposals involving the University’s “mission, academic programs, budget, capital facilities, and such other matters as requested by the president of the institution or the Board of Trustees or otherwise assigned by law.” The board also may review “all proposals regarding institution-wide personnel policies.”

The board ordinarily has 11 members, including seven lay citizens of West Virginia, a University administrative officer appointed by the president, a full-time faculty member with at least the rank of instructor elected by the University faculty, a student in good academic standing chosen by the student body, and a member of the classified staff elected by the classified staff. When serving as the search and screening committee for a new University president, the Board of Advisors is expanded to seventeen members.

Faculty Senate

The Faculty Senate is an elected, representative body chosen by the members of the Faculty Assembly. The Senate exercises the legislative power of the faculty and has the authority to recommend general policies to the president and the Board of Trustees with regard to objectives and academic standards for the University. The Senate (1) considers issues related to the organizational structure of the University with reference to academic matters; (2) approves undergraduate programs and all courses, the academic calendar, and class scheduling; (3) examines elements of student life; (4) recommends general policies for convocations, lectures, entertainment, publications, radio/television, libraries, physical plant, and equipment; (5) recommends honorary degree candidates; and (6) regulates educational policies, programs, and functions under its purview. Decisions are subject to review by the Faculty Assembly and approval by the president and Board of Trustees.

Senators are elected by members of the University faculty. For continuity, approximately one-third of the Senate is elected each year. Senators normally serve for a term of three years. They are eligible to serve two consecutive full terms but then are ineligible for reelection until one year has elapsed.

*Correct as of March 2000.
Faculty Assembly
The University Faculty Assembly includes the University president as presiding officer, vice presidents, academic deans, associate deans, professors, associate professors, assistant professors, and instructors holding appointments on a full-time basis. The assembly meets once a year in September.

Student Administration
West Virginia University also has a tradition of strong student administration that touches all aspects of student life and represents student opinion to the administration and faculty. Student administration has three main units: the executive branch, the 11-member Board of Governors, and the Judicial Board. Students also serve on University-wide committees and on the Mountainlair Advisory Council.

Staff Council
The Staff Council is an advisory council to the president of the University and a means for all classified employees to express their opinions about job conditions, fringe benefits, employee-employer relations, or other areas that affect their jobs. The council is composed of 24 elected members. Council meetings are on the third Wednesday of each month. All meetings are open to the public.

Local 814
Local 814 of the Laborers' International Union of North America, AFL-CIO, represents employees throughout the University and its affiliates. These employees are in craft/maintenance, service, clerical, and technical job categories, with a wide variety of job classifications. Laborers’ Local 814 is the only recognized union at the University by agreement through the Memorandum of Accord.
University System of West Virginia
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WVU Board of Advisors
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Vaughn L. Kiger, Vice Chair
Dennis M. Bone, Secretary
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John W. Fisher II, Administration Representative
Suzanne W. Gross, Faculty Representative
Douglas J. Skaff, Student Representative

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Fred R. Butcher, Senior Associate Vice President for Health Sciences
Lawrence S. Cote, Associate Provost for Extension and Public Service
Carolyn A. Curry, Executive Officer for Communications
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Russell K. Dean, Associate Provost for Academic Affairs
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Suzanne W. Gross, Chair, West Virginia University Faculty Senate
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Karen R. LaRoe, Regional Vice President and President of WVU Institute of Technology
Michael J. Lewis, Associate Vice President for Health Sciences, Charleston Division
Bruce McClymonds, President, West Virginia University Hospitals Inc.
Jennifer A. McIntosh, Executive Officer for Social Justice
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Terry Nebel, President, West Virginia University Staff Council
M. Duane Nellis, Deans’ Representative
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John D. Weete, Associate Provost for Research
Kenneth R. Orgill, Associate Provost for Information Technology
F. Duke Perry, President, West Virginia University Foundation Inc.
Jon A. Reed, Executive Officer and General Counsel
Mary Rittling, Regional Vice President and President of WVU Potomac State College
David C. Satterfield, Chief of Staff and Vice President for Institutional Advancement
David Workman, President, West Virginia University Student Administration
C. B. Wilson, Associate Provost for Academic Personnel

Assistant Vice Presidents
Ann Chester, Health Sciences
Amir Mohammadi, Student Affairs
Joseph C. Fisher, Facilities and Services
Wesley Williams Jr., Enrollment Management

Deans
College of Agriculture and Forestry, and Consumer Sciences, Cameron Hackney
Eberly College of Arts and Sciences, M. Duane Nellis
College of Business and Economics, Lee D. Dahringer
College of Creative Arts, Bernie Schultz
School of Dentistry, James J. Koelbl
College of Engineering and Mineral Resources, Allen Cogley
College of Human Resources and Education, William Deaton
Perley Isaac Reed School of Journalism, Christine Martin
College of Law, John Fisher II
University Libraries, Frances O'Brien
School of Medicine, Robert D'Alessandri
School of Nursing, E. Jane Martin
School of Social Work, David Williams
School of Pharmacy, George R. Srapto
School of Physical Education, Dana Brooks
Student Affairs, Herman L. Moses

Directors
AAO/EEO Program, Jennifer McIntosh
Academic Computing, Donald McLaughlin
ADA Compliance, Barbara T. Judy
Administrative Information Systems, Robert Paulson
Administrative Services, Jeri Ireland
Admissions and Records, Cheng Khoo
Aerospace Studies, Col. Eric Childress
Athletics, Edward M. Pastilong
Blanchette Rockefeller Institute of Neuroscience, Fred Butcher (Interim)
Budget Planning, Narvel G. Weese Jr.
Bureau of Business and Economic Research, Tom S. Witt
Career Services Center, Robert L. Kent
Carruth Center for Counseling and Psychological Services, Catherine Yura
Center for Aging/Education Unit, Hana Hermanova
Center for Black Culture and Research, Katherine Bankole
Center for Women's Studies, (Interim) Barbara Howe
Concurrent Engineering Research Center (CERC), Ramana Reddy
Environmental Health and Safety, Roger L. Pugh
Extended Learning, Sue Day-Perroots
Financial Aid Office, Brenda Thompson
Graduate Education, Robert Stitzel
Health Sciences, Robert Biddington
Housing and Residence Life, Carole Henry
Human Resources, Myrtho Blanchard
Humanities and Social Sciences, Esther Gottlieb
Information Technology and Customer Service, Lewis McDaniel
Institute of the History of Technology and Industrial Archaeology, Emory L. Kemp
Institute of Occupational Environmental Health, Alan M. Ducatman
Institute for Public Affairs, Robert Dilger
Institutional Analysis and Planning, Kathleen K. Bissonnette
Internal Auditing, William R. Quigley
International Programs, Daniel Weiner
Mary Babb Randolph Cancer Center, George Srapto (Interim)
Military Science, LTC Robert Leonhard
Mountainlair, Michael Ellington
National Research Center for Coal and Energy, Richard A. Bajura
Telecommunications and Network Services, Tim Williams
News and Information Services, Rebecca Lofstead
Physical Plant, Lee D. Comer
Printing Services, Richard Beto (Interim)
Procurement Services, Ed Ames
Publications Services, Angela Caudill
Public Safety and Transportation Services, Bobby Roberts
Television Productions, John Duwall
Regional Research Institute,       
Scott Loveridge                    
Research Facilities Office, James R. Shaub  
Sponsored Programs, William W. Reeves  
Student Activities and Educational   
Programming, David H. Taylor        
Telecommunications and IT Business   
Services, Timothy Williams          
Undergraduate Academic Services Center, Nicholas Evans  
University Affiliated Center for Developmental Disabilities, Ashok Dey  
University Honors Program and Governor’s School for Science and Math, William E. Collins  
West Virginia Network, Henry Blosser

**Chaired and Distinguished Professors**

Daniel Banks, M.D., N. LeRoy Lapp  
Professor of Pulmonary and Critical Care Medicine

Shawn Chillag, M.D., Warren Point Chair of Internal Medicine (located at Charleston)

Nigel N. Clark, George B. Berry Chair of Engineering

Franklin D. Cleckley, Arthur B. Hodges Professor of Law

Patrick Conner, Eberly College of Arts and Sciences Centennial Professor of English

Bernard R. Cooper, C. W. Benedum Professor of Physics

Julio Davalos, C. W. Benedum Professor for Outstanding Teaching

Anthony DiBartolomeo, Hazel Ruby McQuain Chair of Rheumatology and Arthritic Diseases

Robert DiClerico, Eberly Professor for Outstanding Teaching

Charles R. DiSalvo, Woodrow A. Potesta Professor of Law

Georg Eifert, Eberly Professor of Clinical Psychology

Gabor B. Fodor, Centennial Professor of Chemistry, Emeritus

Mathis Frick, Orlando Gabriele Chair of Radiology

Frank Gagliano, C. W. Benedum Professor of Theatre

Mark Gibson, MD,OB/GYN, Margaret Sanger Ch. of Fam. Planning and Reproductive Physiology

Rakesh K. Gupta, GE Plastics Professor of Materials Engineering

Ludwig Gutmann, Hazel Ruby McQuain Chair of Rheumatology and Arthritic Diseases

Robert Hoeldtke, Charles E. Compton Chair of Nutrition

Ronald L. Klein, Power Professor of Electrical and Computer Engineering

Kennon Lattal, Eberly College of Arts and Sciences Centennial Professor of Psychology

Ronald Lewis, Eberly Professor of American History

Robert Moss Markley, Jackson Chair of English

Robert S. Maust, Lois F. Tanner Professor of Public Accounting

Brian McHale, Eberly Professor of American Literature

Thomas Meloy, C. W. Benedum Professor of Mineral Processing

William H. Miernyk, C. W. Benedum Professor of Economics, Emeritus

Syd S. Peng, Charles T. Holland Professor of Mining Engineering

Hayne W. Reese, Centennial Professor of Psychology

Patricia Rice, Eberly Professor for Outstanding Teaching

Carl Rotter, Eberly Professor for Outstanding Teaching

Mohindar Seehra, Eberly Professor of Physics (Materials Science)

Kenneth Showalter, C. Eugene Bennett Chair of Chemistry

Penny J. White, William J. Maier, Jr. Visiting Chair of Law

John Zaniekiewski, Asphalt Technology Professor in the Department of Civil and Environmental Engineering

**Governance and Organization**
WVU Degree Programs

Academic Affairs
Multidisciplinary Studies ........................................... B.A.

College of Agriculture, Forestry, and Consumer Sciences
Agricultural and Environmental Education .... B.S.Agr.
Agricultural and Resource Economics ............................. M.S.
Agricultural Education ......................................................... M.S.
Agricultural Sciences ......................................................... Ph.D.
Agriculture ........................................................................ M.Agr.
Animal and Veterinary Sciences .................... B.S., B.S.Agr. .... M.S.
Family and Consumer Sciences ............. B.S. F.&C.S. ........ M.S. F.&C.S.
Forest Resources Management .............................. B.S.F.
Forest Resource Science ........................................ Ph.D.
Forestry ................................................................. M.S.F.
Genetics and Developmental Biology ................. M.S. ........ Ph.D.
Landscape Architecture ........................................ B.S.L.A.
Natural Resource Economics ...................................... Ph.D.
Plant and Soil Sciences ........................................ B.S./B.S.Agr. .... M.S.
Recreation, Parks, and Tourism Resources .. B.S.R ............... M.S.
Reproductive Physiology ........................................ M.S. .......... Ph.D.
Resource Management ........................................ B.S., B.S.Agr.
Wildlife and Fisheries Resources ............... B.S. ................... M.S.
Wood Industries .................................................. B.S.F.

Eberly College of Arts and Sciences
Biology ........................................................... B.A., B.S. ........ M.S. .... Ph.D.
Chemistry ....................................................... B.A., B.S. ........ M.S. .... Ph.D.
Communication Studies ........................................ B.A. ............ M.A.
Computer Science ............................................. B.S.
Economics .......................................................... B.A.
English ............................................................. B.A. .......... M.A. .... Ph.D.
Foreign Languages ................................................. B.A. ........ M.A.
Forensic Identification ........................................ B.S.F.I.
Geography ......................................................... B.A. ............. M.A.
Geology .............................................................. B.A., B.S. .... M.S. .... Ph.D.
History ............................................................... B.A. .......... M.A. .... Ph.D.
Interdepartmental Studies ................................ B.A., B.S.
Legal Studies .......................................................... M.L.S.
Mathematics ...................................................... B.A. .......... M.S. .... Ph.D.
Philosophy .......................................................... B.A.
Physics ............................................................... B.A., B.S. .... M.S. .... Ph.D.
Political Science ...................................................... B.A. .... M.A. .... Ph.D.
Psychology .......................................................... B.A. .... M.A. .... Ph.D.
Public Administration .................................................. M.P.A.
Sociology and Anthropology ............................. B.A. ............. M.A.
Statistics ............................................................. B.A. .......... M.S.

School of Social Work and Public Administration
Public Administration .................................................. M.P.A.
Social Work ......................................................... B.S.W. .......... M.S.W.

Regents Bachelor of Arts Degree
Regents Bachelor of Arts ................................. B.A.
College of Business and Economics

Accounting ..................................................... B.S.B.Ad.
Business Administration .......................................................... M.B.A.
Business Management ..................................................... B.S.B.Ad.
Economics ..................................................... B.S. ............... M.A. .......... Ph.D.
Finance .......................................................... B.S.B.Ad.
Industrial Relations .......................................................... M.S.
Marketing .......................................................... B.S.B.Ad.
Professional Accountancy ..................................................... M.P.A.

College of Creative Arts

Art .............................................................................................. M.A.
Music .............................................................. B.M. ............... M.M. .......... D.M.A., Ph.D.
Theatre .......................................................... B.F.A. ............... M.F.A.
Visual Art .......................................................... B.F.A. ............... M.F.A.
Visual and Performing Arts ..................................................... B.A.

School of Dentistry

Dental Hygiene ..................................................... B.S. ............... M.S.
Dental Specialists .......................................................... M.S.
Dentistry .......................................................... .............................................. D.D.S.

College of Engineering and Mineral Resources

Aerospace Engineering ..................................................... B.S.A.E. ............... M.S.A.E.
Chemical Engineering ..................................................... B.S.Ch.E. ............... M.S.Ch.E.
Civil Engineering ..................................................... B.S.C.E. ............... M.S.C.E.
Computer Engineering ..................................................... B.S.Cp.E.
Computer Science .......................................................... M.S.C.S. .......... D.M.A.
Electrical Engineering ..................................................... B.S.E.E. ............... M.S.E.E.
Engineering ..................................................... M.S.E. .......... Ph.D.
Forensic Identification (Biometric Systems) ................................ B.S.F.I.
Industrial Engineering ..................................................... B.S.I.E. ............... M.S.I.E.
Mechanical Engineering ..................................................... B.S.M.E. ............... M.S.M.E.
Mining Engineering ..................................................... B.S.Min.E. ............... M.S.Min.E.
Occupational Hygiene and Occupational Safety .................................. M.S.
Petroleum and Natural Gas Engineering ................................ B.S.PNGE. ............... M.S.PNGE.
Safety Management and Environmental Engineering .................................. M.S.
Software Engineering .......................................................... M.S.S.E.

College of Human Resources and Education

Counseling .......................................................... M.A.
Counseling Psychology .......................................................... Ph.D.
Education .......................................................... Ed.D.
Education Leadership ..................................................... M.A.
Educational Psychology ..................................................... M.A.
Elementary Education ..................................................... M.A.
Reading .......................................................... M.A.
Rehabilitation Counseling ..................................................... M.S.
Secondary Education ..................................................... M.A.
Special Education ..................................................... M.A.
Speech Pathology and Audiology ........................................ B.S. ............... M.S.
Technology Education .......................................................... M.A.

Perley Isaac Reed School of Journalism

Journalism .......................................................... B.S.J. ............... M.S.J.
College of Law
Law ......................................................................................................................... J.D.

School of Medicine
Anatomy .............................................................................................................. M.S. ...... Ph.D.
Applied Exercise Studies ................................................................................. Ph.D.
Biochemistry (Medical) ................................................................................... Ph.D.
Community Health Promotion ........................................................................ M.S.
Exercise Physiology ......................................................................................... M.S.
Medical Technology ......................................................................................... M.S.
Medicine .............................................................................................................. M.D.
Microbiology and Immunology .................................................................... M.S. ...... Ph.D.
Occupational Therapy ..................................................................................... M.O.T.
Pharmacology and Toxicology ..................................................................... Ph.D.
Physical Therapy .............................................................................................. M.P.T.
Physiology (Medical) ...................................................................................... Ph.D.
Public Health ..................................................................................................... M.P.H.

School of Nursing
Nursing .............................................................................................................. B.S.N. ...... M.S.N., ...... D.S.N.

School of Pharmacy
Pharmaceutical Sciences ................................................................................... Ph.D.
Pharmacy ............................................................................................................ Pharm. D.

School of Physical Education
Physical Education ............................................................................................. B.S.P.Ed. ...... M.S. ...... Ed.D.
Sport Studies ...................................................................................................... B.S.P.Ed.

Part 2 Graduate Education at West Virginia University

The origin of graduate education can be traced to the medieval universities of Europe; the goal for graduate study has remained unchanged over the intervening centuries. A student undertakes such study in order to gain a deeper knowledge in a particular academic discipline and to become able to demonstrate to the faculty and practitioners in the field the attained mastery of knowledge. Consequently, graduate study cannot be defined primarily in terms of semester hours of course work beyond the baccalaureate, even though minimum course work requirements are commonly specified for graduate degrees. Minimum requirements set the lower limit for an integrated plan of study.

Graduate students are expected to become participating members of the University community and are encouraged to attend the lectures presented by visiting scholars, to listen to academic discussions of their faculty, to serve on departmental committees, and to study with their fellow graduate students. The purpose of residency requirements is to promote such participation in the academic affairs of the University.

Seminars
Graduate students enrolled in a graduate program within West Virginia University are expected to participate in a seminar course throughout their graduate careers. Depending on the objectives set by a particular graduate program, seminars may:
• Provide an opportunity for the student to be exposed to a variety of topics.
• Give the student insight into the methods by which to communicate the significance of original research.
• Allow the student to hear outside speakers.
• Engender discussion with faculty concerning research and the development of research methodology.
Minimum Admission Standards
At WVU, the minimum standards for admission to graduate study are set by the University Graduate Council. Beyond this point, however, faculty members in a given graduate program have complete control over who is to be admitted to undertake graduate study under their supervision; and ultimately, it is they who certify which students have demonstrated sufficient mastery of the discipline to qualify for a graduate degree. While a student may be admitted for the purpose of enrolling in advanced course work, only the program faculty may grant permission for the pursuit of a degree. Likewise, a student will not be recommended for a degree until the graduate faculty of a program has indicated in writing that the student has gained the desired knowledge.

Policies
The graduate catalog sets forth the policies and rules for graduate education. It is essential that all students beginning study at the graduate level become familiar with regulations for graduate study in general as well as with the requirements of their own programs—both of which are detailed in this catalog. Each student should obtain the latest information by examining the on-line version of the current graduate catalog when beginning graduate study www.ia.wvu.edu:8888.

Academic Common Market
West Virginia provides its residents the opportunity, through the Academic Common Market (ACM) and through contract programs, to pursue numerous academic programs not available within the state. Both programs permit West Virginians to enter out-of-state institutions at reduced tuition rates. Contract programs have been established for study in optometry, podiatry, and veterinary medicine. ACM programs are restricted to West Virginia residents who have been accepted for admission to one of the specific programs at designated out-of-state institutions. Through reciprocal agreement, WVU allows residents of states within the ACM to enroll in graduate and undergraduate programs on a resident tuition basis.

Further information may be obtained through the Associate Provost for Academic Programs, Stewart Hall, West Virginia University, P.O. Box 6203, Morgantown, WV 26506-6203; or by calling (304) 293-2661. Application must be made through the higher education authority of the state of residence. For West Virginia residents, this authority is the University System of West Virginia Board of Trustees, 950 Kanawha Boulevard East, Charleston, WV 25301.

Organization of Graduate Education
West Virginia University, which is both the comprehensive and the land-grant university in the West Virginia system of higher education, offers graduate work leading to 77 master’s degrees and 33 doctoral degrees. The graduate programs are administered by 14 schools and colleges of the University and by some inter-unit committees.

Office of Graduate Education
The director of the Office of Graduate Education oversees the policies governing graduate education, monitors the quality of graduate programs, and sets goals for enhancing graduate education at West Virginia University. The director of graduate education reports to the associate provost for academic programs. The associate provost for academic programs derives her authority from the provost and vice president for academic affairs and works closely with the vice president for Health Sciences. The web site for the Office of Graduate Education at WVU is: www.wvu.edu/~graduate.
Graduate Council

The University Graduate Council consists of twelve elected faculty representatives from the schools and colleges offering graduate programs and five ex officio nonvoting members representing the provost, the director of graduate education, the vice president for health sciences, the Senate Executive Committee, and the Graduate and Professional Student Association. The council derives its authority from the faculty and from the provost and vice president for academic affairs and research. This body formulates, reviews, and recommends University-wide graduate education policies. The council reviews proposals for new graduate programs, evaluates major revisions in graduate curricula, coordinates periodic program reviews, establishes the University criteria for graduate faculty membership, and considers such other matters affecting graduate education as are brought to the council by an administrative officer of the University, a graduate faculty member, or a graduate student. The duties of the University Graduate Council include responsibility for graduate programs both on and off campus.

Schools and Colleges

Schools and colleges manage most of the day-to-day operation of graduate education. They determine the level of participation by individual faculty members, specify requirements for programs under their jurisdiction, and certify students for graduation.

Graduate Faculty

Members of the graduate faculty continue to play the most important role in graduate education. They are responsible for program content, they serve on graduate student committees, and they assure the quality of preparation of the University’s graduates.

Regular Membership

- Regular members may chair students’ committees or direct master’s and doctoral research, theses, and dissertations.
- Regular members must hold appointments in tenure-track positions.
- Regular members must hold either a terminal degree or have demonstrated equivalent scholarly or creative achievement as defined by their school or college. The definition of equivalent credentials must include, as a minimum, the attainment of the rank of associate professor.
- Regular members must present evidence of continuing scholarly research or creative activity.

Schools and colleges set and publish quantitative and qualitative criteria regarding scholarly activity. These criteria are to be applied for the appointment as well as continuation of graduate faculty membership. These initial criteria and any subsequent amendments or changes are subject to approval of the University Graduate Council and usually include many of the following: publication in major peer-reviewed journals, publication of books and book chapters, invited and/or competitively selected presentations of scholarly work at national and international meetings, and/or presentations and performance of artistic work at professionally recognized events.

Associate Membership

Associate members may perform the same function as regular members with the exception of chairing students’ committees or directing master’s theses and doctoral dissertations (or equivalent). It is the prerogative of the schools and colleges to establish and publish their own criteria for associate membership. These initial criteria and any subsequent amendments or changes are subject to approval of the University Graduate Council and should include one or more of the following requirements: research activity, scholarly publications, artistic performances or presentations, teaching experience particularly on a graduate level, and service on previous graduate committees.
Exceptions

The following individuals also must meet the same criteria (regular or associate) for review, approval, and continuation as do tenure-track graduate faculty.

- Visiting professors may be appointed as members of the graduate faculty for the term of their appointments but cannot chair committees.
- Faculty holding non-tenure-track appointments may be considered for graduate faculty membership.
- Emeritus faculty members may remain on the graduate faculty, subject to school or college review.
- Off-campus professionals willing to participate in graduate education may be acceptable as graduate faculty but may not chair student committees (exceptions may be approved by the director of graduate education).
- Individuals holding faculty appointments in institutions participating in cooperative doctoral programs may be considered graduate faculty, subject to school or college review.

Degree Candidates

Normally, no candidate for a degree at WVU may be a regular or associate member of the graduate faculty. Individuals seeking exceptions to this policy must submit a petition to the director of graduate education.

Evaluation of Graduate Faculty

Individuals interested in appointment to the graduate faculty must request their evaluation for initial membership. Associate members interested in reclassification as regular members must request evaluation. Faculty seeking graduate faculty status must first be evaluated by the school or college in which they hold their primary faculty appointment. If a faculty member holds a secondary appointment in another school or college or wishes to have graduate faculty status in a second school or college, this is permissible; however, faculty may not be designated a regular graduate faculty member in any school or college if such a status is not held in the primary school or college.

Time Schedule

Schools and colleges should establish an appropriate time schedule for evaluating faculty for initial appointment to the graduate faculty and for upgrading graduate faculty status. All graduate faculty are reviewed annually. The annual review is intended to assist graduate faculty members in gauging their continued progress in scholarship, research, or creative activity. The review process for graduate faculty membership should coincide with the annual review process of all faculty. Schools and colleges determine the appropriate mechanisms by which faculty are reviewed (School or College Graduate Council, Promotion and Tenure Committee, etc.). The results are placed in the individual’s personnel file.

Continuance

Once every three years, the graduate faculty review of individuals must be accompanied by a decision to continue or discontinue their current level of membership. A faculty member whose graduate faculty membership is discontinued or changed from regular to associate status will be permitted to complete current responsibilities but may only assume additional responsibilities which are consistent with the new status.

Appeals

Appeals regarding graduate faculty membership classification shall be handled through grievance procedures identified in Policy Bulletin 36. Exception to any of the above must be approved by the University Graduate Council.
Faculty Pursuing Advanced Degrees

No faculty member holding instructor or professorial rank in a program unit (department, division, interdisciplinary committee, etc.) may be admitted to a graduate degree program offered through that unit. Only those people with a rank of teaching fellow, lecturer, etc. can simultaneously pursue a degree in their own unit. Faculty holding instructor or professorial rank may be admitted to a graduate degree program in another program unit.

Application

Graduate study at WVU can be compared to a contractual arrangement between the student and the graduate faculty of the University. The student’s rights, privileges, obligations, and responsibilities are contained in the graduate catalog, the plan of study, and, if research is one of the degree program requirements, the prospectus. Although not contracts in the formal legal sense, they are agreements between the University and a student for the accomplishment of planned educational goals.

The WVU graduate catalog, in effect when a student begins work toward an advanced degree constitutes the agreement between the student and West Virginia University. If there are major changes in the catalog during the course of a student’s studies, a student, with the approval of his or her advisor, may agree to meet the conditions of the graduate catalog of a later year. An agreement to change to a later catalog is an agreement to meet all the conditions of the later edition. Students must abide by catalog changes if the changes were promulgated by the Board of Trustees or local, state, or federal law.

GRE/GMAT

Many programs at WVU require graduate record examination (GRE or GMAT) scores from all applicants, but in no program is an examination score the sole criterion for admission. Some programs require both the general and the appropriate advanced tests before considering an applicant for admission. Other programs require different tests, such as the Miller Analogies. Specific admission requirements are found in the program sections of the on-line catalog (www.ia.wvu.edu.8888). Students should take the tests required for their prospective graduate majors before enrollment in graduate studies. If GRE or GMAT tests are required, the applicant should request the Educational Testing Service to forward scores to the WVU Office of Admissions and Records. (The code identifying WVU to the GRE is 5904.) In addition, students are encouraged to send a machine-reproduced copy of GRE or GMAT scores, if available, along with the initial application to the Office of Admissions and Records in order to facilitate the WVU evaluation process.

Applications to take the GRE or GMAT must be mailed to the Educational Testing Service, Princeton, NJ 08540. Information about the Miller Analogies Test may be obtained from the psychology department or the counseling service of the applicant’s undergraduate institution. At WVU, call the University Testing Center at (304) 293-0669.

Initial Inquiry

Prospective graduate students are urged to apply for admission as early as possible. The first inquiry from a person interested in a degree program should request information from the department, division, school, or college offering the program. The reply to such an inquiry will include instructions for applying to the particular program. Most of this information can be found on the web at www.arc.wvu.edu/admissions/grad.html.
Forms/Fees
In all cases, application for admission to graduate study must be made on standard forms provided by the Office of Admissions and Records. Also see www.arc.wvu.edu/admissions/grad.html. The completed form may be returned to the Office of Admissions and Records and must be accompanied by payment of a nonrefundable special service fee.

Transcripts
Applicants must at the same time arrange for an official transcript to be sent directly to the Office of Admissions and Records by the registrar or records office of the previous colleges and universities attended by the applicant. Transcripts should be requested from all institutions attended in the course of undergraduate or graduate study. Transcripts received by the Office of Admissions and Records become the property of WVU. No one is admitted to graduate study who does not hold a baccalaureate degree from an accredited school/college.

Admission
If an applicant meets the minimum admission requirements of WVU, a copy of the application is forwarded to the faculty of the program of interest by the Office of Admissions and Records. Any graduate degree program is permitted to set admission requirements beyond the minimum admission standards of the University. No one can pursue an advanced degree at WVU unless admitted to the appropriate degree program. A student who wishes to take courses after completing a degree must submit a new application and pay the nonrefundable service fee. Any applicant who fails to enroll within a year after acceptance must reapply in the regular manner for consideration for a subsequent year.

Admission Denial
If an application for admission into a graduate program is denied, the applicant may request the reasons for refusal of admission by writing to the program coordinator. It should be noted that meeting the minimum requirements for admission into a graduate program does not ensure admission. Many programs, due to resource limitations, restrict the number of admissions by selecting the top candidates among the qualified applicants. An applicant can appeal to the program for reconsideration if he/she can document factual errors in processing the application or if the decision was deemed arbitrary and capricious or discriminatory in nature.

If the matter is not resolved satisfactorily within 30 calendar days of the receipt of the appeal by the program, the applicant may appeal to the dean of the college or school. The decision of the dean, as the provost’s designee, shall be rendered within 20 calendar days of the receipt of the appeal and is final.

Non-degree Applicants
Students not wishing to pursue an advanced degree may apply for admission as non-degree graduate students. Applicants must complete the standard application form, pay the nonrefundable special service fee, state the area of intended study, and present evidence of a baccalaureate degree.

Reapplication
When students graduate or complete the program for which they applied, they must reapply and be readmitted before taking further course work at WVU. This policy assures that the University is informed of students’ objectives and assigns them an appropriate advisor. Students are assessed a service fee for each new application.
Readmission

Degree students who have been inactive two or more years must reapply for admission by completing the graduate application process.

Continuance

Master's degree students are permitted to continue in a program for a maximum of eight years under their original application. Students who have not been active students for two years must reapply and be readmitted. The application fee is assessed.

Concurrent or Additional Master's Degree

University policy permits students to obtain more than one master's degree. In these cases, a separate application is required for each program. Each application must be accompanied by payment of a nonrefundable special service fee.

A student desiring to obtain more than one master's degree must successfully complete sufficient additional credit hours to constitute 75 percent of the credit hours required by the additional master's degree program. An individual graduate unit may require a higher percentage of credit to be earned under its direction.

International Students

West Virginia University is authorized under federal law to enroll non-immigrant foreign nationals as students. International students wishing to enroll for graduate work at WVU must comply with the stated academic requirements for admission and with certain additional academic and nonacademic requirements.

Letter of Inquiry

International applicants should forward a letter of inquiry one year before they intend to begin study in the United States. The University receives a large number of applications from international students. For this reason and because of the time required for the student to make visa and financial arrangements, April 1 has been established as a deadline after which applications cannot be guaranteed consideration for fall admission. International students applying for admission to West Virginia University must submit the following:

- A completed international student admission application.
- The mandatory application fee.
- The official results of the Test of English as a Foreign Language (TOEFL). TOEFL results must be sent directly to WVU by the Educational Testing Service (ETS).
- Original or certified copies of the applicant's official academic record in the original language of issue. Applicants who have studied in the United States are required to have the institutions send an official transcript directly to WVU.
- Original or certified copy of all certificates or diplomas in the original language of issue.
- Official English translations of the applicant's academic record and certificates or diplomas.
All of the items listed above should be sent to the Office of Admissions and Records, West Virginia University, P.O. Box 6009, Morgantown, West Virginia 26506-6009. All material must be received by the application deadline. **All application materials should be submitted at one time if possible;** TOEFL scores and official transcripts from institutions within the United States should be requested so that these materials arrive at WVU at about the same date as the other application materials. Incomplete applications cannot be guaranteed consideration for the desired semester. Applicants are encouraged to contact the academic program of interest for information about requirements other than those listed above.

**Financial Documents/Student Visa**

International students requiring a form I-20 or IAP-66 for student or exchange visa must provide certification of adequate financial resources. Generally, the student must provide an official bank statement showing the availability of the appropriate funds. If a private sponsor will be the student’s source of support, the sponsor must submit a letter showing intent to sponsor and an official bank statement showing the availability of the appropriate funds. Other forms of support could include sponsorship certifications from the student’s government or other sponsoring agency. In all cases, original or certified copies of financial/sponsorship documents must be submitted before the I-20 or IAP-66 can be issued.

**English Proficiency/TOEFL Scores**

All applicants whose first language is not English must provide proof of English language proficiency. West Virginia University uses the Test of English as a Foreign Language (TOEFL) as the measure of English language proficiency. A score of 550 on the paper-based TOEFL or 213 on the computer-based TOEFL is the minimum required of all such applicants. Applicants must make arrangements to take the TOEFL well in advance of the desired date of enrollment at WVU. Information about registration for the TOEFL can be obtained by writing to the Educational Testing Service, P.O. Box 6154, Princeton, NJ 08541-6154, USA, or by contacting the local office of the United States Information Service (USIS).

Applicants who have received a high school diploma or a bachelor’s degree in the United States need not submit TOEFL results.

**Intensive English Program**

In some cases, it may be possible to consider applications for students who lack adequate TOEFL scores and will enroll in the West Virginia University Intensive English Program. Such applicants must contact the Intensive English Program directly and notify the Office of Admissions and Records of their intentions. Applicants for graduate programs should also notify the academic department of interest of their intentions. Admission to the Intensive English Program does not guarantee admission to the University or to a specific program of study. In general, students with low TOEFL scores are almost never permitted to enroll in a full nine hours of graduate courses in their first semester, but must take sufficient ESL courses to give them some chance of succeeding in their coursework. **Their subsequent performance in ESL courses will largely determine whether or not they can be accepted with regular graduate student status.** Applicants admitted to an academic program under the condition of successful completion of the Intensive English Program will be required to meet a certain level of English language proficiency before being permitted to begin the academic portion of their studies, e.g., a grade of B or better in ESL courses or a TOEFL score above 550. Inquiries about the Intensive English Program should be directed to the Intensive English Program, Department of Foreign Languages, West Virginia University, P.O. Box 6298, Morgantown, WV 26506-6298.
Official Documents
West Virginia University requires the submission of original academic documents or certified copies of the original academic documents from institutions located outside of the United States. The required documents include the official academic record (showing course titles, dates courses were taken, and grades received) and diplomas or certificates showing the degree awarded. These documents must be in the original language of issue. Official English translations must be provided with the official academic credentials in the original language. Any translation of a document must be a literal, word-for-word translation and must indicate actual grades received, not an interpretation of the grades.

Academic Records
Applicants for graduate programs must submit academic records from all post-secondary education. In some cases, it may be necessary for graduate applicants to submit records from secondary school.

Documents received by West Virginia University cannot be returned to the applicant. It is therefore recommended that students who have only their original academic documents submit certified copies of their credentials with their application.

Applicants who are currently enrolled in an institution and who cannot submit the final academic record and certification of degree may be granted admission if the incomplete record indicates that the applicant will unquestionably meet WVU admission standards. Final admission, however, cannot be approved until the complete academic record and certification of degree have been received and evaluated by the Office of Admissions and Records.

Transferring Within USA
International students applying to transfer from accredited schools within the United States are not permitted to register at WVU until they have complied with all transfer procedures as required by the United States Immigration and Naturalization Service (INS).

Upon arrival on the campus, the student must be prepared to present the I-20 or IAP 66 to the international student advisor for formal processing. No student should move to Morgantown without having received an assurance of admission and immigration documents from WVU.

Transfer Procedures
A student wishing to transfer to WVU from another accredited institution should follow the same application procedures as those outlined for other new students.

A student wishing to apply credit earned at another institution of higher education to a master’s degree at WVU must obtain a transfer of graduate credit form from the Office of Admissions and Records. This form requires the signature of the student’s unit chairperson or designee. The student must also have an official transcript from the other institution sent to the Office of Admissions and Records. Only credit earned at institutions accredited (e.g., North Central accreditation) at the graduate level may be transferred. Non-degree graduate students are not permitted to transfer credit to WVU from another institution.

Credit Hours
Eighteen semester hours can be accepted for master’s degree programs requiring 42 or more semester hours. Individual graduate programs may accept fewer credit hours. Permission forms to apply for transfer credit must be obtained from and returned to the Office of Admissions and Records. It is strongly recommended that students have transfer credit approved prior to enrolling in course work.
Transfer to Another Program

A student may initiate a transfer to another program by contacting the dean’s office of the school or college where enrolled. Following the student’s request, the dean’s office will send the student’s record to the school or college that the student wishes to enter. The school or college receiving the record is required to acknowledge receipt of the record and notify the Office of Admissions and Records of the status of the student’s application within 30 days. If a student is accepted by the new school or college, the school or college retains the student’s record and notifies the student of acceptance. If a student is rejected, he or she is notified of such action, and the student’s record is returned to the original school or college. The Office of Admissions and Records is responsible for updating students’ records to reflect new majors and new advisors.

Internal Credit Transfers

When a student transfers from one unit or program to another unit or program within the University, the faculty of the new unit determines if any credit earned under the guidance of the prior unit may be applied to a degree, certificate, or other educational offering of the new unit.

Programs may establish admission requirements in addition to those set by the University Graduate Council, such as a higher grade-point average, the submission of scores on standardized tests, and the receipt of letters of recommendation.

Admission to Graduate Study

Classifications

Regular graduate students are degree-seeking students who meet all the criteria for regular admission to a program of their choice. The student must possess a baccalaureate degree from a college or university, must have at least a grade-point average of 2.75 on a 4.0 scale, have met all the criteria established by the degree program, and be under no requirements to make up deficiencies.

A student may be admitted as provisional by any unit when the student possesses a baccalaureate degree but clearly does not meet the criteria for regular admission. The student may have incomplete credentials, deficiencies to make up, or may have an undergraduate scholastic record which shows promise, but less than the 2.75 grade-point average required for regular admission.

A non-degree student is a student not admitted to a program. Admission as a non-degree student does not guarantee admission to any course or program. The reasons for non-degree admission may be late application, incomplete credentials, scholarship deficiencies, or lack of a degree objective. Even though a non-degree student has not been admitted to a graduate program, a unit may allow a non-degree student to enroll in its courses. To be admitted as a non-degree student, a student must only present evidence of a baccalaureate degree and a 2.50 grade-point average, but the student must obtain a 2.50 grade-point average on the first 12 credit hours of course work and maintain this average as long as enrolled. (See p. 22, “Previous Graduate Study,” for an exception to this rule.) To be eligible to enter a degree program, the student must maintain a minimum of a 2.75 grade-point average on all course work taken since admission as a graduate student.

The standards cited are the minimum standards established by the University. Individual academic units or graduate programs may establish higher standards.

Academic Standards

The minimum academic standards for the different classifications are as follows. To be in good standing, regular students must obtain a 2.75 grade-point average in the first 12 hours of graduate study and maintain this average throughout the time...
they are enrolled in graduate work. A student failing to achieve this standard will be placed on probation and must achieve a cumulative grade-point average of 2.75 by the end of the next enrollment at West Virginia University. In the case of a part-time graduate student, a 2.75 cumulative grade-point average must be obtained in the next nine hours of graduate study. A student who cannot attain the required average will be suspended.

A provisional student has been admitted to the University with one or more deficiencies. Consequently, by completion of the 18th credit hour, the student must meet the provisions stated by the department and attain a minimum grade-point average of 2.75. A student who fails to meet the provisions of admission or who fails to achieve the required grade-point average will be suspended. Students who meet the provisions of admission and the required grade-point average will be reclassified as regular students, and the regulations governing good standing for regular students will apply.

To be in good standing, a non-degree student must obtain a 2.50 grade-point average in the first 12 hours of graduate study and maintain this average throughout the time enrolled in graduate work. A student failing to achieve this standard will be placed on probation and must achieve a cumulative grade-point average of 2.50 by the end of the next enrollment (or nine credit hours for part-time students) at West Virginia University. Students who cannot attain the required average will be suspended. A non-degree student who later wishes to apply for admission to a degree program must have achieved a minimum grade-point average of 2.75 on all course work taken since admission as a graduate student in order to be considered.

Enrollment Regulations of Non-Degree Students

Non-degree students may enroll in any course in the University for which they have the prerequisites and permission from the academic unit. Some departments that cannot accommodate non-degree students may restrict enrollments to majors only or require permits. These students are normally adults taking classes for enrichment purposes, public school teachers taking classes for certification renewal, or students taking classes as prerequisites for admission to degree programs. Since these students have not made a commitment to a degree program, are not subject to time limits, and may enroll on an irregular basis, the University policies concerning active/inactive status are more liberal than those for degree students.

A non-degree graduate student may accumulate unlimited graduate credit hours, but if the student is later admitted to a degree program, the faculty of that program will decide whether or not any credit earned as a non-degree student may be applied to the degree. Under no circumstances may a non-degree student apply more than 12 hours of previously earned credit toward a degree.

Advising of Non-Degree Students

Each dean establishes a mechanism to advise non-degree graduate students who intend to take the majority of their course work in the dean’s school or college. The mechanism may be the designation of a faculty member to advise non-degree students or the assignment of non-degree students to an advising office or center. Non-degree students who express an interest in programs in two colleges may be assigned to either by the Office of Admissions and Records. It is expected that the assigned advisor will consult the other unit for information when it is needed to assist the student. Students who are truly undecided on a major or who plan to take courses in several schools or colleges for enrichment may be assigned to the Office of Graduate Education. The number of students assigned in this manner will be quite small, and a program advisor will be assigned when a student designates a specific interest.
Previous Graduate Study

The same three admission classifications (regular, provisional, non-degree) apply to those applicants who have undertaken previous graduate study. In general, the cumulative grade-point average regulations apply to any transfer student who has not completed a graduate degree. However, an applicant who has received a master’s degree from an accredited college or university may be admitted to whatever category is deemed most appropriate by the faculty of the program of interest.

Reclassification of Provisional Students

The provisions of a student’s provisional status are specified by the graduate department or program, but also may include satisfactory performance in ESL courses. To be reclassified as a regular student, a student must meet the provisions stated by the department and achieve a minimum grade-point average of 2.75 on all course work taken during the provisional period. Individual degree programs may set higher grade-point average requirements.

No later than the completion of the 18th credit hour, a unit must review the student’s record and make a final decision on the student’s admission. A student who has met the provisions of admission and achieved the required grade-point average will be reclassified as a regular student. A student who fails to meet the provisions of admission or who fails to achieve the required grade-point average will be suspended, but may be reinstated in order to transfer to another program or to non-degree status. The academic unit must notify the student and the Office of Admissions and Records of its decision.

Upon notification by the appropriate academic unit, the Office of Admissions and Records will prohibit the registration of all provisional graduate students who have reached the maximum of 18 credit hours. Registration will not be permitted until the student is reclassified as a regular student, an exception is granted by an academic dean, or the student is transferred. A student may be admitted as a provisional graduate student more than one time, but not by the same graduate program.

Other Reclassifications

Regular and provisional students may become non-degree students by choice. This includes students who fail to meet admission or academic standards or who withdraw voluntarily. To change a student to non-degree status, the advisor must process an Academic Status Change form through the school or college dean’s office.

Non-degree students who later wish to become degree students must present all the credentials required by the degree program. This requires the processing of an Academic Status Change form by the student’s advisor through the Office of Admissions and Records. For admission to a degree program, a non-degree student must have achieved a minimum grade-point average of 2.75 on all course work taken since admission as a graduate student.

Enrollment and Registration

Credit Limitations

Credit toward a graduate degree may be obtained only for courses listed in the graduate catalog and numbered 400-799 (previously 200-499). No more than 40 percent of course credits counted toward meeting requirements of any graduate degree may be at the 400 level (previously 200). No residence credit is allowed for special field assignments or other work taken off the WVU campus without prior approval. Graduate credit is obtained only for courses in which the grade earned is A, B, C,
or S. No course in which the grade earned is D, P, F, or U can be counted toward a graduate degree, nor can courses taken under the audit option.

**Credit Overloads**
Graduate students are strongly recommended to limit their credit loads if they are also involved in extensive outside work or service activities. In general, persons in full-time service to the University or another employer are advised to enroll for no more than six hours of work in any one term; those in half-time service are advised to enroll for no more than 12 hours. Recommended credit loads may be less for employed graduate students in some academic colleges, schools, and departments.

It is recommended that a student enroll for no more than 15 hours of graduate courses in any one term and no more than 12 hours in the total of the two summer enrollment periods. Credit overloads may be approved for students by their advisors. Some school or college dean’s offices may also choose to monitor overloads in their academic units.

**Degree Progress**
Students seeking master’s or doctoral degrees (as determined by the student’s application and letter of admission) are expected to enroll regularly and make steady progress toward their degree objectives. Master’s degree students are permitted to continue in a program for a maximum of eight years under their original application. Students who have been inactive for two or more years must reapply and be readmitted. The application fee is assessed.

**Current Information**
The University must have current information (name, address, telephone number, major, and advisor) about students enrolling for classes in order to communicate with students and maintain permanent records. In addition, when individuals do not enroll in classes for substantial periods of time, it is costly and time-consuming to continue to maintain their records on active status. For these reasons, the Office of Admissions and Records periodically deletes degree and non-degree student records from active status. Students who return after this deletion must reactivate their records by reapplying.

**Advising**
Each academic unit through which graduate degree programs are administered has one or more graduate advisors, and every graduate student is assigned an advisor at the time of admission or shortly thereafter. The advisor and student should meet before the first enrollment to begin formulation of a plan of study.

**Plan of Study**
Shortly after entrance into a degree program and usually before nine to 12 hours of graduate course work have been completed, a meeting is held with the student, the advisor, and the committee (if appointed) to draw up a plan of study. Depending on the degree sought and the field of study, the plan may also contain an outline of the research problem to be undertaken. Some graduate programs have the student and committee meet at a later date to delineate the research project more formally as a prospectus for the report, thesis, or dissertation. The plan of study is subject to mutual approval and is made a part of the student’s record. It then becomes a formal agreement between student and program faculty as to the conditions which must be met for completion of the degree requirements. Any subsequent changes in the plan of study (or prospectus) can be made only through mutual agreement. When the binding nature of these documents is fully understood, there is less likelihood that later misunderstanding will arise. Thus, anyone who contemplates application for graduate work at WVU is urged
to read the graduate catalog carefully and request clarification where needed. A student must be very aware of the right to express personal views in the drafting of the plan of study and/or research prospectus. Should disagreement arise at any time, the responsibility for arbitration rests with the dean of the school or college.

Records

Deans' offices maintain all records for monitoring student progress and for certifying students for graduation. Among these records are plans of study (subject to the school/college dean's approval); graduate committees (subject to the school/college dean's approval); grades; grade modifications; etc.

Required Minimum Enrollment

If a graduate student is using University libraries, research facilities, or consulting with graduate committee members, it is necessary for the student to enroll for at least one hour of graduate credit. In no other way can the University receive credit for its contribution to graduate study, attest to student status, and guarantee the protection to which the student is entitled. Students who take courses intermittently may be excused from such continuous enrollment if they are not using University facilities or consulting with faculty while they are not enrolled. However, students formally admitted to candidacy for graduate degrees are required to register for at least one credit hour each semester as a condition of their continued candidacy. By pursuing a degree at this institution, such persons by definition are utilizing University services, facilities, and other resources, including faculty expertise; this situation continues in cases where students have completed all required course work and are working on a thesis or dissertation. Candidates for graduate degrees who fail to maintain continuity of enrollment can be dropped from candidacy. Registration for one credit of 499 Graduate Colloquium will satisfy this University requirement.

Extended Learning/Off-Campus Study

West Virginia operates six regional centers located at Charleston, Clarksburg, Parkersburg, Keyser, Shepherdstown, and Wheeling. Approximately 250 graduate courses are offered each term at these centers. Students wishing to take off-campus courses for graduate credit must first be admitted as graduate students using the same procedures as for on-campus study. It is the student’s responsibility to obtain from the appropriate college, school, and department the specific requirements for degree candidacy. A new graduate professional development category is available for professionals who are seeking graduate credits but do not plan on pursuing a degree. It is also available for senior citizens taking a course for personal growth or community members interested in a specific topic. Selected courses and degree programs are offered at the centers, including special education, communication studies, safety and environmental management, computer science, business administration, community health promotion, counseling, public health, and social work. Courses in these and other fields meet public education certification requirements as well as personal and professional development goals. A master of science in nursing is available at selected sites. A doctorate with emphasis in education administration is available in cooperation with Marshall University. Special courses may be offered at other locations in the state to meet specific needs.

Graduate courses offered are approved by the appropriate department chairpersons, academic deans, director of Extended Learning Office, and by the associate provost for curriculum and instruction. Advising and scholarship standards, applicable to both on- and off-campus courses, are governed by the individual academic unit.
Information about off-campus courses is available from the program unit offering the courses, the regional centers, and the Extended Learning Office (ELO), www.wvu.edu:80/~exlearn, West Everly Street, P.O. Box 6800 Morgantown, WV 26506-6800.

Enrollment During Final Term
All graduate students must enroll for at least one credit hour (e.g., 499 Graduate Colloquium) during the term (or summer) of graduation. Graduate students who are on campus will be required to register by the normal registration deadlines. Graduate students who have left the campus will be allowed to register until the tenth week of classes in fall and spring terms and the third week of Summer II. Note: Quota waivers generally are not to be used to meet this enrollment requirement.

Full-Time Part-Time Classification
A student is classified as full-time or part-time for any given enrollment period. A graduate student is classified as full-time if enrolled for nine or more hours in the fall or spring terms or six or more hours altogether in the summer. Courses taken on an audit basis are not generally recognized as contributing to full-time status determination.

Auditors
Students may enroll in courses without working for a grade or for credit by registering as auditors. Change in status from audit to credit or from credit to audit may be made during the registration period. Attendance requirements for auditors are determined by the instructor of the course being audited. It is the prerogative of the instructor to strike the name of any auditor from grade report forms, and to instruct the Office of Admissions and Records to withdraw the auditor from the class, if attendance requirements are not met. Auditors are required to follow the same admission procedures as students taking the course for credit. Courses taken under the audit option are not counted toward a graduate degree or toward attaining full-time enrollment status.

Academic Rights
Students’ academic rights and responsibilities are governed by Board of Trustees policies and corresponding policies, rules, and regulations developed by each of the institutions in the University System of West Virginia. The rights and responsibilities of students at West Virginia University are published each year in the WVU Student Handbook. Copies of the WVU Student Handbook may be obtained from the Office of Student Life in Elizabeth Moore Hall.

Research Integrity at West Virginia University
Integrity in research and scholarship is an obligation of all who engage in the acquisition, application, and dissemination of knowledge. Research and scholarly work by West Virginia University faculty, staff, and students is governed by a document entitled Policy and Procedures for Responding to Allegations of Misconduct in Research and Scholarship at West Virginia University. This policy document can be found at: www.wvu.edu/~researchRTF/senateintegritymemo.html. All members of the University community have an obligation to report observed, suspected, or apparent misconduct in research. Reports should be made to the University’s research integrity officer, Esther Gottlieb of the WVU Office of Research (304) 293-4806; e-mail: egottlie@wvu.edu. Regular reviews of the status of research integrity at WVU is conducted by the Research Integrity Policy Committee, a standing committee with representatives from every campus.
Scholarship

Because of their familiarity to most students, letter grades are assigned in many graduate courses. However, better than “average” performance is expected of graduate students. They are enrolled for fewer credit hours than they were as undergraduates, nine to 12 hours being the norm for a full-time graduate student, and are expected to spend more time on each course and achieve above-average mastery of the material. A few grades of C may be tolerated in graduate programs if there are higher grades in other courses to compensate for them. Although a grade of C is considered average performance for an undergraduate student, it is not acceptable as the norm for work produced by one who is studying for an advanced degree.

Grading Scale

A — excellent (given only to students of superior ability and attainment)
B — good (given only to students who are well above average, but not in the highest group)
C — fair (average for undergraduate students, but substandard for graduate students)
D — poor but passing (cannot be counted for graduate degree credit)
F — failure
I — incomplete
W — withdrawal from a course before the date specified in the University calendar. Students may not withdraw from a course after the specified date unless they withdraw from the University
WU — withdrawal from the University doing unsatisfactory work
P — pass (cannot be counted for graduate degree credit—see below)
X — auditor (no grade and no credit)
S — satisfactory
U — unsatisfactory (equivalent to D or F)

Pass/Fail

Pass/fail grading is not applicable to the course work for a graduate degree. A graduate student may register for any course (1-499) on a pass/fail basis only if the course involved is not included in the student’s plan of study and does not count toward a graduate degree. The selection of a course for pass/fail grading must be made at registration and may not be changed after the close of the registration period. A student who, having taken a course on a pass/fail basis, later decides to include the course as part of a degree program must reregister for the course on a graded (A, B, C, D, or F) basis.

S/U

Courses graded S/U are approved by the associate provost for academic affairs. Approved requests are forwarded to the Office of the Faculty Secretary and the Office of Admissions and Records.

GPA

The grade-point average listed on the student’s official transcript will be computed from on all work (including any undergraduate courses taken) for which the student has registered while a graduate student, except for courses with grades of I, S, W, WU, P, and X, and is based on the following grade-point values: A = 4, B = 3, C = 2, D = 1, F = 0, and U = 0. Faculty have the option of adding +/- scales to the letter grades but the +/- scales are not used in figuring the grade-point average. In order to determine whether a student meets the program’s stated minimum GPA to remain in good
academic standing, a given program may, for its own internal purposes, calculate the student’s graduate GPA solely from the courses listed in the student’s plan of study. However, on the official transcript the GPA will be calculated as indicated above.

Incompletes

When a student receives a grade of incomplete and later removes that grade, the grade-point average is recalculated on the basis of the new grade. The grade of I is given when the instructor believes that the course work is unavoidably incomplete or that a supplementary examination is justifiable. Before any graduate degree can be awarded, the grade of I must be removed either by removal of the incomplete sometime before program completion or by having it recorded as a permanent incomplete. Only the instructor who recorded the I, or, if the instructor is no longer at WVU, the chairperson of the unit in which the course was given, may initiate either of these actions. In the case of withdrawal from the University, a student with a grade of I should discuss that grade with the appropriate instructor. An I grade eventually converts to F. Grade changes other than I to a letter grade must be accompanied by an explanatory memo.

Grades Lower Than C

Credit hours for courses in which the grade is lower than C will not be counted toward satisfying graduate degree requirements. These standards are the minimum standards for the University. A graduate program may set higher standards which the student must meet, but these must be presented in writing to all students upon admission or published in the catalog.

Final Grade Appeals

Students have the right to appeal final course grades which they believe reflect a capricious, arbitrary, or prejudiced academic evaluation, or reflect discrimination based on race, sex, age, handicap, veteran status, religion or creed, sexual orientation, color, or national origin. The grade appealed shall remain in effect until the appeal procedure is completed or the problem resolved. The primary intent of this procedure is to provide a mechanism whereby a student might appeal a failing grade or a grade low enough to cause the student to be eliminated from some program or to require the repetition of a course. Grade appeals that do not meet this classification are not precluded.

Step 1. The student shall discuss the complaint with the instructor involved prior to the midsemester of the succeeding regular semester, whether the student is enrolled or not. If the two parties are unable to resolve the matter satisfactorily, or if the instructor is not available, or if the nature of the complaint makes discussion with the instructor inappropriate, the student shall notify the chairperson of the instructor’s department or division (or, if none, the dean). The chairperson or dean shall assume the role of an informal facilitator and assist in their resolution attempts. If the problem is not resolved within 15 calendar days from when the complaint is first lodged, the student may proceed directly to Step 2.

Step 2. The student must prepare and sign a document which states the facts constituting the basis for the appeal within 30 calendar days from when the original complaint was lodged. Copies of this document shall be given to the instructor and to the instructor’s chairperson (or, if none, to the dean). If, within 15 calendar days of receipt of the student’s signed document, the chairperson does not resolve the problem to the satisfaction of the student, the student will forward the complaint to the instructor’s dean (see Step 3).
Step 3. Within 15 calendar days of receipt of the complaint, the instructor’s dean shall make a determination regarding the grade, making any recommendation for a grade change to the instructor involved. If the instructor involved does not act on the dean’s recommendation, or if the student is in disagreement with the decision of the dean, the dean will refer the case to a representative committee, appointed by the dean, for final resolution. This committee shall consist of three or more faculty members, including at least one person outside the instructor’s discipline.

1. Upon receiving an appeal, the committee will notify in writing the faculty member involved of the grade challenge, which shall include a statement of the facts and evidence to be presented by the student.
2. The committee shall provide to the faculty member involved and the student making the appeal written notification of their right to appear at a hearing to be held before the department, college, or school representative committee, together with the notice of the date, time, and place of the hearing.
3. The administrative procedure is not adversarial in nature; the formal rules of evidence do not apply.
4. The final decision of this committee shall be forwarded to the instructor and to the dean involved. If the decision requires a change of grade, the instructor shall take action in accordance with the committee’s decision.
5. If the instructor does not act within five days, the dean shall make any necessary grade adjustment.
6. In the case of grade appeals, the dean functions as the president’s designee; therefore, implementation of this decision shall end the appeal procedure.

Graduate Credit via Senior Petition

Undergraduate students wishing to obtain graduate credit by senior petition must obtain the standardized permission form from the Office of Admissions and Records. This form requires the signature of the student’s undergraduate advisor and the dean of the college granting the undergraduate degree and the dean of the college of the intended graduate degree (if different). The policies regulating an undergraduate’s enrollment in the graduate-level course for graduate credit are:

• Enrollment is permitted only in courses numbered 400-599 (previously 200-399).
• Undergraduates must be within 12 credit hours of their baccalaureate degrees and have a grade-point average of 3.0 on a 4.0 scale.
• The maximum amount of graduate credit permitted by senior petition is 12 credit hours.
• The senior petition must be approved prior to or at the time of enrollment.
• No more than 20 percent of the total enrollment in any 500-level (previously 300) course may consist of undergraduate students.

Approved senior petitions are returned to the Office of Admissions and Records so that a notation of graduate credit may be placed on the student’s transcript. Any exceptions to the regulations must be approved by the dean of the school or college in which the student seeks graduate credit. Note: Students receiving graduate credit for a course do not receive credit toward their undergraduate degree with the same course.
Transcripts

Each copy of a transcript costs $5.00. Two to three weeks may be required to process an application for a transcript at the close of a term or summer term. At other times the service requires approximately two to three days from receipt of the request. A transcript request must have the date of last attendance at WVU, student identification number, and signature of all names under which you attended. All requests for transcripts must be sent, in writing, directly to the Office of Admissions and Records; no phone requests are accepted.

Forfeited Transcripts

Students who default in the payment of any University financial obligation forfeit their right to claim a transcript until such time that the obligation has been satisfied.

Withdrawals

There are two types of withdrawals: withdrawal from some part of the work for which a student has registered, and a complete withdrawal from the University. **Unless the formal withdrawal procedures are completed, failing grades are recorded.** Withdrawals from some part of the work must have the initial approval of the student’s advisor. Graduate students should not independently withdraw from a class electronically (e.g., by telephone) without prior approval of their advisor. It is the student’s responsibility to see that all forms are properly executed and delivered to the appropriate authorities for recording.

Withdrawals From Classes

Until the Friday of the tenth week of class (or Friday of the fourth week in a six-week summer term, or Friday of the second week of a three-week summer term), students may withdraw from individual courses. Deadlines are published in the WVU *Schedule of Courses* each semester.

Students must obtain their advisor’s approval before withdrawing from classes. Students, with the help of their academic advisors, are responsible for determining:

• If their course load would be reduced below the minimum requirement set by their program;
• If their course load would be reduced below the minimum hours required to qualify for a graduate assistantship, financial aid, or international full-time student status;
• If the course to be dropped is a corequisite to another course the student is taking or a prerequisite to a course required the following semester. If so, the student may be required to drop the corequisite course or asked to take a substitute course the following semester.

Students who withdraw from courses before the published deadline and who follow all of the established University procedures receive a W on their transcript for the appropriate course(s). The grade-point average is not affected in any way by this mark.

Withdrawals From the University

Students who decide to leave WVU should withdraw from all classes and must do so in accordance with established University policy in order that the official transcript may reflect this action. **Students are responsible for all financial obligations and for following established procedures, including the completion of forms and delivery of the completed forms to appropriate officials.** Students not fulfilling these requirements may have difficulty withdrawing from the University. The withdrawal becomes official only after the forms have been recorded by the Office of Student Life. Students receive copies and are urged to keep them.
Any student (full- or part-time) may withdraw from all classes for which he or she is registered in the University any time before the last day on which regular classes are scheduled to meet as established by the University calendar and published in the *Schedule of Courses*.

Students who desire to withdraw from all remaining classes should report in person to the Office of Admissions and Records. Withdrawal procedures will be explained at that time. Students unable to withdraw in person because of illness, accident, or other valid reasons still must notify the Office of Admissions and Records of their intention to do so. The notification should be in writing. Students are responsible, with the help of their academic advisors, for determining how withdrawal from the University may affect their future status at the University including such aspects as suspension for failure to make progress toward a degree, violation of established academic probation, and continued eligibility for scholarship, fellowship, or financial aid.

**Absences**

Students and faculty have together formulated the University’s policy on absences from classes. The responsibilities of student and instructor are as follows:

**Students absent from class for any reason are responsible for work missed.** Students should understand that absences may jeopardize their grades or continuance in the course. **Instructors who use absence records in the determination of grades must announce this fact to students (in writing) within the first five class meetings.** It is the responsibility of the instructor to keep an accurate record of all students enrolled. Instructors may report excessive absences to the student’s dean or advisor. Students who have been absent because of illness, authorized University activities, or for other valid reasons are to have the opportunity to make up regularly scheduled examinations. As a matter of courtesy, a student should inform an instructor in advance if obliged to be absent from a class meeting.

**Degree Completion**

**Time Limit for Master’s Degrees**

Graduate work planned with the student’s advisory committee must be satisfactorily completed within a period of eight years immediately preceding the conferring of the degree. A course taken more than eight years previously must be revalidated if it is to be used towards meeting degree requirements. Revalidation can be accomplished by submitting the following information for approval to the office of graduate education:

- A letter from the course instructor listing the criteria used to revalidate the course material.
- A copy of the student’s performance on the student’s revalidation examination.
- A letter from the college or school graduate coordinator and/or dean supporting the revalidation.

**Course Work Requirements for Master’s Degrees**

Graduate Council policy requires that students in a master’s program must complete a minimum of 24 hours of course work other than thesis credit. A minimum of 30 total hours is also considered standard.

**Research Guidelines**

Any graduate student who conducts research involving experiments that utilize animals must have a protocol approved by the Animal Care and Use Committee before starting the research. Information about procedures and protocol forms may be obtained from the Office of Sponsored Programs.
Any graduate student who conducts research involving the use of human subjects must have the approval of the Institutional Review Board for the Protection of Human Subjects before starting the research. Information about procedures and approval forms may be obtained from the Office of Sponsored Programs, 886 Chestnut Ridge Road, Morgantown, WV 26505-6845.

Request for Degree
At the time of registration for the enrollment period in which all degree requirements are expected to be met, or at the latest within two weeks after such registration, each candidate is to submit a formal request for the conferring of the degree. This is done on an Application for Graduation and Diploma form obtainable from the school or college dean’s office. The candidate must complete all requirements at least one week before the end of that enrollment period. If the degree is not actually earned during that term, the student must submit a new Application for Graduation and Diploma when registering for the term in which completion is again anticipated.

Colleges and schools are responsible for seeing that master’s and doctoral students meet the minimum requirements of the University as well as any additional college or school requirements. Deans’ offices are responsible for maintaining all student records necessary to certify students for graduation. Attendance at the spring commencement is voluntary. Anyone not planning to attend should leave a complete mailing address with the Office of Admissions and Records so that the diploma can be mailed.

Graduate Committees
The general requirements for all graduate committees are listed in this paragraph, while the specific requirements are found in the succeeding paragraphs. The majority members of any graduate committee must be graduate faculty members. The chair of the committee must be a member of the graduate faculty. No more than one person may be a nonmember of the graduate faculty. No family member can serve on the graduate committee of his or her relative. All graduate committees are subject to the approval of the chairperson or designee of the department/division and the dean or designee of the college/school. Once a graduate committee has been officially established for a student, it will not be necessary to alter it because of the downgrading of the graduate faculty status of member(s) of the committee.

Master’s committees consist of no fewer than three members. It is recommended that at least one member of the committee be from outside the student’s department. Master’s committees of students with the thesis option must be chaired by a regular faculty member and the majority of the committee must be regular graduate faculty.

Doctoral dissertation committees consist of no fewer than five members, the majority of whom must be regular graduate faculty, including the chairperson. At least one member of the committee must be from a department other than the one in which the student is seeking a degree.

Theses and Dissertations
Theses and dissertations should be presented to the student’s graduate advisor or committee chairperson at least one month before the end of the enrollment period in which completion of all requirements is expected. The form prescribed in the WVU Guide to the Preparation of Master’s Theses and Doctoral Dissertations must be followed with the guidance of the student’s graduate advisor or the chairperson of the committee. For the document to be approved, there must be no more than one unfavorable vote among members of the student’s committee.
ETD Program

The Electronic Thesis and Dissertation (ETD) program is a project sponsored by the Monticello Library Project, a division of Southeastern Universities Research Association Inc. (SURA). Virginia Polytechnic Institute and State University (Virginia Tech) took the lead in development of the ETD and was the first university to make the submission of theses and dissertations mandatory. West Virginia University, as of August 15, 1998, became the second university in the world to require the electronic submission of theses and dissertations. Under the direction of the Office of Academic Affairs and Research, the WVU ETD Task Force governs all program policies and procedures.

West Virginia University is a charter member of the Networked Digital Library of Theses and Dissertations (NDLTD). All dissertations written in partial fulfillment of the requirements for any doctoral degree conferred by the University, and all theses written in partial fulfillment of the requirements of any master’s degree conferred by the University, must ordinarily be filed electronically with the WVU Libraries system according to University procedures. Exceptions to filing electronically must be approved by the Office of the Provost. Copyright to electronic theses and dissertations is subject to the appropriate provisions of the WVU Copyright Policy (www.wvu.edu/~osp/copyright.html).

WVU electronic theses and dissertations are made available through the World Wide Web and the University Libraries. Various web access levels are available to accommodate the student’s needs. Comprehensive technical assistance for the development and conversion of electronic documents is available from the Office of Academic Computing. All theses and dissertations will be microfilmed and their abstracts published through University Microfilms of Ann Arbor, Michigan. This requirement will not be satisfied by any other publication but does not preclude publication elsewhere, which is both permitted and encouraged.

Candidates are to follow the WVU Guide to the Preparation of Master’s Theses and Doctoral Dissertations (formerly The Regulations Governing the Preparation of Dissertations and Theses) as well as general ETD policy guidelines regarding format and organization of the thesis or dissertation. Complete program policy and collection access information is available on-line at www.wvu.edu/~thesis/.

ETD Submission Checklist

The following must be completed by the student no later than one week before the close of the period in which the degree is expected to be completed (one week before the end of the second summer session, by the last day of the final examination period at the end of the first semester, or one week before Commencement day at the end of the second semester).

2. Deliver a completed ETD submission packet with original signatures and required fee(s) in person or by mail to the Charles C. Wise Jr. Library (downtown campus), Acquisitions Department or Technical Services Division Office. Download, print, and complete your ETD submission packet, available on-line at www.wvu.edu/~thesis/etd-overview.html.
   • Completed and signed ETD submission signature form (pdf).
   • Submission fees: dissertations: $65.00, theses: $55.00. Cash, check, or money order payable to West Virginia University Libraries.
   • Completed and signed UMI master’s thesis or doctoral dissertation agreement form (pdf).
   • Extra copy of title page.
   • Extra copy of abstract (dissertations: 350 word limit, theses: 150 word limit).
• Copyright fee: $45.00 check or money order payable to UMI (copyright is optional but recommended).
• Completed and signed Survey of Earned Doctorates (doctoral students only). Print copies are available from the University Libraries or your college graduate coordinator.
• Fees may be subject to change.
• Problem reports may be submitted for a $10.00 fee. UMI submission is optional, fees apply as indicated above.

Contact Information
WVU Libraries, Acquisitions Department, Attn: John H. Hagen, P.O. Box 6069, 1549 University Avenue, Morgantown, WV 26506-6069, (304) 293-4040, x 4025.

Approval
Upon submission, the University Libraries will review the ETD; committee chairs are included in all e-mail communications with the student and have the opportunity to review the document on-line as well. If the ETD is in acceptable form and the ETD submission packet received is complete, the University Libraries will approve the submission electronically, indicating that all obligations regarding submission of the dissertation to the University Libraries have been fulfilled. An official e-mail notification will be sent to the student, the committee chair, and to the appropriate office in the college, school, or department granting the degree. The ETD will be cataloged and distributed on the World Wide Web according to the distribution option the student and committee have chosen.

Doctoral Degree—Specific Requirements
The program of doctoral study is planned with the student’s graduate advisor and committee to combine any or all of the following: graduate courses of instruction, special seminars, independent study, supervised research, and supervised training designed to promote a broad and systematic knowledge of the major field and to prepare the student for the comprehensive qualifying and final examinations and writing of the dissertation.

The doctorate is a research or performance degree and does not depend on the accumulation of credit hours. The three requirements of the degree are admission to candidacy, residency, and completion and defense of a dissertation. The degree signifies that the holder has the competence to function independently at the highest level of endeavor in the chosen profession. Hence, the number of years involved in attaining or retaining competency cannot be readily specified. Rather, it is important that the doctoral student’s competency be assessed and verified in a reasonable period of time prior to conferral of the degree, generally five years.

Graduate education, especially at the doctoral level, involves many learning experiences which take place outside the formal classroom setting. These involve observing and participating in activities conducted by the graduate faculty, using departmental and University libraries, attending lectures presented by visiting scholars, informal debates with fellow students, and similar activities. To insure that graduate students experience these kinds of informal learning, doctoral programs at WVU as elsewhere generally require one year in residence in full-time graduate study. However, because of the contractual nature of graduate study, an individual student or graduate committee may propose an alternative plan by which the student can gain equivalent educational experience. For example, the plan of study may require the student to spend time in residence at a national or foreign laboratory, institute, archive, or research center as partial fulfillment of the residency requirement.
Regulations governing admission, registration, scholarship, etc., described in the preceding sections must be followed. In addition, the student must satisfy requirements specified by the faculty responsible for the major field. **Students applying for admission to a doctoral program, after having received a master’s degree at WVU, must file a new application for graduate work with the Office of Admissions and Records.**

Competence in one or more foreign languages is a common requirement in graduate degree programs. The faculty in the graduate degree program specify the language or languages and the level of competence to be demonstrated. Language examinations are arranged by the foreign language examiner, who can be contacted through the Department of Foreign Languages, and under whose direction language examinations are administered.

When only reading competence is required, the foreign language examiner may waive the examination in those cases where the student’s transcript shows, at a date that proves to fall no earlier than seven years before promotion to doctoral candidacy, either completion of 12 semester hours or equivalent course work in an approved foreign language, with a grade of B or better in the last three hours; or at WVU, completion of French 306, German 306, or Russian 306 with a grade of B or better must be achieved.

**Admission to graduate study and enrollment in graduate courses does not of itself imply acceptance of the student as a candidate for a doctoral degree. This is accomplished only by satisfactorily passing a comprehensive or qualifying examination (either oral, written, or both) and by meeting specified language and/or other requirements.**

**Candidacy**

A student will be given a comprehensive examination to demonstrate knowledge of the important phases and problems of the field of major study, their relation to other fields, and the ability to employ the instruments of research. The examination is intended to determine whether the student has the academic competence to undertake independent research in the discipline, and to insure that the student possesses a thorough grasp of the fields outlined in the plan of study. Successful passage of this examination is the **sole determinant** of formal admission to candidacy, not acceptance of a prospectus, a grant exercise, or other form of student evaluation. The examination, which consists of a series of tests covering all areas specified in the plan of study, is administered after most formal studies have been completed. Scheduling and results of the examination must be reported to the school or college dean. It must be the consensus of the doctoral committee that the student has passed the examination, although the committee may permit one dissenting vote. A single portion of the examination may be repeated at the discretion of the committee, but if two or more members are dissatisfied the entire qualifying examination must be repeated. The student must petition through the doctoral committee in order to be permitted to repeat a qualifying examination, and it is anticipated that a waiting period will be specified by the committee during which the student will have an opportunity to correct deficiencies. Academic tradition does not allow a qualifying examination to be administered more than three times.

**Time Limit**

Because the qualifying examination attests to the academic competence of the student who is about to become an independent researcher or practitioner, the examination cannot precede the conferring of the degree by too long a period of time. **Consequently, doctoral candidates are allowed no more than five years in which to complete remaining degree requirements.** In the event a student fails to complete the doctorate within five years after admission to candidacy, an extension of time can be obtained only by repeating the qualifying examination and meeting any other requirements specified by the student’s committee, including the setting of deadlines by which all degree requirements must be completed.
Dissertation Research

The candidate must submit a dissertation pursued under the direction of the faculty of the University on some topic in the field of the major subject. The dissertation must present the results of the candidate’s individual investigation and must embody a definite contribution to knowledge. While conducting research or writing a dissertation, the student must register at the beginning of each term or summer during which credit is being earned. No residence credit will be allowed for special field assignments or other work taken off the University campus without prior approval by the associate provost for academic affairs.

Final Examination

The final examination is not given until the term or summer term in which all other requirements for the degree are to be met. After the candidate’s dissertation has been tentatively approved, the final oral examination on the dissertation can be scheduled. At the option of the faculty responsible for the degree program, a comprehensive final written examination also may be required. The student’s committee chairperson must indicate in advance the time, place, and recommended examining committee members, and receive clearance from the office of the school or college dean before the examination can be given. Such notifications of doctoral examinations must be received at least three weeks before the examination date. All doctoral final oral examinations are open examinations and the lead time is required for public notice to the University community.

The student cannot be considered as having satisfactorily passed the final examination if there is more than one unfavorable vote among members of the examining committee. Results of each examination must be reported to the school or college dean within 24 hours. Reexamination may not be scheduled without approval of the request by the school or college dean. All committee members are to be present for the final examination. If an examination cannot be scheduled at a time convenient to all committee members, the dean or designee may permit another faculty member to substitute for the original committee member, provided that the original committee member was not the chair. There can be no substitute for the chair. Only one substitute is allowed, and the request for a substitute must be made in writing prior to the examination. The request for a substitute should be signed by the committee chair, the student, and both the original faculty member and the substitute faculty member. A substitute faculty member must have the same or higher graduate faculty status as the original faculty member and represent the same academic discipline or specialization.

Dissertation Submission

The requirements for a doctorate include acceptance of the dissertation. The dissertation must bear the original signatures of at least all but one of the committee members. If more than one member of the committee, whatever the size of the committee, dissents from approving the dissertation, the degree cannot be recommended. If a substitute faculty member attends the final examination, the substitute signs the shuttle sheet; however, the original committee member is to sign the dissertation. The dissertation must be presented to the University not later than one week before the end of the semester or summer session in which the degree is expected to be granted (one week before the end of the summer, by the last day of the final examination period at the end of the first semester, or one week before commencement day at the end of the second semester).

The candidate is required to maintain close contact with the supervisor or chairperson of the graduate committee on these matters in developing a dissertation so as to incorporate the special requirements of the subject discipline.
Summary of Doctoral Degree Requirements

1. Shortly after admission to the program (usually within the first nine to 12 semester hours of course work), an advisory committee is formed and the committee and the student produce a plan of study.
2. The student completes requisite course work and other program requirements, satisfying also the stipulated residency requirement.
3. Student takes the language examination (if applicable).
4. Student takes written and/or oral comprehensive (qualifying) examination for admission to candidacy. The results are communicated to the appropriate office by the student’s graduate program advisor.
5. The student undertakes a doctoral dissertation under the guidance of a dissertation committee. The dissertation phase begins with approval of a dissertation prospectus by the dissertation committee, the department chairperson, and the school or college dean.
6. A copy of the preliminary draft of the dissertation is given to each committee member at least one month prior to the final oral examination.
7. The dissertation advisor (committee chairperson) requests a clearance for the final examination from the school or college dean’s office no later than three weeks before the scheduled examination date.
8. The time and place of the examination is announced.
9. The student defends the dissertation in an oral defense.
10. One electronic copy of the dissertation in approved computer-generated form must be submitted on-line to the WVU ETD archive and a completed ETD submission packet with original signatures and required fee(s) must be delivered to the Charles C. Wise Jr. Library no later than one week before the close of the period in which the degree is expected to be completed.

Summary of Master’s Degree Requirements

1. Shortly after admission to the program (usually within the first nine to 12 semester hours of course work), an advisory committee is formed and the committee and the student produce a plan of study.
2. The student completes requisite course work and other program requirements.
3. The student confers with the advisor and, if applicable, the chairperson of the thesis committee to see if all requirements can be met by the end of the semester in which he or she plans to graduate. This should be done no later than the beginning of the final semester.
4. The student registers for at least one credit hour. No one may graduate who is not registered as a student during the term of graduation.
5. The student checks with the University to insure that there is correspondence between departmental and University records and that there are no remaining deficiencies.
6. The student completes an Application for Graduation and Diploma. This should be done no later than two weeks after registration.
7. After getting a fee slip from the Office of Admissions and Records, the student pays the $30 graduation fee at the cashier’s window in the Mountainlair.
8. The student presents a typed draft of the thesis to each committee member (If applicable).
9. The student should remind the committee chairperson to request clearance from the school or college dean’s office at least two weeks before the date of the final examination (or thesis defense).
10. Results of the final examination (or thesis defense) must be reported to the dean's office by the graduate advisor or the committee chairperson not later than one week before the end of the semester or summer session in which the degree is expected to be granted.

11. If the requirements for the master’s degree include a thesis, the thesis must bear the original signatures of at least all but one of the committee members. If more than one member of the committee, whatever the size of the committee, dissents from approving the thesis, the degree cannot be recommended. If a substitute faculty member attends the final examination, the substitute signs the shuttle sheet; however, the original committee member signs the thesis.

12. Two bound and originally signed copies of the thesis (the original and first copy or two electrostatically reproduced copies) must be submitted to the Charles C. Wise Jr. Library no later than one week before the degree is expected to be granted.

Part 3 Facilities, Fees, and Financial Aid
Facilities, Housing, and Library Services

The WVU campuses combine traditional and modern architectural styles, with eleven campus buildings on the National Register of Historic Places. Many of these original buildings, including Stalnaker Hall, have been restored and renovated.

A new Campus Master Plan was recently completed, setting the stage for numerous improvements over the next decade. Four new buildings are currently under construction: an addition to the Wise Library and renovation of the existing structure, a Student Recreation Center, a new Administration Building on the riverfront as part of a major downtown Morgantown redevelopment project, and a state-of-the-art Life Sciences Building to house the biology and psychology departments, all due for completion in 2001.

Parts of the campus are linked by the Personal Rapid Transit (PRT) system, which consists of computer-directed, electric-powered cars that operate on a concrete and steel guideway, permitting quick and easy access to major locations within the University and the downtown area of Morgantown.

Greater Morgantown, with a population of 47,000, is located on the east bank of the Monongahela River in the rolling hills of northern West Virginia. Morgantown is within easy traveling distance of metropolitan areas: Pittsburgh, Pennsylvania, is 75 miles to the north, and Baltimore, Maryland, and Washington, D.C., are 200 miles to the east. Two major highways, Interstates 79 (north/south) and 68 (east/west), pass near Morgantown.

Of the nearly 23,000 students enrolled on the Morgantown campuses, most undergraduates are housed in the University-owned residence halls, and many married students and single graduate students live in University apartments. Approximately 3,000 students live in privately owned residence halls and fraternity and sorority houses; many commute from their parents' homes, and the rest live in apartments, mobile homes, and private rooms.

The Housing and Residence Life Apartments Office, located at 1056 Van Voorhis Road, phone (304) 293-5840, provides information about University-owned apartments for graduate and select undergraduate students, faculty, and staff. The Student Life Office, in Elizabeth Moore Hall, provides information regarding privately owned, off-campus housing, (304) 293-5611. Listings for rentals change daily, so students should visit the Office of Student Life to check availability and make arrangements with landlords. Good, affordable accommodations can be found in University and private housing. Due to the terrain, parking is limited on the WVU campuses and in the city. Access Housing at www.hrl.wvu.edu and Off-Campus Housing at www.wvu.edu/~studlife.

Because of WVU's resources, the Morgantown area is a major research center in the Appalachian region. Four federal agencies have research facilities in the area: the Department of Health and Human Services (Appalachian Laboratory for Occupational Safety and Health), Forest Service (Forestry Sciences Laboratory), Morgantown Energy Technology Center of the Department of Energy, and Soil Conservation Service (West Virginia headquarters).
The West Virginia University Libraries, consisting of 13 campus libraries, contain over 1.4 million volumes and 2.2 million microforms. Some 25,000 volumes are added each year, and 7,900 periodical titles are received. The collections are especially strong in the biological sciences, chemistry, economics, Africana, Appalachian resources, the Health Sciences, and West Virginia history. The libraries are a federal regional depository for government information and patent and trademark information. Facilities for research in West Virginia and regional history are centered in the West Virginia and Regional History Collection on the second floor of Colson Hall. In addition to an extensive collection of books, periodicals, and maps, the West Virginia and Regional History Collection contains over five million manuscripts. These, together with court records from many counties, are invaluable sources for the study of all aspects of West Virginia and Appalachian history. The rare book room contains an unusually fine collection of first and limited editions, including four Shakespeare folios and first editions of many of the works of Dickens, Scott, and Clemens.

The Evansdale Library houses the collections needed to support the schools and colleges on the Evansdale campus: Agriculture, Engineering and Mineral Resources, Human Resources and Education, Social Work, Physical Education, and Creative Arts.

Discipline-specific libraries serve particular areas. The Physical Sciences Library contains 51,000 volumes in the fields of chemistry, geology, geography, physics, and astronomy. This library is located in the Chemistry Research Building. The Health Sciences Center Library on the second floor of the Basic Sciences Building contains over 270,000 volumes and multimedia materials. The Law Library with a collection of over 210,000 volumes is in the Law Center on the Evansdale campus. The Mathematics Library in Armstrong Hall contains approximately 22,000 volumes. The Music Library in the Creative Arts Center contains some 35,000 items, including microcards, microfilms, sound recordings, books, scores, and journals.

The Audiovisual Library located in Colson Hall contains an extensive collection of films, videos, and other multimedia to support the curriculum.

The libraries are fully automated, providing access to more than 100 electronic periodical indexes and full-text databases. Access to the on-line electronic resources is available in faculty offices, all computer labs, and from remote locations. The libraries are open 98 hours per week and on many holidays.

The Office of Disability Services is located at G30 Mountainlair, phone (304) 293-6700. It helps qualified students with disabilities to reach their academic potential. Its services and accommodations are in keeping with the WVU commitment to provide both architectural and programmatic accessibility. Information provided to Disability Services is treated as confidential and is not released without the student’s prior consent, to the extent permitted by law.

Disability Services provides information, referral, and counseling services not only for students with visible impairments but also for students with less-apparent disorders such as diabetes, cardiovascular problems, learning disorders, asthma, allergies, or epilepsy. Also served are persons with a temporary disability such as a sprained ankle, broken arm, or a hospitalization. The following are some of the services this office provides.

- Liaison between students and faculty.
- Individual counseling.
- Vocational/career information and referral.
- Information for faculty on teaching strategies and alternative testing methods for students.
- Provision of interpreters, tutorial referrals, note-taking strategies, and special equipment.
- Transportation assistance, if eligible, to and from residence (within city limits) and class.

Prospective students with disabilities should contact WVU Admissions and Records, (304) 293-2121, and the graduate program of interest for specific information concerning application procedures and admission requirements. All students admitted to WVU are expected to meet current admission requirements.
Residency Policy for Admission and Fee Purposes

The following is quoted from the Policy Regarding Residency Classification of Students for Admission and Fee Purposes, Policy Bulletin No. 34, published by the West Virginia Board of Trustees.

2.1 Students enrolling in a West Virginia public institution of higher education shall be assigned a residency status for admission, tuition, and fee purposes by the institutional officer designated by the president. In determining residency classification, the issue is essentially one of domicile. In general, the domicile of a person is that person’s true, fixed, permanent home and place of habitation. The decision shall be based upon information furnished by the student and all other relevant information. The designated officer is authorized to require such written documents, affidavits, verifications, or other evidence as is deemed necessary to establish the domicile of a student. The burden of establishing domicile for admission, tuition, and fee purposes is upon the student.

2.2 If there is a question as to domicile, the matter must be brought to the attention of the designated officer at least two weeks prior to the deadline for the payment of tuition and fees. Any student found to have made a false or misleading statement concerning domicile shall be subject to institutional disciplinary action and will be charged the nonresident fees for each academic term theretofore attended.

2.3 The previous determination of a student’s domiciliary status by one institution is not conclusive or binding when subsequently considered by another institution; however, assuming no change of facts, the prior judgment should be given strong consideration in the interest of consistency. Out-of-state students being assessed resident tuition and fees as a result of a reciprocity agreement may not transfer said reciprocity status to another public institution in West Virginia.

3.1 Domicile within the state means adoption of the state as the fixed permanent home and involves personal presence within the state with no intent on the part of the applicant or, in the case of a dependent student, the applicant’s parent(s) to return to another state or country. Residing with relatives (other than parent(s)/legal guardian) does not, in and of itself, cause the student to attain domicile in this state for admission or fee payment purposes. West Virginia domicile may be established upon the completion of at least twelve months of continued presence within the state prior to the date of registration, provided that such twelve months’ presence is not primarily for the purpose of attendance at any institution of higher education in West Virginia. Establishment of West Virginia domicile with less than twelve months’ presence prior to the date of registration must be supported by evidence of positive and unequivocal action. In determining domicile, institutional officials should give consideration to such factors as the ownership or lease of a permanently occupied home in West Virginia, full-time employment within the state, paying West Virginia property tax, filing West Virginia income tax returns, registering of motor vehicles in West Virginia, possessing a valid West Virginia driver’s license, and marriage to a person already domiciled in West Virginia. Proof of a number of these actions shall be considered only as evidence which may be used in determining whether or not a domicile has been established. Factors militating against the establishment of West Virginia domicile might include such considerations as the student not being self-supporting, being claimed as a dependent on federal or state income tax returns, or the parents’ health insurance policy if the parents reside out of state, receiving financial assistance from state student aid programs in other states, and leaving the state when school is not in session.

4.1 A dependent student is one who is listed as a dependent on the federal or state income tax return of his/her parent(s) or legal guardian or who receives major financial support from that person. Such a student maintains the same domicile as that of the parent(s) or legal guardian. In the event the parents are divorced or legally separated, the dependent student takes the domicile of the parent with whom he/she lives or to whom he/she has been assigned by court order. However, a dependent student who enrolls and is properly classified as an in-state student maintains that classification as long as the enrollment is continuous and that student does not attain independence and establish domicile in another state.
4.2 A nonresident student who becomes independent while a student at an institution of higher education in West Virginia does not, by reason of such independence alone, attain domicile in this state for admission or fee payment purposes.

5.1 A person who has been classified as an out-of-state student and who seeks resident status in West Virginia must assume the burden of providing conclusive evidence that he/she has established domicile in West Virginia with the intention of making the permanent home in this state. The intent to remain indefinitely in West Virginia is evidence not only by a person’s statements, but also by that person’s actions. In making a determination regarding a request for change in residency status, the designated institutional officer shall consider those actions referenced in Section 3 above. The change in classification, if deemed to be warranted, shall be effective for the academic term or semester next following the date of the application for recategorization.

6.1 An individual who is on full-time active military service in another state or foreign country or an employee of the federal government shall be classified as an in-state student for the purpose of payment of tuition and fees, provided that the person established a domicile in West Virginia prior to entrance into federal service, entered the federal service from West Virginia, and has at no time while in federal service claimed or established a domicile in another state. Sworn statements attesting to these conditions may be required. The spouse and dependent children of such individuals shall also be classified as in-state students for tuition and fee purposes.

6.2 Persons assigned to full-time active military service in West Virginia and residing in the state shall be classified as in-state students for tuition and fee purposes. The spouse and dependent children of such individuals shall also be classified as in-state students for tuition and fee purposes.

7.1 An alien who is in the United States on a resident visa or who has filed a petition for naturalization in the naturalization court, and who has established a bona fide domicile in West Virginia as defined in Section 3 may be eligible for in-state residency classification, provided that person is in the state for purposes other than to attempt to qualify for residency status as a student. Political refugees admitted into the United States for an indefinite period of time and without restriction on the maintenance of a foreign domicile may be eligible for an in-state classification as defined in Section 3. Any person holding a student or other temporary visa cannot be classified as an in-state student.

8.1 A person who was formerly domiciled in the state of West Virginia and who would have been eligible for an in-state residency classification at the time of his/her departure from the state may be immediately eligible for classification as a West Virginia resident provided such person returns to West Virginia within a one-year period of time and satisfies the conditions of Section 3 regarding proof of domicile and intent to remain permanently in West Virginia.

9.1 Each institution shall establish procedures which provide opportunities for students to appeal residency classification decisions with which they disagree. The decision of the designated institutional official charged with the determination of residency classification may be appealed in accordance with appropriate procedures established by the president of the institution. At a minimum, such procedures shall provide that:

9.1.1 An institutional committee on residency appeals will be established to receive and act on appeals of residency decisions made by the designated institutional official charged with making residency determinations.

9.1.1a The institutional committee on residency shall be comprised of members of the institutional community, including faculty and student representatives, and whose number shall be at least three, in any event, an odd number. The student representative(s) shall be appointed by the president of the institutional student government association while the faculty representative(s) shall be selected by the campus-wide representative faculty organization.

9.1.1b The student contesting a residency decision shall be given the opportunity to appear before the institutional committee on residency appeals. If the appellant cannot appear when the committee convenes a meeting, the appellant has the option of allowing committee members to make a decision on the basis of written materials pertaining to the appeal or waiting until the next committee meeting.
9.1.2 The residency appeal procedures will include provisions for appeal of the decision of the institutional committee on residency appeals to the president of the institution.
9.1.3 Residency appeals shall end at the institutional level.

Fees and Expenses
All West Virginia University fees are subject to change without notice. A nonrefundable special service fee of $45 must accompany the application for admission to graduate studies. All fees are due and payable to revenue and loan services on the days of registration. Completion of arrangements with revenue and loan services office for payment from officially accepted scholarships, loan funds, grants, or contracts shall be considered sufficient for acceptance of registration. Fees paid after regular registration must be paid to the University cashier. Any student failing to complete registration on regular registration days is subject to a late registration fee.

At registration, students pay the fees shown in the fee charts, plus special fees and deposits as required. No degree is conferred upon any candidate and no transcripts are issued to any student before payment is made of all tuition, fees, and other indebtedness to any unit of the University.

Regulations
It is the policy of West Virginia University to place on restriction students who have outstanding debts to a unit or units of the University. The restriction may include, but is not limited to, the withholding of a student’s registration, diploma, or transcript. Persons who are neither registered as University students nor members of its administrative or teaching staffs shall not be admitted to regular attendance in University classes.

Off-Campus/Music/Lab Fees
Tuition for credit hours for off-campus students is the same as that charged students enrolled on-campus. Off-campus students do not pay the Daily Athenaeum fee, the radio station fee, or the Mountainlair construction fee.

Off-campus-only students are not assessed special fees, but they are charged $33.00 per credit hour for each off-campus course and television course.

Consult specific departmental sections of this catalog concerning nonrefundable deposits and microscope rentals.

All music majors must pay a fee of $15.00 per semester, which entitles them to assigned practice space one hour per day. Additional space may be available at the rate of $4.00 per hour. Band and orchestra instruments may be rented by the semester for $10.00.

Auditors
Students may enroll in courses without working for a grade or for credit by registering as auditors and by paying full fees.

Waivers
According to legislation passed by the West Virginia Legislature in 1983, WVU is limited in the number of graduate and professional waivers that can be awarded each school year. According to Board of Trustees Policy Bulletin No. 49, WVU must give priority consideration in awarding these waivers to students who are West Virginia residents and also to faculty and staff of West Virginia public and private colleges and universities.

Academic deans, directors, and vice presidents of other University System of West Virginia Board of Trustees institutions are charged with responsibility of awarding tuition waivers. Students should contact the appropriate person in their department, school, or college for information regarding applications and priorities.
Student Refund Policy

Students withdrawing from the University or dropping courses such that they no longer qualify for full-time status within the refund period are eligible for a tuition and fee refund. Every effort is made to process refunds within 30 days. If a graduate assistant-ship is canceled before the end of the term, the student may be responsible for paying all or part of the tuition and fees for that term (see below).

Refund of Fees
Withdrawals
To withdraw officially and receive a refund, a student must apply at the Office of Admissions and Records. Term fees are refundable as follows.

1. Tuition, special, and refundable miscellaneous fees — Refundable based on date of withdrawal and student status.* Refer to refund schedule.
2. Optional health service fee — Refundable based on date of withdrawal and student status.* Refer to refund schedule.
3. Lab fees — Refundable during the first week of classes only based on student status.* Refer to refund schedule.
4. Nonrefundable miscellaneous fees (includes application, transcript, graduation, late registration/payment, and reinstatement fees) — These fees are nonrefundable.
5. Room and board — The unused portion of room and board is refunded on a pro-rata basis, based on the date the student’s belongings are removed from the room and the meal ticket/ID and room keys are surrendered.

Exceptions
Students called to the armed services of the United States may be granted full refund of refundable fees, but no course credit, if the call comes before the end of the first three-fourths of the semester. If the call comes thereafter, full credit of course(s) may be granted provided the student is maintaining a passing mark at time of departure for military services.

Students withdrawn due to catastrophic illness or death will be provided a refund as approved by the dean of student life or designee.

* Board of Trustees Series No. 22: Percent = number of days in term times percent of term allocated for refund (refer to BOT Series No. 22). If the percent calculation identifies a partial day, the entire day is included in the higher refund period.

Dropped Courses
If a student drops below full-time status (12 hours for undergraduates and nine hours for graduates), semester fees are refundable as follows.

1. Tuition, special, and refundable miscellaneous fees — Refundable based on date of dropped course(s). Refer to refund schedule.
2. Lab fees — Refundable at 100 percent during the first week of classes only and nonrefundable thereafter.
3. Nonrefundable miscellaneous fees (includes application, transcript, graduation, late registration/payment, and reinstatement fees) — These fees are nonrefundable.

Refund Schedule

<table>
<thead>
<tr>
<th>Fall/Spring Term (16-week session)</th>
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<tr>
<td>1st week</td>
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<tr>
<td>2nd week</td>
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<td>4th week</td>
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<tr>
<td>5th week</td>
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<td>7th-16th week</td>
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<table>
<thead>
<tr>
<th>Summer Term (6-week session)</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Refund Period</td>
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<tr>
<td>Day 1 through 4</td>
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<tr>
<td>Day 5</td>
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<tr>
<td>Day 6 through 8</td>
<td>70%</td>
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<tr>
<td>Day 9 and 10</td>
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<td>6th week</td>
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<td>Day 13 through 30</td>
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Refund Policy
### Summer Term (3-week session)

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<tr>
<td>Day 3 and 4</td>
<td>70%</td>
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<td>Day 5 and 6</td>
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<td>Day 7 through 15</td>
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### Summer Term (2-week session)

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<tr>
<td>Day 3</td>
<td>70%</td>
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<tr>
<td>Day 4</td>
<td>50%</td>
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<td>Day 5 through 10</td>
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### Summer Term (1-week session)

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<th>Refund Period</th>
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<tbody>
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<tr>
<td>Day 2</td>
<td>70%</td>
</tr>
<tr>
<td>Day 3 through 5</td>
<td></td>
</tr>
</tbody>
</table>

### Non-Sufficient Funds Check Policy

Payments of tuition, fees, and other charges by check, draft, or money order are subject to WVU’s Non-Sufficient Funds Check Policy.

A copy of the policy is available in the Office of Student Accounts. A service charge of $15.00 is collected on each check returned unpaid by the bank upon which it was drawn. The service charge on unpaid, returned check(s) is subject to change in accordance with state law.

### Financial Aid

The Student Financial Aid Office estimates that the total cost of attending WVU for a nine-month academic year is $12,645 for West Virginia residents living on or off campus and $18,103 for nonresidents living on or off campus. These typical estimated student budgets include tuition and fees, books and supplies, room, board, transportation, and personal expenses that provide for a modest but adequate lifestyle.

### Assistantships

West Virginia University annually awards about 1,500 graduate assistantships supported from state appropriations, federal funds, private grants, and contracts; and about 200 fellowships and traineeships derived from federal agencies and from industries and private foundations. Fellowships are awarded on the basis of academic merit and require no service in return. Graduate fellows are expected to spend full time in pursuit of their studies, but may teach to the extent that the particular degree program requires. Most traineeships, provided through institutional grants, are also for full-time study without scheduled duties.

All graduate assistants and fellows are required to be full-time (nine hours or more) graduate students. The individual is primarily a student and secondarily an employee. Tuition and registration fees generally are remitted (see below). Awards are made by degree programs or by the nonacademic unit where service is to be rendered. Applications should be made to the dean or director concerned or to the chairperson of the program in which the graduate work will be pursued. Early application is strongly recommended. Students may hold only one appointment as a graduate assistant per term.
Remission of Fees

Students appointed as graduate assistants are eligible to apply for remission of tuition and certain fees. Tuition and some fees are generally remitted or paid for fellows and trainees. All students must pay the Mountainlair construction, radio station, and Daily Athenaeum fees, but graduate assistants, fellows, and trainees are granted the option with regard to the remainder of the institution activity fee.

Students may not hold more than the total equivalent of one assistantship. This rule applies even if the appointment comes from several sources (e.g., graduate teaching assistantship, graduate research assistantship, graduate administrative assistantship, graduate residence hall assistantship, and/or teaching fellowship).

Terms of Employment

Stipends for graduate assistantships are generally stated in terms of nine- or twelve-month appointments and require service to the institution. The term of service normally runs from August 15 to May 15 for nine-month appointments, or from August 15 to December 31 for the fall semester, or January 1 until May 15 for spring semester. The total hours of work, as well as the particular days of service (e.g., weekends and/or holidays) required, must be made clear to the student by the appropriate graduate department at the time of assigning the assistantship.

Graduate Teaching Assistant

A person who holds a graduate teaching assistantship is obligated to the extent of teaching two three-hour courses per semester, or for the equivalent in laboratory classes, or for other forms of departmental assistance, except research assistance, amounting to a minimum of 12 clock hours per week. These assistantships are generally registered to academic units.

Graduate Research Assistant

A graduate research assistant is a graduate student whose duties consist of assisting in the research of a faculty member with an obligation of not less than 15 or more than 20 clock hours per week in any semester.

Graduate Administrative Assistant

A student employed as a graduate administrative assistant works part time in one of the administrative offices of WVU. Assistantships obligate the student to no less than 12 or more than 20 hours of work per week in any semester.

Graduate Residence Assistants (Housing and Residence Life)

Resident assistant positions are available for single undergraduate and graduate students. There are nine University-supervised residence halls which house approximately 3,600 undergraduate residents. Resident assistants are required to provide educational, cultural, recreational, and social opportunities and programs for their residents. Remuneration for resident assistant positions is room, board, and a monthly stipend. Graduate students may also receive a tuition waiver for a few specialized, live-in positions.

To obtain further information about the resident assistant recruitment and selection process, write to the assistant director for residence life, G-106 Bennett Tower, P.O. Box 6430, West Virginia University, Morgantown, WV 26506-6430.

Financial Aid
Advising Center Assistant
Assistantships are available through the University Advising Center for students who have been admitted to a graduate program. Those who are accepted will provide academic advising services to freshman and sophomore students. A stipend is paid and the graduate student is eligible to apply for waiver of tuition and registration fees. Contact the director of the University Academic Services Center for information and applications.

Teaching Fellow
A teaching fellow is an advanced graduate student, usually in a doctoral program, who would qualify for a junior faculty position if that person were not a graduate student at WVU. A teaching fellow may be given major responsibilities for the design and/or operation of a course, whereas such responsibility is not placed on a graduate teaching assistant.

Policy on Remuneration for Graduate Assistants
The following principles apply to remuneration for duties performed by graduate assistants.

1. Graduate assistant (other than GRHA) salaries must meet or exceed the University minimum on a nine-month equated basis as set by the Office of Academic Affairs, with the minimum salary for doctoral (post-master’s) students set higher than the minimum for master’s-level students. The minimum salary in effect for 1999–2000 was at the rate of $696 per month which amounts to $3,132 for a semester, $6,264 for nine months, and $8,352 for 12 months. The remuneration in effect for 1999–2000 for GRHA was room, some board, and $150 per month. International students must meet financial support criteria (currently about $9,120 for 12 months in addition to tuition and fee charges) from an assistantship and/or other sources in order to qualify for a Certificate of Eligibility (I-20 or IAP-66) and, subsequently, a student visa.

2. Academic and other units are required to establish discipline-based salary ranges by student level (i.e., master’s, doctoral, first-professional) for graduate assistants funded in their units.

Swiger Fellowships
Arlen G. and Louise Stone Swiger have been special benefactors to WVU in their establishment of this fellowship program through the West Virginia University Foundation Inc. Both were WVU graduates. Arlen G. Swiger, a successful New York attorney, bequeathed to the University half of his estate which became available to the WVU Foundation upon the death of his widow, Louise Stone Swiger. These fellowships are open to doctoral students. Selection is competitive on the basis of academic merit. Application should be made early in the year preceding the year of anticipated enrollment in a doctoral program. Inquiries should be directed to the Office of Graduate Education. The stipend amount for 1999-2000 was $15,000 for twelve months.

W. E. B. DuBois Fellowships
Dr. William Edward Burghardt DuBois was born in 1868. He was educated at Fisk University and received his Ph.D. from Harvard University in 1896. Dr. DuBois was one of the founders of the National Association for the Advancement of Colored People and the Pan-African Congress Movement. The author of many historical and analytical studies of American and African society, his example provides a standard of excellence for scholarship in any discipline and an especially inspiring model for black scholars. Because of the achievements of Dr. DuBois, West Virginia University has named this fellowship program in his honor. The fellowships are open to black graduate and professional students who are native or naturalized U.S. citizens. Selection is competitive.
on the basis of academic merit and potential for success in graduate or professional study. Inquiries should be directed to the graduate or professional program of choice or to the Office of Graduate Education. The stipend amount for 1999-2000 was $11,250 for nine months.

Veterans Educational Assistance

The educational assistance program administered by the federal Department of Veteran Affairs, under which a potentially eligible veteran may be entitled to benefits, is largely dependent upon when the individual served on active duty. DVA administers 11 educational assistance programs and the basic eligibility criteria may vary. Generally, only DVA can determine an applicant’s eligibility for educational assistance. For more information, contact the nearest DVA office. In West Virginia, the DVA is located at 640 4th Avenue, Huntington, WV 25701; telephone: 1-800-827-1000.

Loans and Employment

Information and guidance on loans for graduate students is available in the Student Financial Aid Office in the Mountainlair. On-campus employment opportunities can be investigated at the Student Financial Aid Office in the Mountainlair and the Human Resources Office in Knapp Hall. A summer and part-time job service is operated by the WVU Career Services Center in the Mountainlair. Its purpose is to place students in part-time or temporary jobs in Morgantown and the surrounding area.

Fellowships within the United States and Abroad

Students are encouraged to submit applications to outside agencies that support graduate-level study and research. Among the opportunities available are programs sponsored by the Fulbright-Hays Training Grants, the National Science Foundation, the Marshall Scholarship Program, the National Institutes of Health, the Oak Ridge Associated Universities, and the Rhodes Scholarships. Students should contact the Office of Sponsored Programs for assistance in applying for these programs. In most cases, this office will refer the student to a faculty advisor who can provide detailed assistance. Several national agencies publish information about fellowships and financial aid opportunities for graduate students. Individuals interested in reviewing this information should consult the personnel at the reference desk of the Charles C. Wise Jr. Library.

University Patent Policy

West Virginia University is committed to supporting faculty members and staff in all matters related to patents based on discoveries and inventions developed in situations when the invention has been created solely or jointly by them. The objectives of this policy are to encourage and aid research at the University, to provide financial compensation and professional recognition to inventors, and to protect and serve the public interest.

The University recognizes that discoveries and inventions may, and frequently do, include equities beyond those of the inventor alone. The use of University facilities, equipment, personnel, supplies or services; the particular assignment of duties or conditions of employment; the possible claims of a cooperating agency, as in research supported from extramural funds; and other situations may give rise to complex and interrelated rights involving the inventor, the University, and a sponsoring agency. Such rights must be appraised and an agreement reached on their appropriate disposition. This policy defines and provides for procedures for representing the rights and obligations of the University, its sponsors, and its inventors with respect to inventions resulting from research, development, or other work performed at the University.
Academic Integrity/Dishonesty

The academic development of students and the overall integrity of the institution are primary responsibilities of WVU. Academic dishonesty is condemned at all levels of life, indicating an inability to meet and face issues and creating an atmosphere of mistrust, disrespect, and insecurity. In addition, it is essential in an academic community that grades accurately reflect the attainment of the individual student. Faculty, students, and administrators have shared responsibilities in maintaining the academic integrity essential for the University to accomplish its mission.

Students should act to prevent opportunities for academic dishonesty to occur, and in such a manner to discourage any type of academic dishonesty.

Faculty members are expected to remove opportunities for cheating, whether related to test construction, test confidentiality, test administration, or test grading. This same professional care should be exercised with regard to oral and written reports, laboratory assignments, and grade books.

Deans and department chairpersons are expected to acquaint all faculty with expected professional behavior regarding academic integrity, and to continue to remind them of their responsibility. Deans and department chairpersons shall assist faculty members and students in handling first-offense cheating allegations at the lowest possible level in the University, and with discretion to prevent damage to the reputation of any person who has not been found guilty in the prescribed manner.

Each member of the teaching faculty and all other WVU employees, including but not limited to assistants, proctors, office personnel, custodians, and public safety officers, shall promptly report each known case of academic dishonesty to the appropriate supervisor, department chairperson, or dean of the college or school concerned, and to the Office of Judicial Programs, Office of Student Life.

Definition

West Virginia University expects that every member of its academic community shares the historic and traditional commitment to honesty, integrity, and the search for truth. Academic dishonesty is defined to include but is not limited to any of the following.

1. **Plagiarism**: To take and pass off as one’s own the ideas, writings, artistic products, etc. of someone else; for example, submitting, without appropriate acknowledgment, a report, notebook, speech, outline, theme, thesis, dissertation, or other written, visual, or oral material that has been knowingly obtained or copied in whole or in part, from the work of others, whether such source is published, including (but not limited to) another individual’s academic composition, compilation, or other product, or commercially prepared paper.

2. **Cheating** and dishonest practices in connection with examinations, papers, and projects, including but not limited to:
   a. Obtaining help from another student during examinations.
   b. Knowingly giving help to another student during examinations, taking an examination or doing academic work for another student, or providing one’s own work for another student to copy and submit as his/her own.
   c. The unauthorized use of notes, books, or other sources of information during examinations.
   d. Obtaining without authorization an examination or any part thereof.

3. **Forgery, misrepresentation, or fraud**: 
   a. Forging or altering, or causing to be altered, the record of any grade in a grade book or other educational record.
   b. Use of University documents or instruments of identification with intent to defraud.
   c. Presenting false data or intentionally misrepresenting one’s records for admission, registration, or withdrawal from the University or from a University course.
   d. Knowingly presenting false data or intentionally misrepresenting one’s records for personal gain.
e. Knowingly and unethically furnishing the results of research projects or experiments.

f. Knowingly furnishing false statements in any University academic proceeding. Some cases of forgery, misrepresentation, or fraud which occur outside the context of courses or academic requirements may be referred directly to the University Committee on Student Rights and Responsibilities by any member of the University community. In such cases, the University Committee on Student Rights and Responsibilities will arrange a hearing following the procedure outlined in Step 3 within 15 calendar days of receipt of the charges.

Hearing Procedure Steps

**Step 1.** If a student is charged with academic dishonesty, the instructor will contact the student in person and/or notify the student in writing of the specifics of the charge within 15 calendar days of the discovery of the offense. The student must respond within five calendar days of the receipt of the notification. If the instructor determines the student is guilty, the maximum penalties the instructor may administer are exclusion from the course, a lower grade, and/or an unforgivable F (not eligible for D/F repeat policy) in the course. The instructor and/or the department chairperson also may recommend to the dean of the college in which the course is offered that additional penalties be imposed on the student. At the discretion of the faculty member or department chairperson, in cases where there is written admission of guilt by the student, the case may be satisfactorily resolved at the departmental level. Whenever a penalty is administered, the facts of the case shall be reported in writing to the dean of the college or school and a copy forwarded to the Office of Judicial Programs for the permanent records. In cases wherein academic dishonesty occurs in a college or school other than that in which the student is enrolled, the results of the case shall be reported to the dean of the college or school in which the student involved is enrolled.

**Step 2.** If the student denies guilt, if the student believes the penalty imposed in Step 1 is unjust, or if the instructor and/or department chairperson determines the penalties available at Step 1 are insufficient for a specific act, the dean of the college or school in which the course is offered shall be notified in writing of the specifics of the case. The dean shall then implement the following steps within 15 calendar days of receipt of notification.

**Step 3.** If the student wishes to appeal the decision of the dean, the appeal must reach the University Committee on Student Rights and Responsibilities within 30 calendar days of the student’s receipt of the dean’s decision. The University Committee on Student Rights and Responsibilities will arrange a hearing within 15 calendar days using the following procedures. The University Committee on Student Rights and Responsibilities will reach a decision within seven days of the hearing. If the University Committee on Student Rights and Responsibilities finds the student guilty, it will determine the penalty it deems appropriate under the circumstances and inform all parties involved. The penalty imposed cannot be more severe than the penalty imposed by the dean.

**Step 4.** Only sanctions of suspension or dismissal invoked or upheld by the University Committee on Student Rights and Responsibilities may be appealed to the president or his/her designee. Such appeals must reach the president’s office within 30 calendar days after receipt of written notice of the decision of the University Committee on Student Rights and Responsibilities. The decision of the president or the president’s designee is final.

Fees listed are accurate as of January 1, 2000; however, fees are subject to change without notice. Contact the Office of Admissions and Records for more current information.
### Fees per Credit Hour for Graduate Studies

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<th>Credit Hours</th>
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<th>Non-Resident</th>
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### Higher Education Resource Fund

This fee is paid by graduate students in the Colleges of Business and Economics and Engineering and Mineral Resources.

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### Fees per Credit Hour for Health Sciences Graduate Studies

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### Additional Fees for Pharmacy

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### Doctorate in Pharmacy

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<td>1,697</td>
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*Fee Charts*
Other Fees
Application for admission (dentistry and medicine) .................................. $45
Application for admission (law or graduate studies) .................................. 45
Diploma replacement .................................................................................. 20
Graduation .................................................................................................. 30
(All students pay this fee at the beginning of the term or session in which they expect to complete their degrees.)
Late registration (nonrefundable) ............................................................... 30
(Charged to students who do not register on the registration days set forth in the University calendar.)
Professional engineering degree (includes $20.00 graduation fee) .......... 35
Late penalty fee .......................................................................................... 20
Student identification card replacement ..................................................... 20
Student record fee ........................................................................................ 5
Official transcript ........................................................................................... 5
Official letter (statement of degree/grade-point average) ............................ 5
Course descriptions ...................................................................................... 5
Priority service on any of above ................................................................. 8

Notes on the fee charts
† Nine credit hours are considered the usual maximum at WVU.
*Special fees include Mountainlair ($58); Daily Athenaeum ($7); radio station ($5); health, counseling service, and programs ($106); transportation ($51); student affairs ($31); and athletic ($46).

Part 4 Programs and Courses
Schedule of Courses
Before the opening of each term and the summer terms, a Schedule of Courses is printed, announcing the courses that will be offered by the colleges and schools of WVU.

Current Numbering of Courses (effective until Fall 2001 term)
For convenience, each course of study is designated by the name of the department in which it is given and by the number of that course. The plan for numbering courses is as follows:
Courses 1-99: Courses intended primarily for freshmen and sophomores.
Courses 100-199: Courses intended primarily for juniors and seniors.
Courses 200-299: Courses for advanced undergraduate students and selected graduate students. No more than 40 percent of the credits counted for meeting requirements for a graduate degree can be at the 200 level.
Courses 300-399: Courses for graduate students, students in professional programs leading to a doctorate, and selected advanced undergraduate students. Undergraduates in any class carrying a 300-level course number must have a 3.0 cumulative grade-point average and written approval on special forms from the course instructor and the student’s advisor. Seniors within 12 semester hours of graduation may, with prior approval of their advisors, enroll in 300-level graduate courses for graduate credit.
Courses 400-499: Courses for graduate students only.
In summary, 200-level courses are intended primarily to serve undergraduate students; 300-level courses are intended primarily to serve introductory course needs for graduate programs.
NOTE: Graduate degree credit-hour requirements must include at least 60 percent at the 300 and 400 level.
Graduate Level Common Course Numbers and Descriptions
(As approved by the Faculty Senate.)

Course 391 Advanced Topics. Variable 1-6 hr. PR: Consent. Investigation of advanced
topics not covered in regularly scheduled courses.

Course 397 Research. Variable 1-15 hr. PR: Consent. Research activities leading to a
thesis, problem report, research paper, or equivalent scholarly project.

Any school, college, department, or division may elect to offer these courses for its
students. With the approval of the assistant vice president for curriculum and instruction,
these courses may be graded S or U.

Courses 491 and 497: Courses 491 Advanced Study and 497 Research are approved
for University-wide use by any academic unit. Courses numbered 491 and 497 may be
graded S or U.

Courses 492-495: Courses are approved by the assistant vice president for curriculum
and instruction. Approved requests are forwarded to the Office of Admissions and Records
for entry into the WVU Schedule of Courses.

490. Teaching Practicum. I and II. 1-3 hr. PR: Consent. Supervised practice in college teaching
of __________ (Subject matter determined by department/division/college/school offering the course.)

Note: This course is intended to insure that graduate assistants are adequately prepared and
supervised when they are given college teaching responsibility. It also provides a mechanism for
students not on assistantships to gain teaching experience. Courses numbered 490 are graded
S/U.

491. Advanced Study. I, II, S. 1-6 hr. PR: Consent. Investigation in advanced topics which are not
covered in regularly scheduled courses. Study may be independent or through specially sched-
uled lectures.

Note: This course is intended to be helpful in pioneering new courses prior to requesting formal
approval through the Senate Curriculum Committee and the full Faculty Senate (no later than the
semester following the second offering of a particular Special Topics course) and to allow distin-
guished visitors whose stay will be a month or longer to instruct in their own fields of specialty.

492. Directed Study. I, II, S. 1-6 hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 hr. A study of contemporary topics selected from recent develop-
ments in the field.

494. Special Seminars. I, II, S. 1-6 hr. Special seminars arranged for advanced graduate
students.

495. Independent Study. I, II, S. 1-6 hr. Faculty-supervised study of topics not available through
regular course offerings.

496. Graduate Seminar. 1 hr. PR: Consent. It is anticipated that each graduate student will present
at least one seminar to the assembled faculty and graduate student body of his or her program.

Note: This course is intended to provide a mechanism for graduate students to give their “maiden
speech” in their chosen discipline. Grading will be S/U.

497. Research. 1-15 hr.

498. Thesis. 2-4 hr. PR: Consent.
Note: This is an optional course for programs that believe that this level of control and supervision
is needed during the writing of students’ reports, theses, or dissertations.

499. Colloquium. 1-6 hr. PR: Consent. For graduate students not seeking course work credit but
who wish to meet residence requirements, use the University’s facilities, and participate in its
academic and cultural programs.

Note: Graduate students who are not actively involved in course work or research are entitled,
through enrollment in his or her department’s 499 Graduate Colloquium, to consult with graduate
faculty, participate in both formal and informal academic activities sponsored by his or her pro-
gram, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; collo-
quium credit may not be counted against credit requirements for masters’ programs. Registra-
tion for one credit of 499 graduate colloquium satisfies the University requirement of reg-
istration in the semester in which graduation occurs.
General Comment
Graduate Council policy requires that any student in a master’s program has a minimum of 24 hours of “regular” course work: a minimum of 24 hours of course work other than thesis credit is standard and a minimum of 30 total hours is also standard.

Abbreviations Used in Course Listings
I: a course given in the first (fall) term.
II: a course given in the second (spring) term.
I, II: a course given each term.
I and II: a course given throughout the year.
Yr: a course continued through two terms.
S: a course given in the summer.
Hr: credit hours per course.
Lec: lecture period.
Rec: recitation period.
Lab: laboratory period.
Conc: concurrent registration required.
PR: prerequisite.
Coreq: corequisite.
Consent: consent of instructor required.
CR: credit but no grade.

An asterisk (*) following credit hours listed as variable indicates that the course normally carries three credit hours. Exceptions are made only in emergencies and must be approved by the departmental chair and by the professor teaching the course.
Downtown Campus Map
Evansdale Campus Map
The College of Agriculture, Forestry, and Consumer Sciences is comprised of five divisions: animal and veterinary sciences, family and consumer sciences, forestry, plant, and soil sciences, and resource management. The College's faculty and staff are located in four buildings on the Evansdale campus, in one building on the downtown campus, on farms administered by the College of Agriculture, Forestry, and Consumer Sciences in Kearneysville, Morgantown, Reedsville, Union, and Wardensville, and at the University Forest on nearby Chestnut Ridge. The College also operates the West Virginia University Child Development Laboratory (nursery school).

Students study many different subjects concerned with human behavior, plants, animals, and microorganisms. Curricula in the College stress biological and chemical sciences, applied ecology, fabricated structures, and relationships among people as they live and work in a wide variety of settings. Courses offered in the College give students a comprehensive understanding of the basic elements that interrelate with and affect our environment.

The College of Agriculture, Forestry, and Consumer Sciences sponsors research via an organizational structure called the West Virginia Agricultural and Forestry Experiment Station. The Experiment Station is the mechanism through which most research proposals are generated, evaluated, approved, and funded. The University controls extensive lands, which are administered by the College, with specific areas set aside for research and teaching purposes in dairy, general livestock, poultry, forestry, wildlife management, horticulture, general agronomy, entomology, and soils. The required instruction and analytic work is performed in the classrooms and laboratories of the University’s facilities.
Forestry .................................................................................................... M.S.F.
Genetics and Developmental Biology .............................................. M.S., Ph.D.
Natural Resource Economics ............................................................. Ph.D.
Plant and Soil Sciences .................................................................... M.S.
Agronomy, Entomology, Environmental Microbiology, Horticulture,
Plant Pathology
Recreation, Parks, and Tourism Resources ................................. M.S.
Reproductive Physiology ................................................................. M.S., Ph.D.
Wildlife and Fisheries Resources .................................................... M.S.

Doctoral Programs
The College of Agriculture, Forestry, and Consumer Sciences currently offers five doctoral programs:

Ph.D. in Agricultural Sciences  Doctoral students may choose from a major in either animal and food sciences or plant and soil sciences.

Ph.D. in Forest Resource Sciences  Doctoral students may choose from the following majors: forest resource management, wildlife and fisheries management, or wood science.

Ph.D. in Natural Resource Economics  Doctoral students may choose from the following majors: natural resource and environmental economics, commodity market analysis, modeling and forecasting, or international agricultural and rural resource development. The College directs two interdisciplinary doctoral programs.

Ph.D. in Genetics and Developmental Biology  Doctoral students may select areas related to human, plant, and animal genetics, and developmental biology.

Ph.D. in Reproductive Physiology  Doctoral students may select courses in bio-chemistry, developmental embryology, endocrinology, reproductive physiology, statistics, physiology, and pharmacology.

Master’s Programs
The College of Agriculture, Forestry, and Consumer Sciences offers many programs at the master’s level. Students can choose from the following majors for a master’s degree: agricultural and resource economics, agricultural education, animal sciences, family resources, forestry, plant and soil sciences, recreation and parks management, or wildlife and fisheries management. In addition, students may choose to pursue a master of science in the interdisciplinary programs in genetics and developmental biology or reproductive physiology.

For additional information concerning any of the graduate programs in Agriculture, Forestry, and Consumer Sciences contact the Associate Dean and Coordinator of Graduate Studies, College of Agriculture, Forestry, and Consumer Sciences, P.O. Box 6108, West Virginia University, Morgantown, WV 26506-6108; telephone (304) 293-2691.

General Admission Requirements and Information
Regular  A regular graduate student is a degree-seeking student who meets all of the criteria for regular admission to a program of his/her choice. The student must possess a baccalaureate degree from a college or university, have at least a grade-point average of 2.75 on a 4.0 scale (or an average of 3.0 or higher for the last 60 credit hours), meet all criteria established by the degree program, and be under no requirements to make up deficiencies.
The student must:
1. Have an adequate academic aptitude at the graduate level as measured by the Graduate Record Examination (GRE), or the New Medical College Admissions Test (New MCAT).
2. Provide three letters of reference from persons acquainted with the applicant’s professional work, experience, or academic background.
3. Submit a written statement of 500 words or more indicating the applicant’s goals and objectives relative to receiving a graduate degree.
4. International students have the additional requirement to submit a minimum score of 550 on the TOEFL examination if their native language is not English.

See the specific graduate programs for additional requirements.

**Provisional** A student may be admitted as provisional when the student possesses a baccalaureate degree but clearly does not meet the criteria for regular admission. The student may have incomplete credentials, deficiencies to make up, or may have a promising undergraduate scholastic record that is less than the 2.75 grade-point average or an average of 3.0 or higher in the last 60 credit hours required for regular admission.

**Non-Degree** A non-degree student is a student not admitted to a program. Admission as a non-degree student does not guarantee admission to any course or program. The reasons for non-admission may be late application, incomplete credentials, scholarship deficiencies, or lack of a degree objective. Even though a non-degree student has not been admitted to a graduate program, an academic unit may allow a non-degree student admission. A student must present evidence of a baccalaureate degree and obtain a 2.5 grade-point average on the first 12 credit hours of course work and maintain this average as long as enrolled. A maximum of 12 credit hours of work as a non-degree student may be applied to a graduate degree if the student is later accepted into a graduate program. To be eligible to enter a degree program, the student must maintain a minimum 3.0 grade-point average on all course work taken since admission as a graduate student.

**Graduate Faculty**
* Indicates associate membership in the graduate faculty.
† Indicates regular membership in the graduate faculty.

**Animal and Veterinary Sciences**

**Professors**
† Robert A. Dailey, Ph.D. (U. Wisc.). Reproductive physiology.
† E. Keith Inskeep, Ph.D. (U. Wisc.). Reproductive physiology.
† Paul E. Lewis, Ph.D. (WVU). Reproductive physiology.
† John E. Warren, Ph.D. (U. of Md.). Director. Reproductive physiology.

**Associate Professors**
† Hillar Klandorf, Ph.D. (U. Edinburgh). Poultry physiology.

**Assistant Professors**
† Kenneth P. Blemings, Ph.D. (U. Wisc.). Nutritional biochemistry.
Family and Consumer Sciences

Professors
†Wanda F. Franz, Ph.D. (WVU). Human development, Cognitive development theory.
*Nora M. MacDonald, M.S. (Iowa St. U.). Apparel design, Clothing for special needs, Fashion merchandising.
†M. Zafar Alam Nomani, Ph.D. (Rutgers U.). Dietary fiber, Cholesterol, Protein and energy metabolism, Nutritional assessment, International nutrition.

Associate Professors
†Carol A. Markstrom, Ph.D. (Utah St. U.). Family, Adolescents, Social contexts.

Assistant Professors
†Carol A. Markstrom, Ph.D. (Utah St. U.). Family, Adolescents, Social contexts.

Lecturer

Forestry

Professors
†Ray R. Hicks, Jr., Ph.D. (SUNY). Forest management. Forest ecology, Forest pest management.

Associate Professors
†Mary Ann Fajvan, Ph.D. (U. Maine). Forest management, Quantitative silviculture.
Joseph McNeel, Ph.D. (VPI & SU). Director. Forest engineering/forest operations.
†Steven W. Selin, Ph.D. (U. Ore.). Recreation, parks, and tourism resources. Natural resource-based tourism, Public involvement in natural resource management.

Assistant Professors
†R. Bruce Anderson, Ph.D. (VPI & SU). Wood science, Forest products technology.
*Rory F. Fraser, Ph.D. (Penn. St. U.). Forest management. Forest economics and international trade.
†Linda S. Gribko, Ph.D. (WVU). Forest management. Integrated resources management and planning, Geographic Information Systems.
†Elmer Lang, Ph.D. (VPI & SU). Wood science, Wood mechanics, Wood-based composite materials.
†Patricia Mazik, Ph.D. (Memphis St. U.). Adjunct. Cooperative Fish and Wildlife Research Unit. Fish physiology.
†Michael Schuett, Ph.D. (U. of Minn.). Recreation, parks and tourism resources. Recreation resource management, Recreation behavior, Research methods.
Genetics and Developmental Biology

Professors
† Theresa Wang, Ph.D. (U. of Minn.). Recreation, parks, and tourism resources. Recreation resource management, Environmental interpretation and education.

† Linda Butler, Ph.D. (U. Ga.). Entomology. Forest entomology, Pest management.
† Nyles Charon, Ph.D. (U. Minn.). Medical bacteriology, Genetics and physiology of spirochetes.
† Walter J. Kaczmarczyk, Ph.D. (Hahnemann Med. Col.). Biochemical genetics, Biochemistry.
† Daniel M. Lewis, Ph.D. (WVU). Adjunct. Immunology, Mechanism of immunological reactions in the lung.
† Robert S. Pore, Ph.D. (U. Cal.). Mycology, Pathobiology, Mycoses.
† Donald A. Sens, Ph.D. (U. S.C.). Pathology, Microbiology, Molecular genetics.
† Mary Ann Sens, M.D., Ph.D. (U. SC). Renal and urological pathology.
† William Sorenson, Ph.D. (U. Tx.). Adjunct. Role of fungi in occupational lung disease.
† William V. Thayne, Ph.D. (U. Ill.). Statistics, Statistical genetics.
† Knox Van Dyke, Ph.D. (St. Louis U.). Chemiluminescence in human cells, Effects of anti-inflammatory drugs on chemiluminescence.
† Sharon L. Wenger, Ph.D. (U. Pitt.). Clinical cytogenetics.
† David B. Yelton, Ph.D. (U. Mass.). Microbial genetics, Bacteriophage, Molecular genetics.

Associate Professors
† Keith Garbutt, Ph.D. (U. Wales). Population genetics.
† Hillar Klandorf, Ph.D. (U. Edinburgh). Endocrinology.
† Daniel Panacionne, Ph.D. (Purdue U.). Gene cloning, Gene transfer.
† James Sheil, Ph.D. (U. Ky.). Immunology, Mechanisms of cytotoxic T lymphocyte-mediated antigen recognition and effector function.

Assistant Professors
† Rajeev Arora, Ph.D. (U. Wisc.). Perturbations related to low temperature stress.

Plant and Soil Sciences

Professors
† James W. Amrine, Jr., Ph.D. (Iowa St. U.). Entomology. Medical entomology, Apiculture, Biological control.
† Linda Butler, Ph.D. (U. Ga.). Entomology. Forest entomology, Pest management, Lepidoptera.

College of Agriculture, Forestry, and Consumer Sciences

Associate Professors
†Daniel Panacionne, Ph.D. (Purdue U.). Gene cloning, Gene transfer.

Assistant Professors
†Rajeev Arora, Ph.D. (U. Wisc.). Horticulture, Plant physiology, Environmental stress.
†Devinder K. Bhumbla, Ph.D. (WVU). Extension specialist. Soil science.
†Louis McDonald, Ph.D. (U. KY). Soil chemistry.

Resource Management

Professors
†Dale K. Colyer, Ph.D. (U. Wisc.). Production economics. Rural development.
†Jerald J. Fletcher, Ph.D. (U. Cal.). Agricultural and resource economics, Resource economics.
†Stacy A. Gartin, Ph.D. (Ohio St. U.). Agricultural education, Communications, Program planning, Leadership development, Adult education, Teaching methods.
†Layle D. Lawrence, Ph.D. (LSU). Agricultural education. Social science, Curriculum development, Teaching methods.
†Tim T. Phipps, Ph.D. (U. Cal.). Agricultural and resource economics. Agricultural policy.

Associate Professors
†Kerry S. Odell, Ph.D. (Ohio St. U.). Associate dean. Rural education, Computer application, Leadership development.

Assistant Professor
Reproductive Physiology

Professors

†Robert A. Dailey, Ph.D. (U. Wisc.). Neuroendocrine control of reproduction, Follicular development, Ovulation.
‡Mark Gibson, M.D. (Case W. Reserve U.). Ovarian and uterine functions.
†Robert L. Goodman, Ph.D. (U. Pitt.). Neuroendocrine control of ovarian function.
†E. Keith Inskeep, Ph.D. (U. Wisc.). Uterine and ovarian prostaglandins in sheep and cattle.
†Paul E. Lewis, Ph.D. (WVU). Puberty, Postpartum and seasonal anestrus as limiting factors in reproduction.
†Michael G. Mawhinney, Ph.D. (WVU). Endocrine pharmacology and metabolism of male sex accessory tissues.
†Joginder Nath, Ph.D. (U. Wisc.). Genetics and evolution.

Associate Professor


Assistant Professor


Agricultural and Environmental Education

Peter V. Schaeffer, Director, Division of Resource Management
Layle D. Lawrence, Graduate Program Coordinator
2056 Agricultural Sciences Building

Degree Offered: Master of Science

Prerequisites

The agricultural and environmental education faculty offers master’s programs for persons desiring advanced study in teaching agriculture in public schools, communications and leadership, extension education, or environmental technology. Candidates for the master of science degree may be admitted on a regular or provisional basis. A student who does not have a B.S. in agriculture with a major in agricultural and environmental education may be required to complete undergraduate courses in agriculture and professional education if he or she plans to obtain certification to teach. Students in the curriculum take graduate courses in both technical and professional education.

Programs are planned to ensure that candidates develop competence in:

• Communications and leadership;
• Design, operation, and philosophy of agricultural and environmental education programs; and
• Research and evaluation processes

In addition, students pursuing programs that emphasize agricultural and extension education will be expected to develop an understanding of teaching/learning processes whereas those emphasizing environmental technology will develop competence in technological aspects of environmental management.

All graduate courses offered toward the degree must be approved by the student’s advisor. A thesis is required as part of the 30 credit-hour graduation requirement.
Agricultural and Environmental Education (AGEE)


262. Agricultural and Natural Resource Communications. I, II. 3 Hr. Procedures and practices in developing, interpreting, and communicating agricultural and natural resource information; emphasis on visual materials and effective presentations. (3 hr. lec.)

263. Adult Education in Agriculture and Natural Resources. 2 Hr. PR: Consent. Planning and preparation for teaching adult classes and advising agricultural organizations.

270. Electricity and Lighting. 3 Hr. Properties of electricity and electrical circuits, residential wiring, selection of electric motors, use of electrical controls; and design of interior lighting, landscape lighting, and flood lighting systems. (Field trip required.)

280 A-Z. Agricultural Mechanics Problems. 1-4 Hr. PR: C or better in an AGEE course. Special projects and problems in theoretical analysis, design, or construction. (1-4 hr. conference.)

290. Waste Management-Composting. I. 3 Hr. Both present and alternative waste management strategies will be examined. Students will learn how to analyze the waste stream and be able to develop management concepts which are both economically and environmentally sound. Lectures by waste management professionals will be integrated into the class to expose the students to the very latest practices and technology.


364. Supervision of Agricultural Experience Programs. S. 3 Hr. PR: AGED 160 or consent. Planning, supervision, and evaluating experience programs of secondary students and adults.

460. Planning Agricultural Programs and Courses. S. 3 Hr. PR: AGED 160 or consent. Formulating programs and courses for schools and communities.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of agricultural and environmental education. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; collegium credit may not be counted against credit requirements for master’s programs.

66  WVU Graduate Catalog
Admission Requirements

Applicants must meet the minimum admission requirements of the University for regular graduate students, including a 2.75 grade-point average, in order to be a regular graduate student in this program. Students applying to this degree program are asked to provide a 500-word statement of academic and professional goals and objectives. Applications are reviewed first by the division coordinator for the Master of Agriculture, Forestry, and Consumer Sciences Program in one of the divisions of the College. Applicants selected for admission are recommended to the dean of the College of Agriculture, Forestry, and Consumer Sciences.

If the student’s baccalaureate degree is not in a field sufficiently related to the proposed course of study, the division coordinator may recommend admission as a provisional student completion of prerequisite undergraduate courses. Prime consideration is given to a program of study tailored to the career goals of the individual student.

Degree Requirements

Satisfactory completion of 36 hours of graduate level course work is required for the master of agriculture, forestry, and consumer sciences degree. A minimum of 18 hours must be selected from among graduate courses available within two divisions of the college, with no fewer than six hours in either division. No more than 12 hours of special topics or advanced study may be counted towards the degree. The student must maintain an overall grade-point average of 3.0 in all graduate courses approved by a graduate advisory committee. A three-hour problem report may be included at the option of the student and the graduate advisory committee.

The graduate advisory committee shall consist of at least three members representing at least two divisions with at least two being members of the graduate faculty of the College. The committee shall be formed with advice from the division coordinator for the program and an approved plan of study shall be submitted to the dean during the first semester of enrollment. Upon completion of the course work, the candidate must pass either an oral or a written examination given by the graduate advisory committee.

Agricultural and Resource Economics

Peter V. Schaeffer, Director, Division of Resource Management
Tim T. Phipps, Graduate Program Coordinator
2018 Agricultural Sciences Building
www.caf.wvu.edu/resm/are/

Degree Offered: Master of Science

The master of science in agricultural and resource economics provides advanced training in the areas of environmental, natural resource, agricultural, mineral, energy, and rural development economics. The degree prepares students for further graduate study and a wide variety of careers in the private sector and government.

Agricultural and Resource Economics
Admission Requirements
Prospective graduate students initiate application for admission on forms available from the University Office of Admissions and Records. The completed forms should be returned to the Office of Admissions and Records, accompanied by payment of the nonrefundable application fee. An official transcript from all colleges attended during an applicant’s undergraduate and graduate studies must be a part of the application for admission.

In addition to general requirements, students must have the following.
• Three letters of recommendation.
• Twelve or more semester credits in economics, agricultural and resource economics, statistics, or appropriate social science courses (should include intermediate microeconomics).
• Three or more semester hours of credit in calculus.
• A grade-point average of 2.75 for all credit in economics and agricultural and resource economics.
• A letter of purpose describing research interests and professional aspirations is required.

Students seeking a master of science in agricultural and resource economics may be accepted on a regular or provisional basis. The admissions committee reviews and evaluates all applications. Applicants who do not meet all of the requirements above but have special qualifications may be admitted on a provisional basis. Such admission will usually be subject to conditions, however, such as taking course work to make up for deficiencies. Such make-up work will not be counted as part of the credit requirements for the degree. Scores from the Graduate Record Examination are required from all applicants.

A student whose native language is not English must have obtained a minimum score of 550 on the TOEFL examination.

Thesis Option
Either a thesis or a course work option may be selected. Students should select the option by the time 12 hours of course work are completed (usually by the end of the first semester in the program) and after consulting with their graduate committees. Candidates with graduate research assistantships should select the thesis option.
• A minimum of 30 credit hours of approved work to include not more than six hours of credit for the thesis, and enough courses to provide proficiency in economics and agricultural and resource economics. Courses in closely related areas may be included. The student’s graduate committee must approve the student’s course of study and thesis topic.

Course Work Option
• A minimum of 36 credit hours of approved course work to provide proficiency in economics, resource, and agricultural and resource economics. Courses in closely related areas may be included if approved by the student’s graduate committee.
• The student must satisfactorily complete a written and oral examination administered by the graduate committee.

Plan of Study
Each candidate’s plan of study is developed by the student in consultation with his/her major professor and graduate committee. Normally, the plan of study will include graduate-level courses in economic theory, resource economics, environmental economics, statistics, and agricultural economics. The plan of study should be developed during the first term of study.
GPA Requirement
A minimum grade-point average of 3.0 is required for all graduate credit course work. This includes graduate credit transferred and graduate credit accumulated while pursuing a degree in agricultural and resource economics. Persons requesting transfers of graduate credit must obtain approval of their graduate committee for such transfers.

Research Assistantships
A limited number of graduate research assistantships is available to highly qualified students on a competitive basis. The awards are based on academic merit only.

Agricultural and Resource Economics (ARE)

201. Applied Demand Analysis. II. 3 Hr. Consumer demand economics applied to environmental, natural resource, and agricultural issues; analysis of factors that influence demand and determine prices; special applications to non-market, environmental, and natural resource amenities.

202. Applied Production Economics. I. 3 Hr. Production economics applied to agricultural, environmental, and resource issues; production, multiple-product and cost functions, and joint production; effects of environmental and natural resource management regulations on the production process.

206. Agribusiness Planning. I. 3 Hr. PR: ARE 104 or consent. Application of economic and management principles to agribusiness planning; consideration of risk and uncertainty in agribusiness planning; formulation of economic models for determining optimum allocation of resources for production processes.

210. Environmental and Resource Economics. I. 3 Hr. PR: ARE 201 and ARE 202; or ECON 211 or Consent. Economic analysis of natural resource and environmental problems; management of renewable and non-renewable resources and environmental amenities; market failure, externalities, benefit-cost and risk analysis; property rights and the “taking” issue.

211. Rural Economic Development. I. 3 Hr. Economic trends, development policies, and analysis of rural economies in the United States. Rural diversity, development concepts, rural planning, public programs and policies, and community analysis methods.

213. Economic Development. I, II. 3 Hr. PR: ECON 54 and ECON 55. The problems, changes, and principal policy issues faced by nonindustrialized countries.

220. Agricultural Cooperatives. I. 3 Hr. History, principles, organization, management, taxation, and legal aspects of agricultural, marketing, supply, and service cooperatives in the U.S. development of non-agricultural cooperatives. (Offered in fall of odd years.)

231. Marketing Agricultural Products. II. 3 Hr. Organization, functions, and analysis of the agricultural marketing system. Food consumption, exports, price analysis, marketing costs, market power, commodities futures market, food safety, and government regulations.

235. Marketing Livestock Products. I. 3 Hr. Livestock marketing practices and policies. Supply and demand, livestock price cycles, grading, marketing alternatives, processing and retailing. Economic analysis of alternatives current issues and trends. (Offered in fall of even years.)

240. Futures Markets and Commodity Prices. I. 3 Hr. Analysis of price-making forces which operate in the market place; emphasis on major agricultural and mineral commodity and futures markets.

245. Energy Economics. II. 3 Hr. Analysis of the energy sector and its relationship to the rest of the economy; energy security, deregulation, full cost pricing, substitutability among energy sources, transmission, new technologies, environmental considerations.
250. Agriculture, Environmental, and Resource Policy. II. 3 Hr. PR: ARE 201 and ARE 202; or ECON 211; or consent. Economic analysis of agricultural, natural resource, and environmental policies; problems of externalities and market failure, and alternative policies for addressing such problems; benefits and cost of alternative policies.

261. Agribusiness Finance. II. 3 Hr. An overview of financial analysis and the application of financial principles to small, rural, and agricultural businesses. Includes applications of financial analysis computer software.

300. Applied Microeconomics. I. 3 Hr. PR: ECON 211 and ECON 220, or equiv. Producer and consumer economics used in resource, environmental, and agricultural economic analysis.

321. Quantitative Methods in Resource Economics. I. 3 Hr. PR: ECON 220 or equivalent. Optimization techniques in economic analysis of natural resources; environmental, and agricultural management problems; linear, nonlinear, and dynamic programming.


329. Resource Commodity Markets. II. 3 Hr. PR: ECON 325 and ECON 326 or consent. Advanced econometric methods of specification, estimation, and simulation of domestic and international resource markets and industries; time series and forecasting techniques.

330. Production Economics. II. 3 Hr. PR: ARE 300 and ARE 321. Developments in producer economics applied to natural resources, environmental, and agricultural issues.

332. Natural Resource and Environmental Economics. II. 3 Hr. PR: ARE 300 and ARE 321 or equivalent. Theory and institutions; market failure, externalities and property rights issues; renewable and nonrenewable resources, common property, environmental and resource management, and intergenerational decisions.


340. Rural and Regional Development. II. 3 Hr. PR: ARE 300 and ARE 321. Economic theories and quantitative techniques. Problems and goals for rural and regional planning; methods of policy analysis for community infrastructure development.

342. International Agricultural Economic Development. I. 3 Hr. Current problems, theories, policies, and strategies in planning for agricultural and rural development for increased food production and to improve the well-being of rural people in the developing countries of the world.

343. Project Analysis and Evaluation. II. 3 Hr. PR: Consent. Design, analysis, and evaluation of development projects; economic and financial aspects of project analysis; risk analysis; preparation of feasibility reports.

344. International Markets and Trade. I. 3 Hr. PR: ARE 300 and ARE 321. Causes and consequences of international trade and investment; commodity market structures, commodity price instability and international agreements; trade barriers and protection, export promotion, and impacts on developing countries.

365. Mineral Finance. II. 3 Hr. Methods, risks, and problems of financing mineral projects. Large foreign-project financing, concerns of host governments, multinational mining concerns, and financial institutions.
380. Energy Industry Economics. II. 3 Hr. PR: Graduate standing. Technical production and consumption methodologies, environmental concerns, and national and global economics and politics in making energy decisions.

381. Resource Appraisal and Decision Making. II. 3 Hr. PR: ARE 300 or equivalent. Investment analysis, decision making under risk and uncertainty, and project analysis applied to resource exploration and utilization; mineral and energy reserve and resource estimation techniques.

382. Mineral Industry Economics. II. 3 Hr. Supply, demand, structure, technology, costs, prices, and problems of mineral industries.

400. Research Methods. II. 1 Hr. Research methods in agricultural, environmental, and resource economics. The application of scientific thinking in developing research proposals and critiquing published research.

403. Advanced Natural Resource Economic Theory. I. 3 Hr. PR: ECON 310 and ARE 332. Allocation and distribution of natural resources in static and dynamic contexts; welfare economics, cost-benefit analysis, and optimal control approaches; applications to resource valuation, exhaustion, taxation, and regulation in theory and practice.

410. Advanced Environmental Economics. II. 3 Hr. PR: ECON 310 and ARE 332 or consent. Theory, efficient environmental design and analysis, modeling of economic and environmental systems, evaluation of non-market benefits and costs, and risk assessment.

446. Energy and Regional Development. II. 3 Hr. PR: ECON 355 and ARE 380. Energy in the West Virginia economy and selected regions of the United States.

483. Mineral Technology Assessment. II. 3 Hr. PR: Consent. Methods of studying the effects of modifications in technology on the production of utilization of minerals, and the effects on mineral demand, supply, substitution, and markets.

484. Oil and Gas Industry Economics. II. 3 Hr. PR: Consent. Geology, engineering, and economic theories of evaluating industry structures and performance.

485. Economics of the Coal Industry. 3 Hr. Supply, demand, structure, production technology, costs, prices, and problems of the coal industry. Includes environmental, productivity, and transportation issues.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their students’ reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s or graduate colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
Resource Management (RESM)

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate students body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Agricultural Sciences
Robert A. Dailey, Interim Dean of the College of Agriculture, Forestry and Consumer Sciences
1170 Agricultural Sciences Building
Degree Offered: Doctor of Philosophy

The College of Agriculture, Forestry, and Consumer Sciences offers graduate studies leading to the degree of doctor of philosophy in agricultural sciences. The doctoral program offers two majors: animal and food sciences, and plant and soil sciences. Students entering this program may select research and classes to emphasize environmental microbiology, agronomy, animal nutrition, entomology, horticulture, or plant pathology. The objective of the degree program is to provide doctoral students an opportunity to study and conduct research with faculty in areas of excellence within the College. Research and training in the various disciplines are under ten areas of emphasis in the college: agricultural biochemistry, animal nutrition, animal physiology, production management, crops agronomy, entomology, environmental microbiology, horticulture, plant pathology, and soil sciences.

Admission Requirements
Prospective students initiate application for admission on forms available from the WVU Office of Admissions and Records. The completed forms should be returned to the Office of Admissions and Records, accompanied by payment of the nonrefundable special service fee. An official transcript from all colleges attended in the course of an applicant’s masters and undergraduate degrees must be part of the application for admission. Applicants must hold a master’s or its equivalent to be eligible for admission into the program.

The following admission and performance standards are normally required in the doctor of philosophy in agriculture sciences program.

• An applicant must possess a master’s degree and hold a grade-point average (GPA) of 3.0 or above (on a 4.0 scale) in postgraduate courses.
• The graduate record examination is required. A minimum score of 1300 is expected for regular admission.
• A student whose native language is not English must have obtained a minimum score of 550 on the TOEFL examination.
• An applicant must provide three letters of reference.
• A one-to-two page letter of intent from the student describing his/her research and professional aspirations is required.

Students who do not meet the requirements, but have special qualifications or circumstances, may be admitted as provisional graduate students if approved by the graduate faculty committee, division director, and doctoral program coordinator.
After a student is admitted into the doctoral program, the appropriate division director will appoint a major professor in the appropriate field of study. Doctoral students will conduct research in support of projects approved by the West Virginia Agriculture and Forestry Experiment Station (WVAFES) or externally funded grants. The major professor, in consultation with the student and the division director, will select a graduate committee within the first semester of study. The committee will consist of five or more members, the majority of whom must be WVU faculty, with at least one member representing a discipline outside the College. Each student and his/her committee will formulate a plan of study, which will be filed in the office of the doctoral program coordinator. WVU regulations concerning committee membership will apply; that the chairman and at least two committee members must be regular members of the College’s graduate faculty.

Core Courses

Doctoral students must satisfactorily complete a set of core courses before they will be admitted to candidacy for the Ph.D. degree. All core courses will be at the 600- or 700-level, except where indicated below. Certain course requirements may be waived if the student has received equivalent training in prior course work. Additional course work pertaining to the student’s area of specialization will be determined by the student’s major professor and graduate committee. Core courses for students in the doctoral program in agricultural sciences will be in the following areas.

- A minimum of six credit-hours of course work must be completed in the biological or earth sciences (excluding courses within a student’s major field of study).
- A minimum of six credit-hours must be completed in biochemistry or advanced chemistry (400-level or above), depending on the student’s research concentration.
- A two-semester sequence (minimum of six credits) must be completed in graduate level statistics, plus a course in experimental design or a two-semester sequence (minimum of six credits) must be completed in graduate-level statistics plus one semester (minimum of three credits) of computer science beyond the introductory level.
- One seminar must be presented during each year or part of year in residence. A final dissertation research seminar will be presented as a College or University-wide seminar.
- Oral and written comprehensive (qualifying) examinations will be administered by the student’s graduate committee before the end of the second year following admission to the program. Satisfactory completion of the comprehensive examinations and core course requirements will admit the student to candidacy for the Ph.D. Each candidate for the Ph.D. will be expected to meet the following general requirements.
  - A minimum of three semesters in residence.
  - Successful completion of course work requirements with a grade-point average of 3.0 or higher.
  - Successful completion of comprehensive examinations prepared and evaluated by the student’s graduate committee. Oral and written qualifying exams will be taken before the end of the second year following admission to the program.
  - A dissertation, with the dissertation research applied toward an approved experiment station project or an approved independently funded research project.
  - Successful oral defense of the dissertation.

Although not required, presentation of research results at meetings of a professional society and submission of manuscripts for publication are encouraged.
Animal and Veterinary Sciences

John E. Warren, Director, Division of Animal and Veterinary Sciences
Hillar Klandorf, Graduate Program Coordinator
G038 Agricultural Sciences Building
www.caf.wvu.edu/avs/index.html

Degree Offered: Master of Science

The master of science in animal and veterinary sciences in the College of Agriculture, Forestry, and Consumer Sciences allows maximum flexibility in courses and research problems. Students may emphasize physiology, production, nutrition, or food sciences. They may work with beef and dairy cattle, sheep, swine, poultry, or laboratory animals. Research problems in farm animals form the basis for many studies, but a comparative approach is emphasized.

Prerequisites

Additional requirements are similar to those in other biological sciences. The student should have completed basic courses in the physical and biological sciences, including genetics, nutrition, and physiology. Deficiencies may prolong the time needed to complete degree programs.

A composite graduate record examination score of 1,000 or better will be considered as a basis of admission. The fact that an applicant meets the above requirements shall not guarantee admission since each professor will accept only the number of students that can be supervised adequately with available facilities, time, and funds. Students interested in the Ph.D. should apply for admission to the doctoral program in agricultural sciences or reproductive physiology.

Agricultural Biochemistry (AGBI)

210. Introductory Biochemistry. I, II. 3 Hr. PR: 8 Hr. General chemistry, CHEM 131 or equivalent. Introduction to chemistry of cellular constituents (proteins, amino acids, carbohydrates, lipids, nucleic acids, enzymes, and coenzymes) and their metabolism in animals and plants.

211. Introductory Biochemistry Laboratory. I. 1 Hr. Conc.: AGBI 210. Experiments to demonstrate certain principles and properties of animal and plant biochemicals.

212. Nutritional Biochemistry. II. 3 Hr. PR: AGBI 210 or consent. Nutritional biochemistry of domestic animals.

213. Nutritional Biochemistry Laboratory. II. 1 Hr. PR: AGBI 210 and AGBI 211 and Conc.: AGBI 212. Experiments to determine the nutritional constituents in animal and plant tissues.

310. General Biochemistry. I. 4 Hr. PR: 8 Hr. Organic chemistry. The first half of a general course of biochemistry designed for graduate students of biological sciences. The course emphasizes the chemical properties of cellular constituents.

311. Laboratory Experiments in Biochemistry. I. 2 Hr. PR or Conc.: AGBI 310. Experiments designed to demonstrate some of the basic tools and procedures of biochemical research.

312. General Biochemistry. II. 4 Hr. PR: AGBI 310 or consent. The second half of a general course of biochemistry designed for graduate students of biological sciences. The course emphasizes reactions and control of intermediary metabolism.

414. Enzymes. II. 3 Hr. PR: AGBI 312 or consent. A survey of enzymology covering general principles as well as current concepts and methods.
415. Advanced Biochemistry Laboratory. II. 2 Hr. PR or Conc.: AGBI 312. Experiments in the areas of intermediary metabolism and enzymology.

416. Vitamin and Coenzyme Biochemistry. II. 2 Hr. PR: AGBI 312, or BIOL 231, or consent. Chemical and physical properties, analysis, biosynthesis, metabolism, pathobiology, pharmacology, and toxicology of vitamins, vitamin-like compounds, and coenzymes. (Offered in spring of odd years.)

422. Plant Biochemistry. I. 3 Hr. PR: AGBI 312 or consent. Advanced treatment of the composition and metabolism of plants. Topics include cell wall structure, sulfur and nitrogen metabolism, and photosynthesis. (Offered in fall of odd years.)

424. Advanced Nutritional Biochemistry. I. 4 Hr. PR: AGBI 310 and AGBI 311 and AGBI 312 or consent. Advanced treatment of the biochemistry and metabolism of amino acids, carbohydrates and lipids in the diets of ruminants and nonruminants. (Offered in fall of even years.)

428. Biomembranes and Muscle Biochemistry. II. 3 Hr. PR: AGBI 312, or BIOC 231, or consent. Chemical, organization, and physiological aspects of membranes and muscles; molecular and cellular interactions and integrative mechanisms. (3 hr. lec.) (Offered in spring of even years.)

Animal and Veterinary Science (A&VS)

201. Values and Ethics. 3 Hr. PR: Senior standing or consent. Current ethical aspects in agriculture and forestry and their impact on societal values.

250. Current Literature in Animal Science. I. 3 Hr. PR: ANNU 101. Evaluation of current research in animal science; its application to production and management. (Note: Previously listed as ANPR 250.)

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her departments 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

Animal Nutrition (ANNU)

301. Principles of Nutrition and Metabolism. I. 3 Hr. PR: AGBI 210 or consent. A basic course in principles of nutrition with emphasis on the major classes of dietary nutrients and their digestion and utilization.

302. Nutrition and Physiological Function. II. 3 Hr. PR: ANNU 301 or consent. Sequence to ANNU 301. Techniques used in nutritional studies and the relationship of nutrient requirements to physiological function in species of laboratory and domestic animals and man.
430. *Rumen Metabolism and Physiology*. I. 3 Hr. PR: Course in biochemistry. The anatomy and physiology of the forestomachs of ruminants and the rumen microbial population. Emphasis on the microbial metabolism as it pertains to the utilization of feeds by ruminants. (Offered in fall of odd years.)

432. *Forage Chemistry and Quality*. 3 Hr. PR: ANNU 301 and AGRN 254, or consent. Advanced course in chemistry and biochemistry of pastures and forages, emphasizing factors affecting their quality and principles governing their utilization by herbivorous animals. (Also listed as AGRN 432.) (Offered in spring of even years.)

434. *Mineral Nutrition of Animals*. II. 3 Hr. PR: ANNU 301 or consent. Mineral nutrition of livestock and man; soil-plant-animal interactions. Detailed treatment of function of individual elements and their involvement in deficiency and toxicity conditions on an international basis. (Offered in spring of odd years.)

**Animal Physiology (ANPH)**

200. *Growth and Lactation Physiology*. II. 3 Hr. PR: ANPH 100, or consent. Animal life cycles; nature of growth and lactation; effects of biological, environmental, and social-psychological variants; physiological regulation and control.

204. *Animal Physiology Laboratory*. I. 2 Hr. PR: ANPH 100 or consent. Laboratory study of the physiological systems of animals and the influences of environment on these systems. (4 hr. lab.)

225. *Physiology of Reproduction*. II. 3 Hr. PR: Course in biology. Comparative physiology of reproduction in higher animals; endocrine functions involved in reproduction; genetic and environmental variations in fertility mechanisms.

226. *Breeding of Farm Animals*. 3 hr. PR: Course in genetics or consent. Application of principles of quantitative genetics to the improvement of farm animals. (Offered in spring of odd years.)

280. *Behavioral Patterns of Animals*. 3 hr. Examination of the bases for exhibition and control of behavioral patterns of domesticated and nondomesticated species. (2 hr. lec., 3 hr. lab.) (Offered in spring of even years.)

425. *Endocrinology of Reproduction*. II. 4 Hr. (2 labs) PR: ANPH 225 or BIOL 268 or equivalent. Discussion of and laboratory experience in classical and current concepts of hormonal and neurohormonal regulations of reproductive phenomena with emphasis on species differences and similarities. (Offered in spring of odd years.)

426. *Advanced Animal Selection*. II. 3 Hr. PR: Course in statistics and course in genetics or equivalent. An advanced course dealing with the basic concepts of experimental and statistical approaches in the analysis of quantitative inheritance with special reference to the magnitude and nature of genotypic and nongenotypic variability. (Offered in spring of even years.)

**Animal Production (ANPR)**

422. *Advanced Milk Production*. II. 3 Hr. PR: ANNU 101 or consent. Advanced study of the feeding, breeding, and management of dairy cattle.

**Food Science (FDSC)**

267. *Advanced Meat Science*. 3 Hr. PR: FDSC 167. Theoretical and experimental aspects of meat science, meat product/process systems, and the quantitative biology of muscle systems used for food. (Offered in spring of even years.)

**Veterinary Science (VETS)**

205. *Parasitology*. II. 3 Hr. PR: Course in biology or consent. Common parasites of farm animals, their life cycles, effects on the host, diagnosis, control, and public health importance. (3 hr. lec., 1 hr. lab.) (Offered in fall of even years.)
210. *Principles of Laboratory Animal Science*. 3 HR. PR: Consent for undergraduates. The production, genetics, physiology, nutrition, disease, and regulations of laboratory animals used in research and teaching. This course meets minimal requirements for laboratory animal technical certification programs of the American Association of Laboratory Animal Science (AALAS). (Offered in fall of even years.)

**Family and Consumer Sciences**

*Janice I. Yeager, Director, Division of Family and Consumer Sciences*

*Wanda K. Franz, Graduate Program Coordinator*

702 Allen Hall

[www.caf.wvu.edu/famr/index.html](http://www.caf.wvu.edu/famr/index.html)

**Degree Offered: Master of Science**

The graduate program in the Division of Family and Consumer Sciences provides students the opportunity to study for a master of science degree. Two areas of emphasis are offered: (1) child development and family studies; (2) human nutrition.

Ideally students should have completed an undergraduate curriculum in the area of specialization for which they seek admission. A student whose undergraduate degree is in a different field will ordinarily be required to take supplemental undergraduate courses.

**Child Development and Family Studies**

The child development and family studies emphasis is structured to give students a basis from which to conduct research and to work with families and children in educational and clinical settings. In addition, the program prepares students for entering Ph.D. programs in child development and family studies, family life education, psychology, or counseling.

Courses are offered in child development, parenting strategies, and family studies. Students must complete a research thesis or scholarly problem report as part of the program. Entrance to the program is determined by evaluating the results of the GRE, undergraduate grade-point average, and recommendations accompanying the application.

Students who complete the graduate requirements in child development and family studies are prepared for employment as child care specialists, developmental specialists, child life educators, social service personnel, and extension specialists.

**Human Nutrition**

The human nutrition program offers students a variety of opportunities in clinical and applied nutrition. Admission as a regular graduate student requires that the student has had a basic nutrition course in the past five years and has completed organic chemistry. Students pursuing a master’s degree in the human nutrition specialization have a choice of two tracks: (1) a master’s degree without a concurrent dietetic internship, or (2) a master’s degree with a concurrent dietetic internship. Selection into the internship is highly competitive. Candidates are placed in a nationwide pool that is administratively controlled by the American Dietetic Association. Resident faculty make the final selection. Only six interns are chosen annually for the internship at WVU. Students completing the internship are eligible to sit for the examination required to become registered dietitian.

Students conduct independent studies or work in collaboration with faculty in foods and nutrition, health sciences, gerontology, animal and veterinary sciences, or exercise physiology. They may conduct service-oriented research projects and present nutrition education programs to audiences of all ages. Graduates have a solid foundation for entering doctoral programs in such fields as nutrition, nutrition education, and nutritional biochemistry. Background courses in nutrition, foods, general and organic chemistry, and the biological sciences are helpful to students selecting the human nutrition area for
specialization. Graduates may select from a wide variety of careers, which include employment in hospitals, clinics, industrial food service organizations, fitness centers, and government-supported health programs. On-line at www.caf.wvu.edu/famr/hnf/hnfms.html.

**Thesis or Research Report**

Students pursuing a master of science degree in family and consumer sciences have a choice of two options: thesis or scholarly problem report. The thesis option requires a minimum of 36 hours of course work, which includes six hours of research credit. The scholarly problem option requires a minimum of 36 hours of course work, which includes three hours credit for a the scholarly project. Students completing the concurrent internship track will earn three to four credits for the field experience. Students must complete these tracks with a GPA of 3.0 or above. Course work in both options may include selections from the graduate level courses from other family and consumer sciences programs. For further information, contact the Graduate Program Coordinator, Division of Family and Consumer Sciences, 702 Allen Hall, P.O. Box 6124, West Virginia University, Morgantown, WV 26506-6124; telephone (304) 293-3402.

**Child Development and Family Studies (CDFS)**

212. *Adolescent Development*. II. 3 Hr. PR: Senior or graduate standing. The adolescent in contemporary American culture, including normative physical, social, and personality development; relationships within various typical social settings. (e.g., family, school, community, peer group.)

213. *Contemporary Issues in Family Relations*. II. 3 Hr. PR: Senior or graduate standing or consent. Study of recent research findings in the major areas of family relationships. Topics include effects of family violence, substance abuse, poverty, and health.

214. *Family Life Education*. I. 3 Hr. Introduces the general philosophy and broad principles of family life education along with the range of programs available. An opportunity is given to plan, implement, and evaluate such educational programs for diverse audiences.

215. *Family Interaction and Communication*. II. 3 Hr. PR: Senior or graduate standing or consent. The family as a social group; processes related to well-being for a variety of family relationships.

216. *Child Development Practicum*. I, II. 3-4 Hr. Application of child development principles. Involves planning developmentally appropriate activities for three, four, and five-year-old children at the West Virginia University Child Development Laboratory.


218. *Family Policy and Law*. II. 3 Hr. Explores at the federal and state level the process of policy formation, implementation, and evaluation as it relates to family life. Introduces the laws regulating such family life activities as marriage, parenting, and divorce.

340. *Survey of Family Studies*. I. 3 Hr. A comprehensive overview of the theoretical and empirical literature focusing on the family. (Offered in fall of odd years.)

341. *Cognitive Development of the Child*. 3 Hr. Piaget’s basic theory, including his view of perceptual, symbolic, motor, and logical-mathematical development, across the life span.

345. *Socio-Emotional Development of the Child*. I. 3 Hr. A study and examination of contemporary theory and research into various facets of the socialization process in infancy and childhood. (Offered in fall of odd years.)
347. *Comparative Study of the Family.* I. 3 Hr. The comparative method as a framework for family analysis. An examination of family diversity and multiculturalism in an ever-changing U.S. society. (Offered in fall of even years.)

348. *Theories of Child Development.* II. 3 Hr. Examination of major theoretical conceptions of child development. Work of Werner, Piaget, Freud, Erikson, and the American learning theorists compared and contrasted. (Offered in fall of even years.)


**Family and Consumer Sciences (F&CS)**

281. *Issues in Consumer Sciences.* I, II. 3 HR. PR: Senior standing or consent. Examines the process of socialization for the professional role within the context of social change and current trends affecting families in the U.S. and overseas.

390. *Research Methods in Family Resources.* II. 3 Hr. PR: Introductory statistics or written consent. Research methodology, experimental design, and statistical analysis as relevant to problems in family resources.


394. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of agriculture, forestry, and consumer sciences. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

396. *Graduate Seminar.* I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


**Human Nutrition and Foods (HN&F)**


274. *Nutrition in Disease.* II. 4 Hr. PR: HN&F 71; Physiology or consent. Nutritional care aspects of patients. Modification of diet to meet human nutrition needs in various medical conditions.

370. *Human Nutrition Concepts and Application.* II. 3 Hr. PR: HN&F 260 or equivalent, and consent. Critical study of the nutrient evaluation methods and the nutrient requirements of the human in health and disease, and scope of its application. (Offered spring of even years.)
391. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

**Textile, Apparel, and Merchandising (TA&M)**

222. **Merchandise Buying and Management.** I. 3 Hr. PR: TA&M 320 or consent. Senior standing. Study of merchandising activities performed on the retail level including planning sales and assortments, selecting merchandise for resale, controlling inventories, and determining profit. Basic mathematical formulas involved in merchandising are practiced.

224. **Flat Pattern Design.** II. 3 Hr. PR: TA&M 124 or consent. Creative expression through pattern design is studied using the flat pattern method. Apparel designed and constructed. (May be repeated for max 6 hr. credit.)

226. **Apparel Design and Illustration.** II. 3 Hr. PR: TA&M 124 and TA&M 126 and TA&M 224 or consent. Techniques of drawing fashion models and various media for apparel design presentation. Sources of design inspiration examined for developing original apparel designs. (May be repeated for max. 6 hr. credit.)

227. **Textiles and Apparel in the Global Economy.** (Even years). 3 Hr. PR: TA&M 27. Explores economics, political and social dimensions of the international production, and trade of textiles and apparel. Emphasis is on U.S. textile and apparel complex within an international perspective.

228. **Functional Apparel.** I. 3 Hr. PR: ENGL 1 and ENGL 2 and TA&M 220 and TA&M 230. Physical, psychological, and sociological clothing needs of individuals with functional needs. Historical developments and research needs explored. Students conduct a service-learning project.

229. **Merchandising Study Tour.** II. 1 Hr. PR: Junior standing in TA&M. Study of textile, apparel, and retail industries through visits to historic costume collections, apparel firms, design showrooms, buying offices, and retail establishments. (May be repeated for a max. 2 hr. credit.)

**Forestry**

Joseph McNeel, Director, Division of Forestry
322-A Percival Hall
[www.caf.wvu.edu/for/index.html](http://www.caf.wvu.edu/for/index.html)

**Degrees Offered:** Doctor of Philosophy in Forest Resource Science. 
Master’s of Science in: Recreation, Parks, and Tourism Resources, and Wildlife and Fisheries Management, Forestry.

A student seeking admission to work toward the degree of doctor of philosophy in forest resources science in the College of Agriculture, Forestry, and Consumer Sciences may choose as the major field of study forest science, wood science, or wildlife and fisheries management. Within these major fields of study, specialization is limited only by the range of competencies in the graduate faculty.

**Curriculum Requirements**

Curriculum requirements for all candidates include a block of graduate courses in the major field, which will constitute a comprehensive review of the significant knowledge in that field, and a block of graduate courses in a minor field of study. A minimum of 60 semester hours beyond the bachelor’s degree and exclusive of the dissertation is required.
Dissertation and Final Examination

The research work for the doctoral dissertation must show a high degree of scholarship and must present an original contribution to the field of forest resources science. In addition to course work and the dissertation, the candidate is required to pass a qualifying examination and a final examination.

Admission Requirements—Master’s Degree Programs

Admission requirements are those of the College of Agriculture, Forestry, and Consumer Sciences. Additionally, students seeking admission for the degree of master of science in forestry (M.S.F.) should have completed an undergraduate curriculum in forestry. A student whose undergraduate degree is in a field other than forestry will ordinarily be required to take supplemental undergraduate courses. Candidates for the degree may major in forest biometry, forest ecology, forest economics, forest genetics, forest management, forest meteorology, silviculture, or wood industry. The candidate must complete 30 hours of approved study, six hours of which shall constitute a thesis. The program ordinarily requires two years of residence.

The Division of Forestry in the College of Agriculture, Forestry, and Consumer Sciences offers program options leading to the master of science for students who wish to major in recreation, parks, and tourism resources. Students selecting this graduate program may emphasize recreation management and policy, environmental education and interpretation, and natural resource based tourism. Degree requirements are either 30 semester hours of approved study, including a six credit-hour thesis, or 36 semester hours without a thesis but including a three credit-hour field project. This program ordinarily requires two years of residence.

Graduate studies in wildlife and fisheries management in the Division of Forestry lead to the master of science (M.S.) degree. Students may elect either 30 semester hours of approved study, including a six hour thesis, or 36 hours of approved study without a thesis but including a three hour problem paper.

Forest Hydrology (FHYD)

244. Watershed Management. II. 3 Hr. PR: FMAN 12 and FMAN 211. (Primarily for forest management majors.) Influences of silvicultural practices and forest management activities on the hydrology of forested catchments.

Forest Management (FMAN)

200. Forest Resources Management Field Practice. S. 6 Hr. PR: CE 5 and FMAN 122. (Course will be taught during five consecutive six-day weeks.) Application and study of forest management practices with emphasis on field problems, including a one-week trip to observe forestry outside the Appalachian hardwood region.

211. Silvicultural Systems. I. 4 Hr. PR: FOR 5, and FMAN 12, and FMAN 122, or FOR 5 and WMAN 213. The theory and practice of controlling forest stand establishment, composition, structure, and growth. Systems include: reproduction methods, release operations, and intermediate treatments.

213. Regional Silviculture. I. 2 Hr. PR: Forestry major or consent, FMAN 12; PR or Conc.: FMAN 211. Major forest types of the United States: their composition, management, problems, and silvicultural treatment.

216. Forest Genetics and Tree Improvement. II. 3 Hr. Forest genetic principles and their application to forest tree improvement, including crossing methods, selection systems, and other techniques.

222. Advanced Forest Measurements. I. 3 Hr. PR: FMAN 122 or equivalent. Measurement and computer simulation of forest growth; principles of growth and yield; statistical methods applied to forest measurement problems.
230. Principles of Forestry Economics. II. 4 Hr. PR: ECON 54 or ARE 50 and ECON 55. Production, distribution, and use of forest goods and services. Emphasis on analytical methods and problem solving techniques in the economic aspects of forestry.


234. Forest Resources Management Planning. II. 3 Hr. PR: FMAN 122 and FMAN 200 and FMAN 211 and PR or CONC: (ENTO 170 or PPTH 170) and FMAN 230. Integrated planning of long-term management of forest resources. Development of a management plan for an actual forest tract. Emphasis on biological, social, economic, and ethical considerations in decision-making.

330. Advanced Principles of Forestry Economics. II. 3 Hr. PR: ECON 54 or ARE 50 and ECON 55 and FMAN 230. Intensive study of both micro-and macroeconomics of forestry.

340. Current Issues in Forest Management. I. 3 Hr. PR: Consent. Analysis of environmental issues in forest management and current controversies surrounding the management of forested lands. Emphasis on traditional and ecosystem-based forest management policy, philosophy, and practices. (Offered in fall of odd years.)

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

411. Advanced Forest Ecology. I. 3 Hr. PR: FMAN 12 or equivalent; FMAN 211. Ecological relationships in forests with emphasis on biogeochemical cycles.

412. Silvicultural Practices for Hardwood Forest Types. II. 3 Hr. PR: FMAN 211. Designing proper silvicultural systems for managing Appalachian hardwood stands; reconstructing stand histories, recognizing problems, and prescribing appropriate silvicultural treatment.

431. Forest Stand Dynamics. II. 3 Hr. PR: Undergraduate courses in ecology or silviculture, and statistics. Examination of the processes causing temporal and spatial changes in communities of trees including: stand establishment, growth, competition, disturbance, and mortality. Labs focus on the quantification of stand development patterns. (Offered in spring of even years)

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
Forestry (FOR)

220. Forest Policy and Administration. I and II. 3 Hr. PR: Upperclass forestry major or consent. Forest policy in the United States; important federal and state laws; administration of public and private forests; problems in multiple-use forestry.

225. Global Forest Resources. II. 3 Hr. Significance of renewable natural resources on a global scale and the ecological, economic, and social contexts in which they are managed. Emphasis is on world forest resources, including timber, wildlife, and social uses.


310. Biometeorology. II. 4 Hr. PR: Consent. A description of the physical environment of plants and its effect on growth, its modification for increasing yield and for plant protection against extreme atmospheric conditions.

480. Principles of Research. I. 2 Hr. The specific method as applied in the formal, concrete, and normative sciences; special emphasis on forestry-related research plans and reports.

490. Teaching Practicum. I, II. 1-6 Hr. PR: Consent. Supervised practices in college teaching of forest resources management, wood science, wildlife management resources, and recreation and parks.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet resident requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her departments, 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Recreation, Parks, and Tourism Resources (RPTR)

233. Wildland Recreation Management. I. 3 Hr. PR: FMAN 12 or consent. Topics include an analysis of administrative agencies concerned with wildland management; methods of ameliorating human impact on outdoor recreation resources; discussion of philosophies underlying wilderness recreation; and a review of contemporary controversies concerning wildlands.

234. Wilderness in American Society. II. 3 Hr. PR: RPTR 233 or consent. A seminar examining political, sociological, and environmental aspects of American wilderness. A discussion on articles concerning wilderness preservation, management, and aesthetics.

235. Management in Recreation, Parks, and Tourism Organizations. II. 3 Hr. PR: 12 Hr. of recreation, parks and tourism courses, junior standing, or consent. Principles of administration as applied to the operation of recreation, parks, and tourism organizations, including legal foundations, policy, organization, personnel, and finance.
239. *Natural Resource Tourism*. I. 3 Hr. PR: Junior standing. Tourism in natural settings; emphasis on sustainable tourism development and natural resource stewardship. (Field trip required; some transportation costs.)

242. *Environmental, Historical, and Cultural Interpretation*. II. 3 Hr. PR: Junior standing. Philosophy and methods of locating source material for and interpreting the historical, cultural, and natural resources of an area; developing and evaluating the quality of interpretive programs, brochures, exhibits, waysides, trails, and school-based curriculum.


250. *Evaluation in Recreation and Parks*. I. 3 Hr. Evaluation in recreation, parks, and tourism resources with concentration on program assessment methods. Data collection techniques and applications specific to the evaluation of recreation, parks, and tourism programs and activities will be studied.


333. *Natural Resources Recreation Management*. I. 3 Hr. PR: Consent. Study of governmental and private sector organizations involved in the delivery of natural resource-based recreational opportunities: examination of management systems; review of current issues and controversies. (Some travel costs may be incurred.)

338. *Tourism Planning*. I. 3 Hr. Use of natural settings; integration of tourism development with respect to environmental protection concerns. (Field trip required; some transportation and food costs.)

370. *Meanings of Place*. I. 3 Hr. Study of place as a psychological and social phenomenon with implications for community development, historic preservation, interpretation design, management, natural and cultural sustainability, and human well-being. (Equivalent to LARC 370.)


408. *Recreation and Park Management Practicum*. 2-4 Hr. PR: Consent. Field experience and conference in the study, analysis, and solution of management problems in private, commercial, and governmental recreation and park organizations.

414. *Human Dimensions of Natural Resources: Recreation, Parks, and Tourism*. II. 3 Hr. This course explores the psychological, social psychological, and sociological constructs that are contributing to a contemporary, interdisciplinary understanding of recreation, parks, and tourism. These concepts will be related to natural resource management and sustainable tourism.


421. *Recreation Planning: Human Interest Areas*. 3 Hr. Exploration of human interest areas as sources of recreation program content; the nature, factors, and extent of participation; and their structuring and administration through work program planning. (Offered in fall of even years.)

462. *Community Recreation*. I. 3 Hr. PR: RPTR 316 or consent. Study of problems related to providing adequate recreation services for a community. Standards and quality of recreation service; methods of measuring existing services and their coordination; community organization procedures. For leaders in voluntary agencies, schools, churches, and municipal recreation organizations. (Offered in fall of odd years.)

490. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of recreation, parks, and tourism resources. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)

491. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

**Wildlife and Fisheries Management (WMAN)**


221. **Interpretive Bird Study.** II. 3 Hr. PR: BIOL 17 or consent. Intensive field studies in recognition through sight, song, and behavioral patterns of birds, and their ecology in the central Appalachians. (2 hr. lec., 2 hr. lab.)

224. **Vertebrate Natural History.** I. 3 Hr. PR: BIOL 17 or consent. Relationships of fish, amphibians, and reptiles to the forest, with emphasis on the ecology, taxonomy, evolution, natural history, and field identification of these groups. Laboratory emphasizes natural history and anatomy of fish, amphibians, and reptiles.

225. **Mammalogy.** II. 3 Hr. PR: BIOL 17 or consent. Mammals and their biological properties with emphasis on life history, ecology, and distribution of regional forms. (Also listed as BIOL 258.)

226. **Ornithology.** II. 3 Hr. PR: BIOL 15 and BIOL 17, or consent. Identification, distribution, and ecology of birds (particularly of forest lands.) (2 hr. lec., 1 hr. lab.)

228. **Wildlife Policy and Administration.** II. 3 Hr. Study of the organization, authority, policies, programs and administration of public agencies and private organizations concerned with fish and wildlife. Emphasis is in the legal and political role in making wildlife management decisions.

231. **Wildlife Habitat Techniques.** I. 3 hr. PR: Wildlife major or consent; WMAN 213 and FOR 5. Field and laboratory techniques necessary in management and study of wildlife; collection of field data, mapping, censusing, habitat evaluation, wetland delineation, and use of literature and scientific writing.

234. **Forest Wildlife Management.** 3. Hr. Principles and problems of forest wildlife management with emphasis on habitat management at the stand and landscape levels. Habitat manipulations through use of appropriate silvicultural practices, wildlife enhancement techniques, and regulations are evaluated.

240. **Principles of Wildlife Toxicology.** I. (Alternate years). 3 Hr. PR: WMAN 213 and CHEM 16. Survey of toxicological environmental contamination. Ancillary topics include oil, metals, and pesticide impacts; legislative mandates; vertebrate sampling procedures and risk assessment.
245. *Introduction to Fisheries Management.* II. 3 Hr. PR: WMAN 224 or consent. Basic principles of management of fishery resources, with an emphasis on freshwater stocks. Includes current environmental and management issues, concepts, and methods used in management of commercial and recreational fisheries.

246. *Limnology.* II. 4 Hr. PR: (BIOL 1 and BIOL 3) or WMAN 224 or consent. Physical, chemical, and biological characteristics of inland waters with emphasis on the structure and function of stream ecosystems.

249. *Fisheries Techniques.* II. 3 Hr. PR: BIOL 2 or BIOL 15. Study of the methods and techniques used in the study of fish and fisheries. Includes study of sampling methodologies, age and growth, marking and tagging, telemetry, and remote sensing. (2 hr. lec., 1 hr. lab.)

250. *Pollution and Management of Aquatic Ecosystems.* II. 3 Hr. PR: Junior standing. Biological and ecological effects of water pollution and loss of freshwater resources. Topics include effects of effluents, water diversion, and land use practices on aquatic resources in lake, river, and wetland environments, mitigation and management techniques, and regulatory structures.

280. *Wildlife/Fisheries Field Tech.* I, S. 3 Hr. PR: Jr. or Sr. standing. Survey of methods and techniques frequently used in the field by wildlife and fisheries managers. Class is taught off-campus.

312. *Advanced Wildlife Population Ecology.* II. 3 Hr. PR: WMAN 214 or equivalent, or consent. Case history approach to wildlife population ecology with emphasis on ungulates, gallinaceous birds, large predators; forest invertebrates and their vertebrate predators; endangered species; genetics and conservation of wildlife populations. Emphasis on current and historical literature. (3 hr. lec.)

333. *Quantitative Ecology.* I. 3 Hr. PR: STAT 311 or equivalent, and WMAN 213 or equivalent. A survey of techniques and strategies for the quantitative analysis of complex ecological data sets. (Offered in fall of odd years.)

350. *Fish Ecology.* II. 3 Hr. PR: WMAN 245. Study of the interrelations between fish and the biotic and abiotic environment and the influence of these interactions upon fisheries. Includes trophic dynamics, reproductive ecology, predatory-prey interactions, and anthropogenic factors.

370. *Wildlife Seminar.* II. 1 Hr. per semester; (4 hr. max.) PR: Consent. Discussion of current developments in wildlife management.

380. *Rural and Urban Wildlife Management.* II. 3 Hr. PR: Consent. Management of nongame wildlife in the rural and urban environment, emphasizing habitat improvement and development and control of pest species. (2 hr. lec., 1 hr. lab.) (Offered in spring of odd years.)

391. *Advanced Topics.* 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. *Research.* 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

434. *Ecology and Management of Upland Wildlife.* I. 4 Hr. PR: Consent. Ecology and management of upland game birds and mammals with emphasis on recent literature. (Offered in fall of even years.)

436. *Ecology and Management of Wetland Wildlife.* II. 4 Hr. PR: Consent. Ecology and management of waterfowl and wetland furbears with emphasis on recent research and management literature. (Offered in spring of even years.)

491. *Advanced Topics.* 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.
496. Graduate Seminar. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Wood Science (WDSC)

200. Forest Measurement Field Practice. S. 3 Hr. PR: Wood industry major, FOR 5, CE 1, FMAN 122. Application of surveying and mensurational practices with emphasis on field problems.

201. Wood Industries Field Trip. S. 1 Hr. A one-week trip to observe manufacturing methods and techniques of commercial wood industry plants. Plants visited include furniture, plywood, veneer, hardboard, pulp and paper, sawmilling, and preservation.

213. Wood Chemistry. I. 3 Hr. PR: Wood Industry major or consent, and CHEM 131 or CHEM 133. Chemical composition of wood including cellulose, hemicellulose, and extractives. Chemical processing of wood.

222. Harvesting Forest Products. II 3 hr. PR: MATH 4 or equivalent and WDSC 132. Analysis of ground-based and cable harvesting systems, including time and motion studies, productivity and cost analysis, occupational safety and health, environmental issues, equipment evaluation and selection, and trucking of forest products. (2 hr. lec., 1 hr. lab.)

223. Forest Roads. I. 4 Hr. PR: CE 5 and CS 5. A study of techniques and methods of design, layout, and construction details of various standards of forest roads.

230. Wood Machining. I. 3 Hr. Introduction to basic concepts of wood machining with emphasis on production equipment and furniture manufacturing. Special topics of wood joining techniques and methods. Analysis of operational safety, health hazards, and accident prevention. (Offered in fall of even years.)


237. Wood Adhesion and Finishing. II 3 hr. PR: Wood Industry major or consent; WDSC 123 and WDSC 141. Fundamentals of the bonding and finishing of wood including preparation, processing, and evaluation of adhesive and finishing systems.

240. Physical Behavior of Wood. II. 3 hr. PR: WDSC 123, and PHYS 1, and MATH 4. Specific gravity and density of wood; relationships between wood and liquids and applications in wood seasoning; thermal, electrical, and acoustical properties.

241. Wood Mechanics. 3 Hr. PR: Wood industry major or consent; WDSC 123, and MATH 15, and PHYS 1. Introduction to static properties of selections, elementary mechanics of deformable bodies, axial loading, column and beam analysis, and design considerations. (2 hr. lec., 1 hr. lab.)

251. Forest Products Protection. II. 3 Hr. PR: WDSC 123. Biological organisms responsible for deterioration of wood products, their control by preservative methods, and study of fire retarding methods.

260. Plant Layout for Wood Industries. II. 3 Hr. PR: Senior standing. Relates knowledge of wood product processes to optimize production. Study of proper arrangement of machines and work and storage areas.

262. Forest Product Decision-Making. I. 4 Hr. PR: Junior standing in forestry and MATH 15 and STAT 101. Use of decision making tools and techniques by forest products industry professionals, including examples of control chart techniques and acceptance sampling techniques, simulation modeling, linear programming, forecasting, and network analysis. (4 hr. lec.)
265. *Wood-based Composite Materials.* 3 Hr. PR: WDSC 132, and WDSC 240, and WDSC 241. Fundamentals of manufacturing wood-based composite materials, including processing, products, evaluation, and applications in the marketplace. (2 hr. lec., 1 hr. lab.)

340. *Advanced Physical Behavior of Wood.* I. 3 Hr. PR: WDSC 240 or equivalent or consent. Physical relationships of water and wood; fluid flow through wood; thermal, electrical, and acoustical behavior of wood. Theories of wood drying and their application.


397. *Research.* 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

473. *Graduate Seminar.* II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

490. *Teaching Practicum.* 1-3 Hr. PR: Consent. Supervised practice in the college teaching of wood science. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on Assistantships to gain teaching experience. (Grading will be S/U.)

491. *Advanced Topics.* 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

496. *Graduate Seminar.* 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. *Research.* 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

**Genetics and Developmental Biology**

*Joginder Nath, Chairperson of the Interdisciplinary Faculty*

1120 Agricultural Sciences Building

[www.caf.wvu.edu/genetinf.html](http://www.caf.wvu.edu/genetinf.html)

**Degrees Offered: Master of Science, Doctor of Philosophy**

**Areas of Emphasis**

The master of science and doctor of philosophy degrees are offered in genetics and developmental biology, an interdisciplinary program involving the faculty and facilities of a number of departments in the various colleges and schools of the University. A student may concentrate in genetics or developmental biology. The areas in which emphases are offered are as follows.

**Genetics** Biochemical and molecular genetics, cytogenetics, developmental genetics, immunogenetics, mutagenesis, toxicology, human genetics, plant genetics, population and quantitative genetics, and animal breeding.

**Developmental Biology** Molecular aspects of development, experimental morphogenesis, teratology, regeneration, descriptive embryology, and life cycles of animals and plants.

The student may also minor in one or more other scientific fields.
Requirements

Students are expected to maintain at least a 3.0 (B) grade-point average in all work offered in fulfillment of the degree program. For a more complete statement of requirements, the student is referred to the program’s Guidelines for Graduate Students in the Genetics and Developmental Biology Program.

Program Objective

The objective of this program is an increased level of understanding of modern concepts and methodologies employed in genetic and developmental biological work and to prepare a student to pursue a career in teaching and/or research. Responsibility for a student’s program is vested in a graduate committee charged with arranging the student’s course work, conducting examinations, and supervising the research.

Admission

To be considered for admission in the program the student must possess a baccalaureate degree from an accredited college or university, must have a grade-point average of at least a 2.75 (on a 4.0 scale), or an average of 3.0 or higher for the last 60 credit hours, or an average of 3.0 or higher in all courses in sciences and mathematics.

GRE and New MCAT

The student must submit the scores of the Graduate Record Examination (GRE), or the New Medical College Admission Test (New MCAT). The student must provide three letters of reference from persons acquainted with the applicants’ professional work, experiences, or academic work, and submit a written statement of 500 words or more indicating the applicants’ goals and objectives relative to receiving a graduate degree.

Basic training in mathematics, physics, chemistry, and biology is required for admission. Students lacking prerequisites may be accepted in a provisional status but must fulfill them before graduation. Applications for graduate study should be sent in as early in the year as possible, but not later than April 1 for entry the following August. However, applications are accepted year-round for admission to the program in the following semester. Official transcripts of baccalaureate and/or master’s degrees must be sent directly to the WVU Office of Admissions and Records. Application forms can be received from the WVU Office of Admissions and Records, P.O. Box 6009, Morgantown, WV 26506-6009. For further information, write to the department chair.

Developmental Biology

The following courses in the departments of anatomy, biochemistry, and biology may be applied toward the requirements for a major in developmental biology: Anatomy 402 Advanced Developmental Anatomy, 405 Experimental Embryology, Biochemistry 491 Advanced Study in Nucleic Acids, Biology 214 Molecular Basis of Cellular Growth, Biology 309 Molecular Biology of the Gene, Biology 362 Developmental Biology, and Biology 364 Advanced Plant Physiology.

Genetics (GEN)

290. Crop Breeding. II. 3 Hr. PR: GEN 171 or GEN 321. Methods and basic scientific principles involved in improvement of leading crops through hybridization, selection, and other techniques. (Offered in spring of even years.)

325. *Human Genetics*. II. 3 Hr. PR: GEN 171 or GEN 321 or consent. Study of genetic system responsible for development of phenotype in man. (Offered in spring of odd years.)

335. *Population Genetics*. II. 3 Hr. PR: GEN 171 or GEN 321 or consent. Relationship of gene and genotype frequencies in populations of diploid organisms, and the effects of mutation, selection, assortive mating, and inbreeding in relation to single gene pairs. Application of these concepts to multigenic inheritance of quantitative traits. (Offered in fall of odd years.)

370. *Medical Genetics*. II. 2-4 Hr. PR: Second-year medical student standing; graduate student in genetics and developmental biology; others by consent. Introduction to clinical genetics including molecular, biochemical, and cytogenetic aspects of human biology. Application of genetic principles to human health and disease. (Also listed as CCMD 370, MED 370, PEDI 370.)


424. *Cytogenetics*. II. 4 Hr. PR: GEN 171 or GEN 321, and BIOL 215 or consent. Emphasis on macromolecules that carry information of the chromosomes, cell division, and the cytological and molecular basis of genetics. Special attention given to visible manifestation of genes, human cytogenetics, of genomes and chromosome morphology, and their evolution. (Offered in spring of odd years.)


427. *Genetic Mechanisms of Evolution*. I. 3 Hr. PR: GEN 171 or equivalent. Molecular genetic mechanisms which result in evolutionary change. Origin of life, origin, and organization of genetic variability, differentiation of populations, isolation and speciation, role of hybridization and polyploidy, and origin of man. (Offered in fall of odd years.)

450. *Seminar*. I, II. 1 Hr. per semester. Recent literature pertaining to biochemical, classical, human, molecular, and cytological genetics.

496. *Graduate Seminar*. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


498. *Thesis or Dissertation*. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. *Graduate Colloquium*. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her departments, 799 or 899 *Graduate Colloquium*, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.
Natural Resource Economics

Peter V. Schaeffer, Director, Division of Resource Management
Tim T. Phipps, Graduate Program Coordinator
2018 Agricultural Sciences Building
www.caf.wvu.edu/resm/are/handbook1.htm#ph.d.program

Degree Offered: Doctor of Philosophy

The Agricultural and Resource Economics Program in the Division of Resource Management offers graduate studies leading to the degree of doctor of philosophy in natural resource economics. The doctoral program offers three fields of study:

- Natural resource and environmental economics.
- Commodity market analysis modeling and forecasting.
- International development.

Careers for which students completing the program are qualified include those with universities, research institutes, industry, and state, national, or international agencies concerned with natural resource and environmental issues.

Admission

Prospective graduate students initiate application for admission on forms available from the WVU Office of Admissions and Records. The completed forms should be returned to the Office of Admissions and Records, accompanied by payment of the nonrefundable application fee. An official transcript from all colleges attended during an applicant's undergraduate and graduate studies must be a part of the application for admission.

Performance Standards

- An applicant must possess a master’s degree and hold a grade-point average of 3.5 or above (on a 4.0 scale) in postgraduate courses.
- Scores from the Graduate Record Examination are required.
- Applicants whose native language is not English must have attained a minimum score of 550 on the TOEFL examination.
- Three letters of recommendation are required.
- A letter of purpose describing research interests and professional aspirations is required.

Applicants who do not meet all of the requirements above but have special qualifications may be admitted if approved by the graduate admission committee, the division director, and the graduate program coordinator. Such admission will usually be subject to conditions, such as taking course work to make up for deficiencies. Such make-up work will not be counted as part of credit requirements for the degree.

A limited number of graduate research assistantships are available to highly qualified students on a competitive basis. The awards are based on academic merit only.

Requirements for Research

After a student is admitted, the program coordinator will appoint a major professor to direct his/her research. Doctoral students will conduct research in support of approved projects. The student, in consultation with the major professor, will select a graduate committee during the second semester of study. The committee will consist of five or more members, the majority of whom must be WVU faculty, with at least one member representing a discipline outside the program. Each student and his/her committee will formulate a plan of study. University regulations concerning committee members require that a majority of the graduate committee, including the major professor, must be regular members of the WVU graduate faculty.
Core Courses

Doctoral students must satisfactorily complete a set of core courses in economic theory, quantitative methods, and resource analysis before they will be admitted to candidacy for the Ph.D. degree. All core courses will be at the 300- or 400-level. Certain course requirements may be waived if the student has received equivalent training in prior course work. Additional required course work pertaining to the student’s area of specialization will be determined by the student’s major professor and graduate committee.

Fields of Study

There are three fields of study: natural resource and environmental economics; commodity analysis, modeling, and forecasting; and international development. Doctoral students must select two fields subject to approval by the student’s major professor and graduate committee. The student will be required to successfully complete a minimum of three courses at the 300- or 400-level in each field selected.

Admission to Candidacy

Oral and written qualifying examinations will be administered by the qualifying examination committee before the end of the second year following admission to the program. Upon satisfactory completion of the qualifying examinations and core course requirements, the student will be eligible for admittance to candidacy for the Ph.D. in natural resource economics.

Completion

Each candidate for the Ph.D. degree will be expected to meet the following general requirements:

• A minimum of two years in residence;
• Successful completion of qualifying examinations and examinations in two fields of study;
• A dissertation; and
• Successful oral defense of the dissertation.

Although not a requirement, presentation of research results at a meeting of a professional society and submission of manuscripts for publication are encouraged.

Agricultural and Resource Economics (ARE)

201. Applied Demand Analysis. II. 3 Hr. Consumer demand economics applied to environmental, natural resource, and agricultural issues; analysis of factors that influence demand and determine prices; special applications to non-market, environmental, and natural resource amenities.

202. Applied Production Economics. I. 3 Hr. Production economics applied to agricultural, environmental, and resource issues; production, multiple-product and cost functions, and joint production; effects of environmental and natural resource management regulations on the production process.

206. Agribusiness Planning. I. 3 Hr. PR: ARE 104 or consent. Application of economic and management principles to agribusiness planning; consideration of risk and uncertainty in agribusiness planning; formulation of economic models for determining optimum allocation of resources for production processes.

210. Environmental and Resource Economics. I. 3 Hr. PR: ARE 201 and ARE 202; or ECON 211 or Consent. Economic analysis of natural resource and environmental problems; management of renewable and non-renewable resources and environmental amenities; market failure, externalities, benefit-cost and risk analysis; property rights and the “taking” issue.
211. Rural Economic Development. I. 3 Hr. Economic trends, development policies, and analysis of rural economies in the United States. Rural diversity, development concepts, rural planning, public programs and policies, and community analysis methods.

213. Economic Development. I, II. 3 Hr. PR: ECON 54 and ECON 55. The problems, changes, and principal policy issues faced by nonindustrialized countries.

220. Agricultural Cooperatives. I. 3 Hr. History, principles, organization, management, taxation, and legal aspects of agricultural, marketing, supply, and service cooperatives in the U.S. development of non-agricultural cooperatives. (Offered in fall of odd years.)

231. Marketing Agricultural Products. II. 3 Hr. Organization, functions, and analysis of the agricultural marketing system. Food consumption, exports, price analysis, marketing costs, market power, commodities futures market, food safety, and government regulations.

235. Marketing Livestock Products. I. 3 Hr. Livestock marketing practices and policies. Supply and demand, livestock price cycles, grading, marketing alternatives, processing, and retailing. Economic analysis of alternatives current issues and trends. (Offered in fall of even years.)

240. Futures Markets and Commodity Prices. I. 3 Hr. Analysis of price-making forces which operate in the marketplace; emphasis on major agricultural and mineral commodity and futures markets.

245. Energy Economics. II. 3 Hr. Analysis of the energy sector and its relationship to the rest of the economy; energy security, deregulation, full cost pricing, substitutability among energy sources, transmission, new technologies, environmental considerations.

250. Agriculture, Environmental and Resource Policy. II. 3 Hr. PR: ARE 201 and ARE 202; or ECON 211; or consent. Economic analysis of agricultural, natural resource, and environmental policies; problems of externalities and market failure, and alternative policies for addressing such problems; benefits and cost of alternative policies.

261. Agribusiness Finance. II. 3 Hr. An overview of financial analysis and the application of financial principles to small, rural, and agricultural businesses. Includes applications of financial analysis computer software.

300. Applied Microeconomics. I. 3 Hr. PR: ECON 211 and ECON 220, or equiv. Producer and consumer economics used in resource, environmental, and agricultural economic analysis.

321. Quantitative Methods in Resource Economics. I. 3 Hr. PR: ECON 220 or equivalent. Optimization techniques in economic analysis of natural resources; environmental and agricultural management problems; linear, nonlinear, and dynamic programming.


329. Resource Commodity Markets. II. 3 Hr. PR: ECON 325 and ECON 326 or consent. Advanced econometric methods of specification, estimation, and simulation of domestic and international resource markets and industries; time series and forecasting techniques.

330. Production Economics. II. 3 Hr. PR: ARE 300 and ARE 321. Developments in producer economics applied to natural resources, environmental, and agricultural issues.

332. Natural Resource and Environmental Economics. II. 3 Hr. PR: ARE 300 and ARE 321 or equivalent. Theory and institutions; market failure, externalities and property rights issues; renewable and nonrenewable resources, common property, environmental and resource management, and intergenerational decisions.
333. **Natural Resource Policy Analysis.** I. 3 Hr. PR: ARE 330 and ARE 321, or equiv. Welfare economics applied to the analysis and evaluation of natural resources, environmental, agricultural, and energy policy issues.

340. **Rural and Regional Development.** II. 3 Hr. PR: ARE 300 and ARE 321. Economic theories and quantitative techniques. Problems and goals for rural and regional planning; methods of policy analysis for community infrastructure development.

342. **International Agricultural Economic Development.** I. 3 Hr. Current problems, theories, policies, and strategies in planning for agricultural and rural development for increased food production and to improve the well-being of rural people in the developing countries of the world.

343. **Project Analysis and Evaluation.** II. 3 Hr. PR: Consent. Design, analysis, and evaluation of development projects; economic and financial aspects of project analysis; risk analysis; preparation of feasibility reports.

344. **International Markets and Trade.** I. 3 Hr. PR: ARE 300 and ARE 321. Causes and consequences of international trade and investment; commodity market structures, commodity price instability and international agreements; trade barriers and protection, export promotion, and impacts on developing countries.

365. **Mineral Finance.** II. 3 Hr. Methods, risks, and problems of financing mineral projects. Large foreign-project financing, concerns of host governments, multinational mining concerns, and financial institutions.

380. **Energy Industry Economics.** II. 3 Hr. PR: Graduate standing. Technical production and consumption methodologies, environmental concerns, and national and global economics and politics in making energy decisions.

381. **Resource Appraisal and Decision Making.** II. 3 Hr. PR: ARE 300 or equivalent. Investment analysis, decision making under risk and uncertainty, and project analysis applied to resource exploration and utilization; mineral and energy reserve and resource estimation techniques.

382. **Mineral Industry Economics.** II. 3 Hr. Supply, demand, structure, technology, costs, prices, and problems of mineral industries.

400. **Research Methods.** II. 1 Hr. Research methods in agricultural, environmental, and resource economics. The application of scientific thinking in developing research proposals and critiquing published research.

403. **Advanced Natural Resource Economic Theory.** I. 3 Hr. PR: ECON 310 and ARE 332. Allocation and distribution of natural resources in static and dynamic contexts; welfare economics, cost-benefit analysis, and optimal control approaches; applications to resource valuation, exhaustion, taxation, and regulation in theory and practice.

410. **Advanced Environmental Economics.** II. 3 Hr. PR: ECON 310 and ARE 332 or consent. Theory, efficient environmental design and analysis, modeling of economic and environmental systems, evaluation of non-market benefits and costs, and risk assessment.

446. **Energy and Regional Development.** II. 3 Hr. PR: ECON 355 and ARE 380. Energy in the West Virginia economy and selected regions of the United States.

483. **Mineral Technology Assessment.** II. 3 Hr. PR: Consent. Methods of studying the effects of modifications in technology on the production of utilization of minerals, and the effects on mineral demand, supply, substitution, and markets.

484. **Oil and Gas Industry Economics.** II. 3 Hr. PR: Consent. Geology, engineering, and economic theories of evaluating industry structures and performance.
Economics of the Coal Industry. 3 Hr. Supply, demand, structure, production technology, costs, prices, and problems of the coal industry. Includes environmental, productivity, and transportation issues.

Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their students' reports, thesis, or dissertations. (Grading may be S/U.)

Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's or Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

Resource Management (RESM)

Advanced Topics. I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Plant and Soil Sciences

Barton S. Baker, Director, Division of Plant and Soil Sciences and Graduate Program Coordinator
1090 Agricultural Sciences Building
www.caf.wvu.edu/plsc/index.html

Degree Offered: Master of Science

Areas of Emphasis

The master of science degree in plant and soil sciences is offered to students who wish to study crops agronomy, entomology, environmental microbiology, horticulture, plant pathology, or soil science. Students interested in the Ph.D. in these disciplines should apply to the doctoral program in agricultural sciences.

Program Objective

The objective of the M.S. in plant and soil sciences is to provide students the opportunity to take courses and conduct original, master-level research in their areas of specialization. The educational experience obtained through courses and research is expected to provide students with the background and expertise to enter doctoral programs or professional careers as agronomists, entomologists, microbiologists, horticulturists, and plant pathologists. These disciplines are critical to maintain agriculture and forest productivity, solve environmental problems, and promote economic development in the state.
Admission and Performance Standards

In order for a student to be admitted to the program, the following admission criteria will be considered. The applicant normally must:

• Possess a baccalaureate degree;
• Have a minimum undergraduate grade-point average of 2.75 (3.0 for acceptance as a regular graduate student);
• Have an adequate academic aptitude at the graduate level as measured by the Graduate Record Examination (GRE) or other tests/evidence;
• Provide three letters of reference from persons acquainted with the applicant’s professional work, experience, or academic background; and
• Submit a written statement of approximately 500 words indicating the applicant’s goals and objectives relative to receiving a graduate degree.

International students have the additional requirement to submit a minimum score of 550 on the TOEFL examination if their native language is not English. Interviews are encouraged but not required.

Students enrolled in the M.S. in plant and soil sciences must complete STAT 311, 312, and three semesters of seminar in their area of emphasis. Other class requirements will be determined by the student’s graduate committee and made a part of the student’s plan of study. This degree requires a minimum of 30 graduate credit hours, six of which may be research.

Each student must develop a plan of study, conduct original research and prepare a thesis. The plan of study which is to be developed within the first year of study must contain the courses to be taken plus an outline of the research to be conducted. The thesis must be satisfactorily defended in an oral examination given by the student’s graduate committee.

Agronomy (AGRN)

210. Soil Fertility. I. 3 Hr. PR: AGRN 102 and AGRN 103 and CHEM 16. Effect of soil chemical and physical properties on soil fertility; evaluation of essential and toxic nutrients and the controls on their availability; fertilizer and lime use; soil fertility evaluation. (3 hr. lec.)

215. Soil Survey and Land Use. I. 3 Hr. PR: AGRN 15 or consent. Identification of morphological characteristics and taxonomic units of soil; techniques of writing soil pedon and mapping unit descriptions; techniques of preparing soil maps; evaluation of soil for land use planning. (2 hr. lec., 3 hr. lab.) (Offered fall of odd years.)

217. Soil Genesis and Classification. I. 4 Hr. PR: AGRN 15 or consent. Origin and formation of soils; principles of soil classification; study of soil pedons and polypedons; influence of soil-forming factors and processes. Two Saturday field trips required. (3 hr. lec., 3 hr. lab.) (Offered fall of even years.)

220. Soil Microbiology. I. 3 Hr. PR: ENVM 141. Microbiology and biochemistry of the soil environment. Occurrence, distribution, ecology, and detection of micro-organisms in soil. (Offered in fall of even years. Also listed as ENVM 220 and ENVP 220.)

225. Environmental Soil Management. I. 3 Hr. PR: AGRN 102 and AGRN 103. This course provides a foundation for utilizing creative solutions and technical knowledge in preserving and enhancing soil and water quality soil conservation, precision agriculture and nutrient management for protection of soil and water quality are covered. (Also listed as ENVP 225.)

230. Soil Physics. II. 3 Hr. PR: AGRN 102 and AGRN 103. Physical properties of soils; water and air relationships and their influence on soil productivity. (Offered in spring of even years.)
251. Weed Control. I. 3 Hr. PR: PLSC 52 and AGRN 102 and AGRN 103 or consent. Fundamental principles of weed control. Recommended control measures for and identification of common weeds. (2 hr. lec., 1 hr. lab.) (Offered in fall of odd years.) (Also listed as ENVP 251.)

252. Grain and Special Crops. II. 3 Hr. PR: PLSC 52 and AGRN 102 and AGRN 103 or consent. Advances study of methods in the production of grain and special crops. Varieties, improvement, tillage, harvesting, storage, and use of crops grown for seed or special purposes. (Offered in spring of even years.)

254. Forage Crops. I. 3 Hr. PR: PLSC 52, AGRN 102 and AGRN 103, or consent. All phases of forage crop science, including ecology, taxonomy, management practices used for the production of forage and seed, and forage composition, quality, and utilization. (3 hr. lec., 1 hr. lab.)

255. Reclamation of Disturbed Soils. II. 3 hr. PR: Junior standing or above. Principles of soil science, geology, hydrology, and engineering will be applied to surface mine planning, overburden handling during mining, soil replacement and amendments, revegetation practices, acid mine drainage control and treatment, hazardous wastes, and land management of disturbed areas. (Field trip required.) (Also listed as ENVP 255.)

316. Soil Chemistry. II. 3 Hr. PR: AGRN 210. An analysis of the important reactions that occur in soils; thermodynamic and kinetic aspects of these reactions and application to modern problems in soil chemistry. (3 hr. lec.) (Offered spring of odd years.)

325. Forage Harvesting and Storage. 3 Hr. PR: AGRN 254, or consent. Advanced study of processes associated with harvesting and storage of forages. (3 hr. lec.) (Offered in fall of odd years.)

352. Pedology. S. 3 Hr. PR: AGRN 217 or consent. Genesis and evolution of soils considered as natural bodies; including both macro and micromorphological properties. Week-long field trip required at student’s expense. (2 hr. lec., 1 hr. lab.) (Offered in summer of odd years.)

354. Pasture Management and Utilization. 3 Hr. PR: AGRN 254 and ANNU 101, or consent. Advanced study of pastures and their management and utilization with emphasis on temperate species. (3 hr. lec.) (Offered in spring of odd years.)

374. Tropical Grasslands. 3 Hr. PR: AGRN 254 and ANNU 101, or consent. Advanced study of tropical grasslands and their management and utilization in animal production. (Offered in fall of even years.)

410. Soil Testing and Plant Analysis. II. 3 Hr. PR: AGRN 210 and BIOL 169, or consent. Influence of soil chemical and physical properties on availability of plant nutrients; intensive study of individual plant nutrients and interactions of nutrients in soils and crops; and intensive study of methods used to test soils and analyze plants for nutrients and other metals. (2 hr. lec. and 1 hr. lab.) (Offered in spring of even years.)

416. Soil Chemistry. I. 3 Hr. PR: Consent. Chemistry of soil development; chemical and mineralogical composition of soils; nature and properties of organic and inorganic soil colloids; cation and anion exchange phenomena; soil chemistry of macro and micro-nutrients. (Offered in fall of odd years.)

426. Advanced Soil Chemistry. II. 3 Hr. PR: AGRN 316. The structure of important soil minerals and their identification; the physical chemistry of surfaces; introduction to modeling soil chemical processes. (3 hr. lec.) (Offered spring of even years.)

432. Forage Chemistry and Quality. 3 Hr. PR: ANNU 301 and AGRN 254, or consent. Advanced course in chemistry and biochemistry of pastures and forages, emphasizing factors affecting their quality and principles governing their utilization by herbivorous animals. (Also listed as ANNU 432.) (Offered in spring of even years.) (3 hr. lec.)
496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

499. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 **Graduate Colloquium**, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

**Entomology (ENTO)**

201. **Apiculture.** II. 3 Hr. PR: BIOL 1 and BIOL 3 and BIOL 2 and BIOL 4. Development, physiology, and behavior of the honey bee with emphasis on colony management, pollination of crops, diseases of bees, properties of honey and beeswax, and marketing of honey bee products. (Offered spring of odd years.)

202. **Apiculture Laboratory.** II. 1 Hr. PR or Conc: ENTO 201. Identification and anatomy of honey bees, assembly, and use of beekeeping equipment, field management of honey bees, examination for diseases and pests, production of queens and nuclei. (3 hr. lab.) (Offered in spring of odd years.)

204. **Principles of Entomology.** I. 4 Hr. PR: BIOL 1 and BIOL 3 and BIOL 2 and BIOL 4 or equiv. Basic course dealing with the anatomy, morphology, physiology, reproduction, systematics, ecology, and management of insects.

210. **Insect Pests in the Agroecosystems.** I. 4 Hr. PR: ENTO 204 or consent. Life cycle, damage, and economic impact of pestiferous insects in the agroecosystem. Included are insect pests of agricultural and ornamental plants, stored products, structures, and livestock. (3 hr. lec., 1 hr. lab.)

212. **Pest Management.** II. 4 Hr. PR: ENTO 204 or consent. An in-depth look at current problems and solutions in controlling insect pests in an environmentally compatible manner. Management techniques include cultural, mechanical, physical, biological, regulatory, and chemical practices. (Also listed as ENVP 212.)

390 A-Z. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

**Environmental Microbiology (ENVM)**

201. **Environmental Microbiology.** II. 4 Hr. PR: ENVM 141 or consent. Microbiology as applied to soil, water, wastewater, sewage, air, and the general environment. Occurrence, distribution, ecology, and detection of microorganisms in these environments. (Also listed as ENVP 201.)

220. **Soil Microbiology.** I. 3 Hr. PR: ENVM 141. Microbiology and biochemistry of the soil environment. Occurrence, distribution, ecology, and detection of micro-organisms in soil. (Offered in fall of even years. Also listed as AGRN 220 and ENVP 220.)

347. **Food Microbiology.** 4 Hr.

348. **Sanitary Microbiology.** II. 3 Hr. PR: ENVM 141 or consent. Microbiology and health hazards associated with food handling, water treatment, and sanitary waste disposal. (Offered in spring of even years.)

350. **Current Concepts in Microbial Ecology.** I, II. 1 Hr. Emphasis on reading, criticism, and discussion of recent journal articles from the primary literature in microbial ecology/environmental microbiology.
Environmental Protection (ENVP)


201. *Environmental Microbiology*. II. 4 Hr. PR: ENVM 141 or consent. Microbiology as applied to soil, water, wastewater, sewage, air, and the general environment. Occurrence, distribution, ecology, detection of microorganisms in these environments. (Also listed as ENVM 201.)

212. *Pest Management*. II. 3 Hr. PR: ENTO 204 or consent. An in-depth look at current problems and solution in controlling insect pests in an environmentally compatible manner. Management techniques include cultural, mechanical, physical, biological, regulatory, and chemical practices. (3 hr. lec.) (Also listed as ENTO 212.)

220. *Soil Microbiology*. I. 3 Hr. PR: ENVM 141. Microbiology and biochemistry of the soil environment. Occurrence, distribution, ecology, and detection of microorganisms in soil. (Offered in fall of even years.) (Also listed as ENVM 220 and AGRN 220.)

225. *Environmental Soil Management*. I. 3 Hr. PR: AGRN 102 and AGRN 103. This course provides a foundation for utilizing creative solutions and technical knowledge in preserving and enhancing soil and water quality. Soil conservation, precision agriculture, and nutrient management for protection of soil and water quality are covered. (Also listed as AGRN 225).

251. *Weed Control*. I. 3 Hr. PR: PLSC 52 or consent. Fundamental principles of weed control. Recommended control measures for and identification of common weeds. (2 hr. lec., 1 hr. lab.) (Offered in fall of odd years.) (Also listed as AGRN 251.)

255. *Reclamation of Disturbed Soils*. 3 Hr. PR: Junior standing or above. Principles of soil science, geology, hydrology, and engineering will be applied to surface mine planning, overburden handling during mining, soil replacement and amendments, revegetation practices, acid mine drainage control and treatment, hazardous wastes, and land management of disturbed areas. (Field trip required.) (Also listed as AGRN 255.)

Horticulture (HORT)

204. *Plant Propagation*. II. 3 Hr. PR: PLSC 52 or consent. Study of practices of plant propagation and factors involved in reproduction in plants. (Offered spring of even years.)

242. *Small Fruits*. I. 3 Hr. PR: PLSC 52, HORT 107, or Consent. (One 2-day field trip required.) Taxonomic, physiological, and ecological principles involved in production and handling of small-fruits. (2 hr. lec., 1 hr. lab.) (Offered in fall of odd years.)

243. *Vegetable Crops*. I. 3 Hr. PR: PLSC 52 or consent. (One 3-day field trip required.) Botanical and ecological characteristics influencing the production of vegetable crops. (2 hr. lec., 1 hr. lab.) (Offered in fall of even years.)

244. *Handling and Storage of Horticultural Crops*. I. 3 Hr. PR: PLSC 52 and CHEM 16. Characteristics of perishable crops. Methods and materials used to maintain quality. (2 hr. lec., 1 hr. lab.) (Offered in fall of odd years.)


246. *Tree Fruits*. I. 3 Hr. PR: PLSC 52 or consent. Principles and practices involved in production of tree fruits. (2 hr. lec., 1 hr. lab.) (Offered in fall of even years.)
301. *Post Harvest Physiology.* 3 Hr.

391. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

**Plant Pathology (PPTH)**


301. **Diseases of Economic Plants.** I, II, S. 1-3 Hr.; 2 Hr. In summer. PR: PPT 201 or 303 or consent. Recognition, cause, and control of diseases of economic plants. (Sem. I—Diseases of vegetable crops and of tree and small fruits; Sem. II—Diseases of ornamental plants and field and forage crops; S—Diseases of forest trees. Students may register for 1-3 hr. in I and II, 2 hr. in S, until 8 hours of credit are accumulated) (Offered in alternate years.)

302. **Principals of Plant Pathology.** II. 4 Hr. PR: PPTH 153, 201, or 303, or consent. (Primarily for graduate students and seniors majoring in biology or agriculture science.) Nature of disease in plants with practice in laboratory methods. (Offered in spring of even years.)

303. **Mycology.** I. 4 Hr. Lectures and field and laboratory studies of parasitic and saprophytic fungi. (Offered in fall of even years.)

309. **Nematology.** II. 3 Hr. (Primarily for graduate students majoring in the agricultural sciences or biology.) Nematode taxonomy, bionomics, and control, with particular emphasis on plant parasitic forms. (Offered in spring of odd years.)

402. **Physiology of Plant Diseases.** I. 3 Hr. PR: AGBI 310 and PPTH 302, or consent. Study of host-parasite interactions, with emphasis on physiological and biochemical changes that occur in higher plant tissues in response to pathogenic organisms.

430. **Physiology of the Fungi.** II. 4 Hr. PR: Organic chemistry, mycology, and bacteriology, or consent. Physiological aspects of growth, reproduction, and parasitism of fungi, with emphasis on nutrition, environmental, and other biotic factors. (Offered spring of odd years.)

440. **Taxonomy of the Fungi.** S. 3 Hr. PR: PPTH 303. Collection and identification of fungi with emphasis upon those of economic importance. (Offered in summer of even years.)

496. **Graduate Seminar.** 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. **Thesis.** 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
Reproductive Physiology
E. Keith Inskeep, Chairperson of the Interdisciplinary Faculty
G-044 Agricultural Science Building
www.caf.wvu.edu/reproinf.html
Degrees Offered: Master of Science
Doctor of Philosophy

Requirements
The graduate program in reproductive physiology, leading to master’s and doctoral degrees, is interdisciplinary, with faculty located in the Departments of Animal and Veterinary Sciences, Biology, Obstetrics and Gynecology, Pharmacology and Toxicology, Physiology, and Plant and Soil Sciences. Requirements for admission include at least a 2.75 grade-point average (4.0 system) and completion on the following prerequisites with a grade of C or better in each: calculus, genetics, organic chemistry, physics, and vertebrate embryology. It is recommended, but not required, that applicants complete both the aptitude and the advanced tests of the Graduate Record Examination. Foreign languages are not required for a degree in reproductive physiology. Only a limited number of students are accepted each year.

Research
Research topics include function and regression of the corpus luteum, aging of the oocyte, control of postpartum reproductive performance, environmental factors in reproduction, control of steroidogenesis, control of estrus and ovulation, new methods of artificial insemination, ovarian follicular development, endocrine functions of polypeptides, neuroendocrine control of gonadotropic hormone secretion, and roles of prostaglandins in reproduction. Research is almost entirely with farm animals, including poultry.

Courses
The program draws on courses offered in various departments and includes courses in endocrinology, advanced reproductive physiology, biochemistry, physiology, statistics, and developmental embryology. Students present seminars and participate in journal clubs each semester.
The Eberly College of Arts and Sciences is West Virginia University’s largest college, with 325 faculty in academic departments and program areas in literature and the humanities, social and behavioral sciences, and mathematics and natural sciences. The college supports 15 graduate programs, ten of which include doctoral programs; its departments occupy 12 buildings on the downtown campus. Many of the faculty enjoy distinguished national and international reputations and have been honored for excellence in teaching, research, and service. Their awards not only acknowledge extreme dedication but also accentuate the relationship between the faculty and the students. Graduate students often collaborate with faculty on specialized research projects which lead to publications in national and international journals. In 1995, the faculty of the college produced over 300 publications, delivered 315 professional presentations, and received 112 grants and contracts, 50 professional association citations, and 49 academic honors. In recent years, Arts and Sciences faculty have generated over $6,000,000 annually in external support for research and instruction.

The Eberly College of Arts and Sciences offers doctoral programs in biology, chemistry, English, geography, geology, history, mathematics, physics, political science, and psychology. Available research or teaching concentrations are as follows:

- Biology—cellular and molecular biology, environmental plant biology.
- Chemistry—analytical, inorganic, organic, physical, and theoretical chemistry.
- English—literature.
- Geography—regional development, geographic information systems.
- Geology—energy (basin analysis), environmental geology.
- History—United States (Appalachia), Europe, Africa, science, and technology.
- Mathematics—selected areas of pure, applied, and discrete mathematics.
- Physics—condensed matter, applied physics, plasma physics, astrophysics, electro-optics, and elementary particle physics.
- Political science—public policy analysis (domestic and international).
- Psychology—behavior analysis, developmental psychology, and clinical psychology.

Graduate programs leading to a master’s degree are available in biology, chemistry, communication studies, English, foreign languages, geography, geology, history, liberal arts, mathematics, physics, psychology, public administration, sociology and anthropology, and statistics. Each program prepares students for further study or for productive roles in professional environments. Information concerning graduate programs in the Eberly College of Arts and Sciences may be obtained by contacting the Associate Dean for Research and Graduate Studies, Eberly College of Arts and Sciences, 201 Woodburn Hall, West Virginia University, P.O. Box 6286, Morgantown, WV 26505-6286; telephone (304) 293-4611.
Graduate Programs

Biology ............................................ M.S. .................... Ph.D.
Chemistry ....................................... M.S. .................... Ph.D.
Communication Studies ................. M.A.
English ............................................ M.A. .................... Ph.D.
Foreign Languages ............................. M.A.
Geography ...................................... M.A. .................... Ph.D.
Geology .......................................... M.S. .................... Ph.D.
History ............................................. M.A. .................... Ph.D.
Mathematics ................................... M.S. .................... Ph.D.
Physics ........................................... M.S. .................... Ph.D.
Political Science ............................. M.A. .................... Ph.D.
Psychology ..................................... M.A. .................... Ph.D.
Public Administration ...................... M.P.A.
Sociology and Anthropology .......... M.A.
Statistics ........................................ M.S.

Graduate Faculty
† Indicates regular member of graduate faculty.
* Indicates associate member of graduate faculty.

Biology

Professors

Associate Professors
† Clifford P. Bishop, Ph.D. (U. Va.). Developmental and molecular biology of drosophila.
† Dorothy C. Dunning, Ph.D. (Tufts U.). Bat prey defenses and other aspects of bat biology.
Ramsey Frist, Ph.D. (U. Pitt.). Biophysics.

Assistant Professors
† Ashok Bidwai, Ph.D. (Utah St.). Biochemical and molecular genetic analysis of protein kinases.
† Marc Kantorow, Ph.D. (George Wash. U.). Molecular biology of ocular disease.

Clinical Assistant Professor
† Donna Ford-Werntz, Ph.D. (Missouri). Plant systematics.

Chemistry

Professors
† Harry O. Finklea, Ph.D. (Calif. Inst. Tech.). Analytical/physical chemistry, Properties of organized monolayers deposited on electrodes, Chemical sensors.
† Jeffrey L. Petersen, Ph.D. (U. Wisc.). Physical inorganic chemistry, Organometallic chemistry, X-ray diffraction, Catalysis, Olefin polymerization.
† Reuben H. Simoyi, Ph.D. (Brandeis U.). Physical chemistry, Chemical kinetics, Oscillating reactions.
†Kenneth Showalter, Ph.D. (U. Colo.). C. Eugene Bennett Chair of Chemistry, Chemical kinetics, Multistability and oscillating systems.
†Kung K. Wang, Ph.D. (Purdue U.). Organic chemistry, Stereoselective synthesis, Natural products.

Associate Professors
†Kay M. Brummond, Ph.D. (Penn. St. U.). Synthetic organic chemistry, Synthetic methods, Natural products synthesis.
†Charles Jaffe, Ph.D. (U. Col.). Theoretical chemistry, Molecular dynamics, Nonlinear dynamics.
†Fred L. King, Ph.D. (U. Va.). Analytical chemistry, Mass spectrometry, Gas-phase ion chemistry.
†John H. Penn, Ph.D. (U. Wisc.). Organic chemistry, Photochemistry, Electron transfer.
†Ronald B. Smart, Ph.D. (U. Mich.). Associate chairperson. Environmental analytical chemistry, Electrochemistry, Trace metals.
†Alan M. Stolzenberg, Ph.D. (Stanford U.). Inorganic chemistry, Bioinorganic chemistry, Organometallic chemistry.

Assistant Professors
Terry Gullion, Ph.D. (William and Mary). Physical chemistry, Solid state NMR, Structural elucidation.
Aaron Timperman, Ph.D. (U. Ill.). Analytical chemistry, Separation science, Mass spectrometry, Proteins in seawater.

Communication Studies
Professors
†Melanie Booth-Butterfield, Ph.D. (U. Mo.). Chairperson. Health and interpersonal communication.
†Joan S. Gorham, Ph.D. (Northern Ill. U.). Associate dean. Instructional, intercultural, and mass media communication.
†Virginia P. Richmond, Ph.D. (U. Nebr.). Instructional, Intercultural, and Organizational communication.

Associate Professors
†Matthew M. Martin, Ph.D. (Kent U.). Interpersonal and mass communication, Communication traits.
†Brian R. Patterson, Ph.D. (Okla.U.). Developmental communications, Communication theory.

Assistant Professors
*Stephen C. Hines, Ph.D. (Purdue U.). Interpersonal and health communication, Quantitative research methods.
*Kevin B. Wright, Ph.D. (Okla. U.). Computer mediated, interpersonal, and developmental communication, Quantitative research methods.

English
Professors
†Dennis Allen, Ph.D. (U. Minn.). Critical theory, Prose fiction, Popular culture.
†Patrick W. Conner, Ph.D. (U. Md.). Chairperson. Eberly College Centennial Professor in English. Anglo-Saxon literature and culture, Medieval English literature, Humanities computing.
†Elaine Ginsberg, Ph.D. (U. Okla.). M.A. supervisor, American literature, Women writers, Feminist theory.
†Robert Markley, Ph.D. (U. Penn.). Jackson Family Chair in British Literature, Restoration and 18th-century literature, Science studies, Cultural studies.
†Kevin Oderman, Ph.D. (U. Calif.). American poetry, American literature, Creative writing: essay.
†Susan Shaw Sailer, Ph.D. (U. Wash.). Irish poetry, James Joyce, Literary theory, Epics.
†Cheryl B. Torsney, Ph.D. (U. Fla.). American fiction, Henry James, Literary theory, Women writers.

**Associate Professors**
†Gail Adams, M.A. (U. Tx.). American studies, Creative writing.
†Rudolph P. Almasy, Ph.D. (U. Minn.). Acting dean. Renaissance and Reformation studies, Composition.
†Laura Brady, Ph.D. (U. Minn.). Composition and rhetorical theory, Women’s studies.
†Anna Shannon Elfenbein, Ph.D. (U. Neb.). American literature, Women’s studies, Film.
†Marilyn Francus, Ph.D. (Columbia U.). Restoration and 18th-century literature and culture, Women’s studies, Satire, History of the novel.
†David Stewart, D.Phil. (Oxford U.). British romanticism, Literary theory.
†Timothy Sweet, Ph.D. (U. Minn.). American studies (17th-19th century), Literature and photography, Native American literature.

**Assistant Professors**
*Patricia DeMarco, Ph.D. (Duke U.). Middle English and general Medieval studies.
†Susan Warshauer, Ph.D. (U. of Tx.). Humanities computing, drama, and composition.

**Foreign Languages**

**Professors**
†Kathleen McNerney, Ph.D. (U. N. Mex.) Spanish. Catalan language and literature, Spanish literature and culture, Women writers.
†Frank W. Medley, Jr., Ph.D. (Purdue U.) Chairperson. Spanish. Foreign language acquisition.
Foreign language education.

**Associate Professors**
†Deborah Janson, Ph.D. (U. Cal.). German. Enlightenment, Romanticism, GDR and post-Wende literature, Ecofeminism.
†Jürgen Schlunk, Ph.D. (U. Marburg). German. 18th- to 20th-century German literature, German drama, cinema, and culture.
†Johan Seynnaeve, Ph.D. (Cornell U.). Graduate coordinator. General linguistics, Sociolinguistics, Phonology, Medieval linguistics.

Assistant Professors
†Susan Braidi, Ph.D. (U. Del.) ESL/Linguistics. Applied linguistics, Second language acquisition, Syntax.

Geology and Geography

Professors
†Robert E. Behling, Ph.D. (Ohio St. U.). Geomorphology.
†Frank J. Calzonetti, Ph.D. (U. Okla.). WV EPSCOR Director. Energy and regional development.
†Trevor M. Harris, Ph.D. (U. Hull). Chairperson. Geographic information systems.
†Kenneth C. Martis, Ph.D. (U. Mich.). Political geography, Historical geography.
†M. Duane Nellis, Ph.D. (Oregon St. U.). Satellite remote sensing, Natural resources.
†John J. Renton, Ph.D. (WVU). Geochemistry.
†Thomas H. Wilson, Ph.D. (WVU). Geophysics.

Associate Professors
†J. Steven Kite, Ph.D. (U. Wisc.). Geomorphology.
†Helen Lang, Ph.D. (U. Ore.). Petrology and mineralogy.
†Calvin Masilela, Ph.D. (VPI). Planning, International development and land use policy.
†Ann M. Oberhauser, Ph.D. (Clark U.). Economic restructuring, Gender studies, Europe.
†Timothy A. Warner, Ph.D. (Purdue U.). Remote sensing.

History

Professors
†Robert E. Blobaum, Ph.D. (U. Nebr.). Russia, East Europe, Poland, 20th-century political and social history.
† Stephen C. McCluskey, Ph.D. (U. Wisc.). Medieval Europe, History of Science, Astronomies of traditional cultures.
† John C. Super, Ph.D. (UCLA). Latin America, Spain, Biography, Food and agriculture.

Associate Professors
* William S. Arnett, Ph.D. (Ohio St. U.). Ancient, Egyptology, Aging and the elderly in the ancient Middle East.
† Gregory A. Good, Ph.D. (U. Toronto). History of Science, 18th- and 19th-century science, History of instruments and scientific institutions.
† A. Michal McMahon, Ph.D. (U. of Tx.). 18th- and 19th-century U.S. environmental history, History of Technology.
† Steven M. Zdatny, Ph.D. (U. Penn.). Modern Europe, France, Social.

Assistant Professors
* Katherine Aaslestad, Ph.D. (U. Ill.). Europe, Germany, Cultural, urban, and international relations.
* Mark B. Tauger, Ph.D. (UCLA). Russian/Soviet, Modern Europe, Environmental.

Mathematics

Professors
† Henry W. Gould, M.A. (U. Va.). Combinatorics, Number theory, Special functions.
† Dening Li, Ph.D. (Fudan U.). Partial differential equations.
† Larry N. Mann, Ph.D. (U. Penn.). Topology, Geometry.
Michael E. Mays, Ph.D. (Penn. St. U.). Number theory.
Sam B. Nadler, Jr., Ph.D. (U. Ga.). Continuum theory.
† Cun-Quan Zhang, Ph.D. (Simon Fraser U.). Combinatorics, Graph theory.

Associate Professors
† Weifu Fang, Ph.D. (Claremont). Applied mathematics.
† John Goldwasser, Ph.D. (U. Wisc.). Combinatorics, Linear algebra.
† Harumi Hattori, Ph.D. (RPI). Differential equations, Continuum mechanics, Numerical analysis.
† Andrzej Karwowski, Ph.D. (Rutgers U.). Continuum mechanics.
† Hong-Jian Lai, Ph.D. (Wayne St. U.). Combinatorics, Graph theory.
† James E. Miller, Ph.D. (U. Ky.). Complex analysis.
John W. Randolph, Ph.D. (U. Va.). Algebra.
† Jerzy Wojciechowski, Ph.D. (Cambridge U.). Combinatorics, Graph theory.
Philosophy
Professors
† Ralph W. Clark, Ph.D. (U. Colo.). Ethics, Business ethics, Metaphysics.
† Mark R. Wicclair, Ph.D. (Columbia U.). Philosophy of law, Medical ethics, Ethics.

Associate Professor
† Richard A. Montgomery, Ph.D. (U. Ill.-Chicago). Chairperson. Philosophy of mind/cognitive science, Philosophy of science.

Assistant Professor

Physics
Professors
† Bernard R. Cooper, Ph.D. (U. Calif.). Benedum professor of physics. Condensed matter and materials theory.
† Martin V. Ferer, Ph.D. (U. Ill.). Phase transitions and critical phenomena, Theory.
† Larry E. Halliburton, Ph.D. (U. Mo.). Chairperson. Solid state physics, Experiment.
† H. Arthur Weldon, Ph.D. (MIT). Particle physics, Quantum fields, Theory.

Associate Professors
† Wathiq Abdul-Razzaq, Ph.D. (U. Ill.-Chicago Circle). Solid state physics, Experiment.
† Nancy C. Giles, Ph.D. (N.C. St. U.). Optical properties of semiconductors, Experiment.
† Mark E. Koepke, Ph.D. (U. Md.). Plasma physics, Experiment.

Assistant Professors
† David Lederman, Ph.D. (U. Calif.-Santa Barbara). Condensed matter physics, Experiment.
† Earl E. Scime, Ph.D. (U. Wis.-Madison). Plasma physics, Experiment.

Political Science
Professors
† Robert Dilger, Ph.D. (Brandeis U.). Director, Institute for Public Affairs. Intergovernmental relations, State and local government, Congress.
† Joe D. Hagan, Ph.D. (U. Ky.). International relations and world politics, Foreign policy analysis.
† Hong N. Kim, Ph.D. (Georgetown U.). Comparative politics (Asia), Comparative public policy.
† Donley Studlar, Ph.D. (Ind. U.). Eberly distinguished professor. British politics, Comparative politics (European and English-speaking regimes), Gender and ethnic politics.
† Rodger D. Yeager, Ph.D. (Syracuse U.). Comparative politics, (Africa), Political development.

Associate Professors
† Neil Berch, Ph.D. (U. Wash.). Public policy (political economy), American politics (state and local).
† Richard A. Brisbin, Jr., Ph.D. (Johns Hopkins U.). Public law and judicial politics, Public policy (Criminal justice and regulation).
† Allan H. Hammock, Ph.D. (U. Va.). Chairperson. American government, Public policy (Civil rights, health care).
† Susan Hunter, Ph.D. (Ohio St. U.). Public policy (Environment, policy design, and ethics), Contemporary political theory.
† Kevin Leyden, Ph.D. (U. Iowa). Congress, Political behavior, Interest groups, Research methods.
† Christopher Z. Mooney, Ph.D. (U. Wisc.). State politics, Research methods, Legislative politics.
† Jeffrey S. Worsham, Ph.D. (U. Wisc.). Public policy (regulation, social welfare), Bureaucratic politics and public administration.

**Assistant Professors**
† Paul Hoyt, M.A. (Ohio St. U.). Comparative politics (Middle East), International relations, U.S. Foreign policy.
* Jamie Jacobs, Ph.D. (U. Pitt.). International relations, Comparative politics (Latin America), Public policy (environment, political economy).

**Psychology Professors**
† Philip N. Chase, Ph.D. (U. Mass.). Verbal behavior, Concept learning, Individualized instruction, Organizational behavior management.
† Kennon A. Lattal, Ph.D. (U. Ala.). Centennial Professor. Experimental analysis of behavior, Behavior theory and philosophy, History of psychology.
Joseph Panepinto, Ph.D. (WVU). Community psychology, Program development and evaluation.
† Michael Perone, Ph.D. (U. Wisc.-Milwaukee). Chairperson. Basic processes in the operant behavior of humans and animals, Research methodology, Laboratory application of microcomputers, Radical behaviorism.
† Richard J. Seime, Ph.D. (U. Minn.). Adult behavior therapy and assessment, Eating disorders, Mood disorders.

**Associate Professors**
† Andrew S. Bradlyn, Ph.D. (U. Miss.). Pediatric behavioral medicine, Child behavior therapy and assessment.
† Carole V. Harris, Ph.D. (U. Fla.). Child and adolescent behavior therapy, Adolescent substance abuse, Pediatric behavioral medicine.
Alice Darnell Lattal, Ph.D. (WVU). Organizational behavior management.


†Daniel W. McNeil, Ph.D. (U. Ala.). Director of clinical training. Experimental psychopathology, Fear, Anxiety, Phobia.

†Vernon Odom, Ph.D. (U. N.C.). Abnormal and normal visual development.


†David W. Schaal, Ph.D. (U. Fla.). Behavioral pharmacology, Delayed reinforcement, Radical behaviorism.


**Assistant Professors**

†Christina D. Adams, Ph.D. (Louisiana St. U.). Adolescent psychopathology, Test construction, Pediatric psychology.


Lynda J. Birckhead, Ph.D. (U. Md.). Adjunct. Supervision theory, research, and practice.


†Jennifer Haut, Ph.D. (U. N.D.). Behavioral medicine.

†Marc Haut, Ph.D., (U. N.D.). Behavioral medicine.

Alfred Kasprowicz, Ph.D. (U. Pitt.). Behavioral medicine, Psychophysiology.


†Jerry B. Richards, Ph.D. (Emory U.). Impulsive behavior, Drug abuse, Behavioral pharmacology, Behavioral neuroscience, Animal models of psychopathology.

Julie Smith, Ph.D. (WVU). Organizational performance systems, Innovation and creativity, Training systems.

Thomas J. Spencer, Ph.D. (WVU). Organizational behavior management.

†JoNell Strough, Ph.D. (U. Utah). Problem-solving and interpersonal relationships across the life span, Interpersonal processes in aging.


Christina Sara Wilson, Ph.D. (Wayne St. U.). Clinical neuropsychology, Dementia, Head injury.

**Public Administration Professors**

†Gerald M. Pops, Ph.D. (Syracuse U.), J.D. (U. Calif.). Personnel, Public law.

†David G. Williams, Ph.D. (SUNY Albany) Chairperson. Public organization, Management.

**Associate Professors**


**Assistant Professors**


L. Christopher Plein, Ph.D. (U. Mo.). Public policy, Legal and political foundations.

**Social Work Professors**

Marjorie H. Buckholz-Cleveland, Ph.D. (WVU). Emerita.


†Nancy L. Lohmann, Ph.D. (Brandeis U.). Social gerontology, Research measurement.
Roger Lohmann, Ph.D. (Brandeis U.). Nonprofit management, Social welfare history, Social policy, Rural social services.

Associate Professors
Jody Kashden, Ph.D. (WVU). Adjunct. Neuropsychological testing.
Neil L. Mogge, Ph.D. (George Peabody Coll.). Adjunct. Adolescent personality, Delivery of psychological services.
Caroline T. Mudd, M.S.W. (U. Penn.). Emerita.
Neal A. Newfield, Ph.D. (Tx. Tech U.). Strategic therapy, Hypnosis, Solution focused therapy.
Jeannie Sperry, Ph.D. (Ohio U.). Visiting Assistant Professor and Director, Quin Curtis Center, Department of Psychology, WVU.
Oliver Wirth, Ph.D. (WVU). Adjunct. Behavior analysis, Occupational health.

Assistant Professors
Elizabeth Randall, Ph.D. (U. Ga.). Clinical social work, Mental health.
Joan E. Saltman, Ph.D. (U. of Md.). Human behavior, Family social work, Multicultural issues.
Norma Wasko, Ph.D. (SUNY—Albany). Health policy, Health and mental health services and research, Direct clinical practice.

Instructors
Linda Ferrise, M.S.W. (WVU). Clinical social work, Mental health, Adoption.
Helen M. Hagerty, M.S.W. (U. Pitt). Coordinator of field instruction.

Academic Professionals
Brenda Morgan-Patrick, M.S.W. (WVU). Admissions coordinator and academic counselor.

Sociology and Anthropology

Professors
†Ronald C. Althouse, Ph.D. (U. Minn.). Chairperson, sociology. Theory, Work, Occupational safety and health.
†Richard A. Ball, Ph.D. (Ohio St. U.). Sociology. Deviant behavior, Criminology, Social psychology.

Associate Professors
†Sally W. Maggard, Ph.D. (U. Ky.). Sociology. Appalachian studies, Gender, Work, Social change.
†Lawrence T. Nichols, Ph.D. (Boston C.). Sociology. Criminology, Sociology of business, Theory, Qualitative methods.
†Partricia Rice, M.A. (Ohio St.). Anthropology. Prehistoric art, Physical archaeology.

Assistant Professors
Statistics
Professors
†Erdogan Gunel, Ph.D. (SUNY-Buffalo). Bayesian inference, Biostatistics, Categorical data analysis.
†William V. Thayne, Ph.D. (U. Ill.). Experimental design, Statistical genetics, Regression analysis.

Visiting Research Professor

Associate Professors
†Magdalena Niewiadomska-Bugaj, Ph.D. (Adam Mickiewicz U., Poznan, Pol.). Classification, Categorical data analysis, Statistical computing.

Adjunct Associate Professors
Michael D. Attfield, Ph.D. (WVU). Design and analysis of experiments.

Assistant Professor
Michael E. Schuerers, Ph.D. (Iowa St. U.). Bayesian methodology, Hierarchical models, Survey sampling.

Women’s Studies
Professor
*Judith G. Stitzel, Ph.D. (U. Minn.). Women’s studies, Feminist pedagogy, Creative writing.

Associate Professor

Visiting Assistant Professor

Biology
Keith Garbutt, Chairperson of the Department
200 Brooks Hall
www.as.wvu.edu/biology

Degrees Offered: Master of Science, Doctor of Philosophy

The Department of Biology offers graduate studies leading to the degrees of doctor of philosophy and master of science. The doctor of philosophy degree is offered in the area of cellular and molecular biology and in the area of environmental biology, with research concentration in the areas of gene regulation and transcriptional control during development; cellular and molecular bases of ocular disorders; molecular biology of ocular disorders; bone cell differentiation; endocrinology of reproduction; analysis of protein kinases; molecular biology of aging; uses of remote sensing in evaluation of forest health; population and ecological genetics of plants; environmental stress physiology; mycorrhizal-plant interactions and physiological, population, community, and ecosystem ecology with an emphasis on global climate change, regional environmental issues, and conservation of biodiversity. The master of science provides specialization in plant systematics and animal behavior as well as in cellular and molecular biology and environmental biology as listed above. Each degree requires completion of an original research project which represents the principal theme about which the graduate program is constructed.
Master of Science

Prerequisites and Requirements Applicants for the master of science program in biology must show at the minimum the equivalent of a bachelor’s degree from an accredited institution, an undergraduate grade-point average of 3.0, a 50th percentile ranking for the verbal, quantitative, and analytical sections of the Graduate Record Examination; an adequate science background which normally includes one year of physics and two years of chemistry; and a sufficient knowledge in biology as reflected in scores normally greater than the 50th percentile on all three sections of the GRE subject test in Biology. Applicants are requested to submit a one-page essay describing past research experience and expectations for career goals. Three letters of recommendation from individuals familiar with the applicant’s academic performance are required as well as official transcripts from all colleges or universities attended. The Department of Biology’s graduate committee reviews the applicant’s records and makes the admission decisions.

The WVU general requirements for the master of science are outlined elsewhere in the graduate catalog. Students in the biology M.S. program may apply up to six hours of research credit toward the 30-hour requirement; the remaining 24 hours of credit must be earned in graduate courses which reflect a diversified exposure to biology. The establishment of an advisory committee and the generation of a program of study are explained in detail in the department’s Graduate Student Handbook. A final oral examination is administered by the Advisory Committee after the program of study has been completed and the thesis has been submitted.

Doctor of Philosophy

Program The program for the degree of doctor of philosophy concentrating in cellular and molecular biology, or in environmental biology, reflects a flexible, research-oriented approach geared to develop the interests, capabilities, and potentials of mature students. Applicants must have met all the entrance requirements listed above for the master of science program. Acceptance into the Ph.D. program is by vote of the graduate committee of the Department of Biology. This committee ensures that all entrance requirements are met or that provisions have been made to remedy the deficiencies, and that facilities and personnel are adequate to support the program to a successful conclusion.

Each student admitted to the Ph.D. program works under the close supervision of a faculty research advisor and an advisory committee; details on the composition and establishment of an advisory committee are available in the Graduate Student Handbook. Students must have a program of study formulated and approved within 12 months of entering the Ph.D. program; all deficiencies must have been removed earlier. Significant deviations from an established program of study require approval from the advisory committee and the graduate committee.

Examinations and Dissertation Proposal The advisory committee is responsible for overseeing the progress of the student and for administering and judging performance in the required examinations; it ensures that all Department of Biology, College of Arts and Sciences, and University requirements are met during the course of the student’s program of study. The program of study outlines the course work to be taken in support of the proposed research.

Students must successfully complete a preliminary exam and proposal exam before being promoted to candidacy for the Ph.D. The preliminary exam is given by the end of the fourth semester in residence and consists of two parts, a written exam and an oral exam. The proposal exam is taken by the end of the fifth semester in residence and consists of a written dissertation research proposal, which is also orally presented before the department.
Candidacy  Successful passage of the preliminary and proposal examinations leads to promotion to candidacy, wherein the student may concentrate fully upon the dissertation research and prepare for the final examination. The final examination consists of the submission of a completed and acceptable written dissertation and an oral dissertation defense. A formal departmental seminar covering the dissertation research must be presented before graduation.

Biology (BIOL)

201. History of Biology. I. 3 Hr. PR: (BIOL 1 and BIOL 3 and BIOL 2 and BIOL 4) or BIOL 15. History of development of biological knowledge, with philosophical and social backgrounds.

209. Topics and Problems in Biology. I, II, S. 1-4 Hr. (May be repeated for a max. of 6 Hr.) PR: Permission required. Topics and problems in contemporary biology. All topics or problems must be selected in consultation with the instructor.

210. Biometry. 3 Hr. PR: STAT 101. Application of quantitative methods and statistics to biological data, with emphasis on hands-on hypothesis construction, experimental design, data analysis, and biological interpretation of statistical results. (3 hr. lec., 3 hr. contact.)


212. Advanced Cellular/Molecular Biology-Laboratory. II. 1 Hr. Coreq: BIOL 211. Experimental approaches to the study of cellular systems.

213. Introduction to Virology. I. 3 Hr. PR: BIOL 19. Survey of viruses; their modes of replication; contributions made to molecular biology, significance of viral diseases in agriculture and medicine, and contemporary use of viruses in biotechnology. (3 hr. lec.)

214. Molecular Basis of Cellular Growth. I. 3 Hr. PR: BIOL 19. Study of the integration of events as they regulate the growth and division of cells. Topics include: hormones as cell effectors and the cancer cell as a model system.

216. Cell and Molecular Biology Methods. I. 3 Hr. PR: BIOL 19. Introduction to the theory and application of basis analytical tools used in molecular biology. Selected topics included are: hydrodynamic methods, chromatography, electrophoresis, and general laboratory methods. (Offered in even years.)

219. Introduction to Recombinant DNA. I. 4 Hr. PR: BIOL 19. An introductory course covering the basic principles and techniques of recombinant DNA technology. Includes molecular cloning, isolation of plasmid DNA, agarose/acylamide gel electrophoresis, restriction enzyme mapping, nucleic acid hybridization, and DNA sequencing.

221. Molecular Genetics. II. 4 Hr. PR: BIOL 15, 17, 19. Theoretical and practical knowledge in genetics, as a field of study and tool for investigating biological problems, are presented. The laboratory is a logical sequence of experiments providing an actual research experience in molecular genetics. (3 hr. lec., 3 hr. lab., 6 hr. contact.)

222. Cell Structure and Function. 4 Hr. PR: BIOL 21. Students have hands-on experiences in methodologies used to study cell structure and function. Light and fluorescence microscopy are used to address cell signaling, signal transduction, exocytosis, apoptosis, and regulation of gene expression in reproductive endocrinology. (3 hr. lec., 3 hr. lab., 6 hr. contact.)

223. Developmental Biology. II. 4 Hr. PR: BIOL 15, 17, 19. A molecular genetic analysis of the mechanisms by which multicellular organisms develop from single cells. (3 hr. lec., 4 hr. lab., 7 hr. contact.)

231. Animal Behavior. I. 4 Hr. PR: BIOL 21 and ((BIOL 1 and BIOL 3 and BIOL 2 and BIOL 4) or BIOL 15). Introduction to animal behavior (ethology), emphasizing the ecology and evolution of individual and social behaviors. Laboratory includes independent investigation of behavioral phenomena. Given in even-numbered years.
232. *Physiological Psychology*. I. 3 Hr. PR: 9 Hr. Psychology, behavior, physiology, or graduate standing. Introduction to physiological mechanisms and the neural basis of behavior. (Also listed as PSYC 232.)


234. *Neuroethology*. II. 3 Hr. PR: BIOL 17 and 19 and (BIOL 231 or BIOL 232). Explores the way behavior is controlled in a wide variety of animals, so the similarities and differences in neural mechanisms can be better understood. Given in odd-numbered years.

240. *Methods in Ecology and Biogeochemistry*. II. 3 Hr. PR: BIOL 21. Introduction to the theory and application of basic analytical tools used in ecology and biogeochemistry. Topics include sampling of terrestrial and aquatic organisms and their environment, and chemical analyses of biological materials. (Offered in odd years.)

243. *Plant Ecology*. I. 4 Hr. PR: BIOL 21. Introduction to the four divisions of plant ecology, including physiological, population ecology, community ecology, and ecosystem ecology. (Offered in odd years.)

244. *Global Ecology*. I. (odd-num. yrs.) 3 Hr. PR: BIOL 21. The Earth viewed as a changing biogeochemical system. Topics include: the structure, composition, and dynamics of the ecosphere; nutrient cycles; changing atmospheric composition; climate change; ozone depletion; land-use change; biological invasions; and changes in biodiversity.


247. *Aquaculture*. 3 Hr. PR: (BIOL 1, 3 and 2, 4) or BIOL 15. An introduction to the farming and husbandry of freshwater and marine organisms. Overnight field trips are voluntary. (Offered in odd years.)

248. *Comparative Evolutionary Biology of Plants*. I. 4 Hr. PR: BIOL 1 and BIOL 3 and BIOL 2 and BIOL 4. Evolutionary history, morphology, life cycles, and ecology of extant and extinct groups, including: cyanobacteria, lichens, algae (green, red, and brown), bryophytes, ferns, fern allies, gymnosperms, and angiosperms. Laboratories emphasize comparative analysis of living specimens. One or two field trips at student's expense.

249. *Plant Systematics*. I. 4 Hr. PR: BIOL 1 and BIOL 3 and BIOL 2 and BIOL 4 or BIOL 17. Study of the taxonomy of flowering plants worldwide and related topics in angiosperm classification and evolution. Laboratories emphasize characteristics of selected families of monocotyledons and dicotyledons, using living and herbarium material. (5 hr. contact.)


252. *Flora of West Virginia*. S. 3 Hr. PR: (BIOL 1, 3 and 2, 4,) or BIOL 15 Identification of local woody and herbaceous seed plants, focusing on common native and introduced species. Conducted primarily through field trips to nearby areas with the use of dichotomous keys to determine the scientific names of observed specimens.

253. *Anatomy and Development of Plants*. II. 4 Hr. PR: BIOL 17 or PLSC 52. A comparative study of vegetative and reproductive structures (cells, tissue, and organs) of bryophytes and vascular plants, with emphasis on flowering plants. Laboratories focus on living plants, and include observation of plant development from spores, seeds, and cuttings. One field trip.

254. *Plant Geography*. II. 3 Hr. PR: BIOL 21. World-wide distribution patterns of plants and factors related to these distributions—including dispersal. Limiting factors, climate, isolation, evolutionary history, plate tectonics, pleistocene glaciations, and human activities. Plant communities and soils of polar, temperate, and tropical biomes are discussed.

255. *Invertebrate Zoology*. II. 4 Hr. PR: BIOL 19 and 21. The evolution of animals without vertebral columns. The laboratory includes field trips, including one that takes an entire weekend. (Dissection kit required.) Given in odd-numbered years.
257. Ichthyology. II. 3 Hr. PR: BIOL 17. Internal and external structure of fishes, their systematic and ecological relationships, and their distribution in time and space. (Dissection kit required.)

259. Parasitology. 4 Hr.

260. Plant Development. I. 4 Hr. PR: BIOL 15, 17, 19, and 21 and (organic chemistry or biochemistry.) Experimental studies of plant growth and development.

261. Comparative Anatomy. I. 4 Hr. PR: BIOL 15, 17, 19, and 21 or consent. A functional and evolutionary study of vertebrate structure. (Dissection kit required.)


268. Molecular Endocrinology. I. 3 Hr. PR: BIOL 21. Hormonal action is discussed at the cellular and molecular levels. Topics include hormone production and regulation, receptor kinetics and activation, and receptor output.

269. Molecular Endocrinology - Laboratory. I. 1 Hr. Coreq: BIOL 268. Experimental techniques used to study hormones and receptors.

270. General Animal Physiology. I. 3 Hr. PR: BIOL 15, 17, 19, and 21. In-depth, current treatment of physiological principles which operate at various levels of biological organization in animals of diverse taxonomic relationships. Understanding is developed from background lectures and student analysis in discussion sessions of research literature.

271. General Animal Physiology-Laboratory. I. 1 Hr. Coreq: BIOL 270. After learning basic techniques, students are provided the opportunity to design, execute, and report upon an independent research project in physiology.

309. Topics and Problems in Biology. I, II, S. 1-4 Hr. PR: Consent. Topics and problems in contemporary biology, to be selected in consultation with instructor.

311. Biology Seminar. I, II. 1 Hr. Discussions and presentations of general interest to biologists.

314. Molecular Cell Biology. II. 3 Hr. PR: Consent. An advanced course presenting contemporary methodologies and their application to study of problems in cellular organization, molecular genetics, and developmental biology. Introduction to the research literature is stressed.

315. Molecular Basis of Virology. I. 3 Hr. PR: BIOL 19 or equiv., or consent. Lectures on bacterial, animal, and plant viruses; their structure, replication, and interaction with host cells. Discussion of the contributions virology has made to the understanding of molecular mechanisms in biology.

320. Molecular Biology of the Gene. 3 Hr. PR: BIOL 19 or consent. Comprehensive survey of basic principles, theories, and techniques of molecular biology, including structure/function of nucleic acids, DNA replication, transcription, translation, recombination, gene regulation, and function. (3 hr. lec.)

324. Cell Structure and Function. 4 Hr. PR: Graduate level status. Students have a hands-on experience in methodologies used to study cell structure and function. Light and fluorescence microscopy are used to address cell signaling, signal transduction, exocytosis, apoptosis, and regulation of gene expression in reproductive endocrinology. (3 hr. lec., 3 hr. lab., 6 hr. contact.)

340. Ecosystem Dynamics. I. 3 Hr. PR: Consent. A survey of our current understanding of the biogeochemistry that occurs at and near the surface of the Earth. Emphasis is placed on the biogeochemical cycles of carbon, nitrogen, phosphorus, and sulfur. The origin and dynamics of the atmosphere, lithosphere, and hydrosphere are also considered. (Offered in even-numbered years.)

341. Plant Population Biology. 3 Hr. PR: Graduate status or undergraduate status with the completion of Biology 21 and the instructor’s permit. Plant population biology examines the interplay of ecological theory and the real world of experimental ecology of natural populations using a case study approach. Each student will research a current topic in greater depth. (3 hr. lec., 3 hr. contact.)
345. *Fisheries Science*. II. 4 Hr. PR: BIOL 257 or equiv., or consent. Population dynamics in relation to principles and techniques of fish management. (Offered in spring of even years.)


356. *Advanced Plant Systematics*. II. 3 Hr. PR: BIOL 151 or equiv. Investigation of taxonomic problems and methods of plant classification through readings and herbarium, greenhouse, and laboratory experiences. Approaches include techniques in comparative morphology, anatomy, palynology, cytology, phytochemistry, statistics, and cladistics.

362. *Developmental Biology*. I. 3 Hr. PR: BIOL 262 or equiv., organic chemistry or biochemistry, or consent. The molecular and cellular basis of differentiation and morphogenesis. (Offered in fall of odd years.)

364. *Advanced Plant Physiology*. I, II. 3 Hr. PR: BIOL 169, organic chemistry, general physics, and consent. Advanced studies of plant processes including recent advances in the field. I Second semester, even numbered years — Mineral nutrition of higher plants. II. First semester, odd - numbered years — Plant growth and development. III. First semester, odd numbered years Environmental physiology.

375. *Fundamentals of Gerontology*. II. 3 Hr. PR: MDS 50 or consent. An advanced multidisciplinary examination of current research in biological, psychological, and sociological issues of human aging and the ways in which these impinge on the individual to create both problems and new opportunities. (Also listed as PSYC 375.)

391. *Advanced Topics*. 1-6 Hr.


400. *Teaching Practicum*. 1-3 Hr.

491. *Advanced Study*. 1-6 Hr.

493. *Directed Study*. 1-6 Hr.

493. *Special Topics*. 1-6 Hr.

494. *Special Seminars*. 1-6 Hr.

495. *Independent Study*. 1-6 Hr.

496. *Graduate Seminar*. 1 Hr.


499. *Graduate Colloquium*. 1-6 Hr.

**Chemistry**

*Paul W. Jagodzinski, Chairperson of the Department*

222 Clark Hall or 357 Chemistry Research Laboratory

[www.as.wvu.edu/chemistry](http://www.as.wvu.edu/chemistry)

**Degrees Offered: Master of Science, Doctor of Philosophy**

The Department of Chemistry offers graduate studies leading to the degrees of master of science and doctor of philosophy with research concentration in the areas of analytical, inorganic, organic, physical, and theoretical chemistry. The master of science and doctor of philosophy degrees require completion of a research project, which represents the principal component of the graduate program.
Prerequisites
Applicants for graduate studies in chemistry must have a bachelor’s degree as a minimum requirement. Applicants must have a major or concentration in chemistry and an appropriate background in physics and mathematics. All entering graduate students in chemistry are required to take departmental guidance examinations in the major areas of chemistry. These examinations, at the undergraduate level, are administered before registration and serve to guide the faculty in recommending a course program for the beginning graduate student. Deficiencies revealed by the departmental guidance examinations need to be corrected in a manner prescribed by the faculty. All graduate students pursuing M.S. and Ph.D. degrees in chemistry are required to teach in the instructional laboratories for a minimum of two semesters.

Thesis/Credits
The WVU general requirements for the master of science degree are outlined elsewhere in this catalog. Graduate students in the M.S. program in chemistry are required to submit a research thesis. They may apply up to six hours of research credit toward the 30-hour requirement. The remaining 24 hours of credit must be earned in the basic graduate courses which reflect a diversified exposure to chemistry; no more than nine hours of 200-level chemistry courses may be included; no more than 10 hours may be elected outside the department; and course work taken at the 300 to 400-level must include at least three, three-credit-hour courses distributed in at least two of the three areas of chemistry outside the student’s major area of research. Students are required to enroll in the departmental seminar program and are expected to attend special lectures and seminars offered by visiting scientists. A final oral examination is administered after completion and submission of the thesis.

Doctor of Philosophy
The program for the degree of doctor of philosophy reflects a flexible, research-oriented approach geared to develop the interests, capability, and potential of students. A program of courses is recommended to suit individual needs based on background and ability. These courses are classified as basic graduate courses which present the essentials of a given discipline on an advanced level, and specialized graduate courses that take one to the frontiers in a specific area of research. The course offerings are designed to provide guidelines from which students can launch their independent studies in preparation for candidacy examinations. Students are required to enroll in the departmental seminar program and are expected to attend special lectures and seminars offered by visiting scientists.

Graduate students in the Ph.D. program are required to complete satisfactorily a minimum of three courses (three credits each) at the 300-400 course level, offered by the Department of Chemistry and distributed in at least two areas outside their major area of research. In addition, each major area in chemistry requires students in that area to enroll in basic graduate courses presenting the essentials of that discipline on an advanced level.

Candidacy Candidacy examinations contain written and oral portions. The written examinations are of the cumulative type, and are offered eight times a year. The oral examination is based on a proposition for a research problem not intimately related to the student’s own project, or any particular research project being actively pursued at WVU. This proposition is presented in writing to the student’s research committee and defended before that group and any other interested faculty members.
Research

Research, which is the major theme of graduate studies, may be initiated as early as the student and faculty feel appropriate for the individual. Normally, a student will begin laboratory work no later than the second semester. Upon successful completion of an original piece of research, the candidate will present results in a Ph.D. dissertation and at the appropriate time defend the work in a final oral examination.

Chemistry (CHEM)


321. Organometallic Chemistry. 3 Hr. PR: Graduate standing in chemistry or consent. Syntheses, structure, and reactivity of organometallic compounds. Applications of organometallic compounds to catalysis and organic synthesis. (3 hr. lec.)

331. Advanced Organic Chemistry 1. I. 3 Hr. PR: CHEM 134. Structural concepts, bonding, tautomerism, static and dynamic stereochemistry, mechanistic classifications of reagents, and reactions including some applications. (3 hr. lec.)

332. Advanced Organic Chemistry 2. II. 3 Hr. PR: CHEM 331. Continuation of CHEM 331 with emphasis upon synthetic methods and reaction mechanisms. (3 hr. lec.)

341. Chemical Thermodynamics. 3 Hr. PR: CHEM 248. Principles of classical and statistical thermodynamics and their application to chemical problems. (3 hr. lec.)

411. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

412. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

413. Electrochemistry and Instruments. I. 3 Hr. PR: CHEM 210. Electronic instrumentation applied to study of mass transfer kinetics of electrode reactions, voltammetry, and high-frequency methods. (3 hr. lec.)

414. Analyt. Atomic Spectrum. I. 3 Hr. PR: CHEM 250. Theory of atomic spectroscopy relevant to elemental analysis. Considerations in the design and use of modern optical spectrometry systems. (3 hr. lec.)

415. Chemical Separations. 3 Hr. PR: CHEM 115, 133 and physical chemistry. Fundamentals of separate transport and flow transport processes underlying all separation techniques. Empirical coverage of chromatographic and electrophoretic methods for analytical separations. (3 hr. lec.)


421. Graduate Seminar. I, II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.
422. Graduate Seminar. I, II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

423. Phys. Methods in Inorganic Chemistry. I. 3 Hr. PR: CHEM 222. Symmetry, vibrational spectroscopy, theory, and applications of NMR and EPR methods, magnetism, optical activity, dynamic processes, and fluxional behavior. (3 hr. lec.)

424. Coordination Chemistry. II. 3 Hr. PR: CHEM 222. Symmetry, hybridization, ligand field theory, molecular orbital theory, metal-ligand bonding in coordination complexes and organometallics. (3 hr. lec.)

425. Inorganic Reactions and Mechanisms. I. 3 Hr. PR: CHEM 222. Inorganic reactions (ligand substitution equation, organometallic reactions, electron transfer); kinetics and mechanistic studies. (3 hr. lec.)


431. Graduate Seminar. I, II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

432. Graduate Seminar. I, II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

433. Physical Organic Chemistry. II. 3 Hr. PR: CHEM 331. Theoretical considerations of organic molecules, kinetics, and other methods used in the study of organic structure and reaction mechanisms, linear free energy relationship, and other related topics. (3 hr. lec.)


441. Graduate Seminar. I, II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate students body of his/her program.

442. Graduate Seminar. I, II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

443. Chemical Kinetics. I. 3 Hr. PR: CHEM 248. Theories and applications of kinetics in gaseous state and in solution. (3 hr. lec.)

444. Statistical Mechanics. I or II. 3 Hr. PR: CHEM 446. Theory and application of statistical mechanics to chemical systems. (3 hr. lec.) (Offered on demand.)

445. Theoretical Chemistry 1. I or II. 3 Hr. PR: Differential equations. Theoretical background for quantum mechanics. (3 hr. lec.)

446. Theoretical Chemistry 2. I or II. 3 Hr. PR: CHEM 445. Theories and applications of quantum mechanics in chemistry. (3 hr. lec.) (Offered on demand.)

447. Molecular Spectrosc. and Structure. II. 3 Hr. PR: CHEM 250 or graduate standing in chemistry, or consent. Advanced applications of spectral methods to the study of molecular structure. (3 hr. lec.)
448. Advanced Topics. I, II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

449. Advanced Topics. I, II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

489. Research Seminar. I, II. 1 Hr. PR: Graduate student in chemistry. Research seminars by visiting lecturers.

490. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of chemistry. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492 A-Z. Directed Study. I, II. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, program report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Communication Studies
Melanie Booth-Butterfield, Chairperson of the Department
108 Armstrong Hall
www.as.wvu.edu/comm
Degree Offered: Master of Arts

The Department of Communication Studies offers work leading to the degree of master of arts, with a concentration in communication theory and research. Persons who possess a bachelor’s degree from an accredited college or university may be admitted to the program. Qualified graduate students from a variety of disciplines are admitted to the program. The master of arts degree program is intended to qualify the student to:
• Assume a variety of professional roles in educational, industrial, governmental, or media institutions.
• Teach the subject matter in high school and/or college.
• Undertake advanced training toward a doctorate in the behavioral/social sciences.

Requirements
In addition to the general WVU requirements, the graduate student in communication studies must meet departmental requirements. These include successful completion of the minimum number of required graduate hours as set forth in Program A, B, or C, below with a grade of B or above in each class and the maintenance of a minimum grade-point average of 3.0.
Classes graded P, S or marked CR may not be counted toward a degree.

Program A
Applicants for admission must specify the program they wish to pursue. Program A is open only to full-time students. Programs B and C are open to both part-time and full-time students.
All students planning to continue graduate study past the M.A. level are encouraged to enter Program A. The following are required:
• At least 36 hours of graduate credit, 30 of which must be in the Department of Communication Studies. A maximum of six hours of thesis credit will be allowed.
• Completion of COMM 401 and 420.
• A thesis.
• An oral examination on the thesis.

Program B
All students planning a professional career in a field other than education are encouraged to enter this program. This is normally a terminal degree program in communication studies. The following are required:
• A minimum of 36 hours of course work with at least 30 hours in the Department of Communication Studies.
• Successful completion of written and oral comprehensive examinations.
The oral examination may be waived with the approval of the student’s examination committee and the departmental coordinator of graduate studies.
Students who wish to prepare themselves to be more effective professional communicators but who may not wish to complete Program B may obtain a certificate in corporate and organizational communication by completing 15 specified hours in this program. Three courses are required: COMM 491A Applied Communication Theory, COMM 491B Nonverbal Communication in the Organizational Environment, and COMM 376 Theory and Research in Organizational Communication. Six hours of electives may be chosen from COMM 370, 373, 374, and 377.

Program C
All students planning a professional career in elementary or secondary education are encouraged to enter this program. This is normally a terminal degree program in communication studies. Students may complete this program through off-campus study, on-campus study, or a combination. The following are required:
• A minimum of 33 hours of course work with at least 27 hours in the Department of Communication Studies including COMM 361, 362, 363, and 378.
• Successful completion of written and oral comprehensive examinations.
The oral examination may be waived with the approval of the student’s examination committee and the departmental coordinator of graduate studies.
Communication Studies (COMM)

201. Principles of Communication Education. I, II. 3 Hr. PR: 15 hr. communication studies. Literature, principles, and current practices of communication education in public schools with directed application. Intended for teachers in communication and language arts.

206. Advanced Study in Nonverbal Communication. I, II. 3 Hr. PR: COMM 106. Functions of nonverbal communication including status, power, immediacy, relationship development, regulation, turn-taking, leakage and deception, intuition, person perception, and emotional expressions.

221. Persuasion. I, II. 3 Hr. Theory and research in persuasion, emphasizing a critical understanding and working knowledge of the effects of social communication on attitudes, beliefs, and behavior.

361. Communication in the Classroom. I, II, S. 3 Hr. PR: Teaching experience or consent. Role of interpersonal communication in classroom environment, with particular emphasis on communication between students and teachers. Recommended for elementary, secondary, and college teachers in all fields.

362. Nonverbal Communication. I, II, S. 3 Hr. Examines the impact of nonverbal communication on the communication process. Attention is given to research on non-language aspects of communication and their application to various contexts.

363. Communication in the Educational Organization. I, II, S. 3 Hr. Problems of communication within educational organizations with emphasis on elements that impact educational change, conflict management, and interpersonal influence. Recommended for elementary, secondary, and college teachers in all fields.

364. Communication Problems of Children. I, II, S. 3 Hr. (Primarily for elementary and secondary school teachers and language arts supervisors.) Normal maturational development of listening and speaking skills, their relationships to language acquisition, and influence upon achievement.

365. Media in Communication and Education. I, II, S. 3 Hr. Use of the media in educational and other communication environments with emphasis on communication processes and principles relevant to television and film.


371. Theory and Research in Language. 3 Hr. Study of verbal interactions and language from source and receiver perspectives.


373. Theory and Research in Persuasion. I, II, S. 3 Hr. Various theories and principles of persuasion with emphasis on contemporary research literature.

374. Intercultural Communication: Theory and Research. 3 Hr. Advanced seminar in communication of various cultures. Special emphasis on research in diffusion of innovations.

375. Communication Apprehension and Avoidance. 3 Hr. Theory and research related to individuals’ perdispositional and situational tendencies to approach or avoid communication. Emphasis on work in the areas of willingness to communicate, communication apprehension, reticence, and shyness.

376. Theory and Research in Organizational Communication. I, II. 3 Hr. Contemporary research linking communication variables and networks to organizational change, effectiveness, leadership, power, and management practices. Analysis of communication problems within a variety of organizations.
377. **Small Group Theory and Practice.** I, II, S. 3 Hr. Specific research areas in interpersonal communication with emphasis on small groups.

378. **Communication and Affect in Instruction.** II. 3 Hr. PR: Graduate status. This advanced graduate course addresses how communication of affect from the perspective of both instructor and students influences of classroom learning.

382. **Gender and Communication.** 3 Hr. This graduate course will review contemporary and historical communication issues about sex, gender, and communication. Nonverbal communication, friendship, romantic family, educational, organizational, and media impacts will be reviewed.

383. **Communication Training and Development.** 3 Hr. This applied graduate course provides the student who has a background in human communication theory and research, an introduction to communication training and development issues, procedures, assessment, and presentational skills.

389. **Health Communication.** 3 Hr. PR: Graduate standing. Overview of essential concepts and theories needed to understand and evaluate health-related messages in patient-provider relationships, between workers in health care organizations, and in medical related applications.

391 A-Z. **Advanced Topics.** 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. **Research.** 1-15 Hr. PR: Consent. Research activities leading to a thesis, problem report, research paper, or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

401. **Graduate Research Methods.** I. 3 Hr. Major emphasis on designing and conducting experimental and laboratory research in human communication. Computer applications to social science research also given consideration. Should be taken the first semester of graduate study.

402. **Advanced Seminar in Research Methods.** II. 3 Hr. PR: COMM 401. Research techniques necessary to conduct original communication research. Emphasis on advanced statistical techniques.

420. **Survey of Human Communication Theory.** I. 3 Hr. Broad overview of contemporary theories in human communication. Should be taken the first semester of graduate study.

433 A-Z. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

475. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

486 A-Z. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

490. **Teaching Practicum.** I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of communication studies. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students on assistantships to gain teaching experience. (Grading will be S/U.)

491 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492 A-Z. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

493 A-Z. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494 A-Z. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.
Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

Graduate Seminar. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Thesis or Dissertation. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

English

Patrick W. Conner, Ph.D., Chairperson of the Department
Timothy Sweet, Ph.D. Supervisor
Elaine Ginsberg, M.A. Supervisor
Stansbury Hall
www.as.wvu.edu/english

Degrees Offered: Master of Arts, Doctor of Philosophy

Master of Arts

Admission To be admitted to the Department of English as prospective candidates for the degree of master of arts, students are expected to have completed work comparable to the department’s undergraduate requirement for English majors (but with records distinctly above the average), and to present as part of their applications their scores on the Graduate Record Examination General Aptitude Test, and, if nonnative speakers of English, their TOEFL scores. Past experience has shown that successful graduate students usually score at least the 60th percentile on the verbal section of the GRE. Students also must provide three letters of reference and a sample of their academic writing.

Course Requirements (No Thesis) M.A. students selecting the non-thesis option must successfully complete 30 hours, distributed as follows: nine hours of core courses; nine hours of author, topic, genre courses; nine hours of seminar courses (including ENGL 492); and three hours of unrestricted course work. No more than six hours of course work outside the Department of English can apply toward the 30-hour requirement. Students should check with the department about the most current courses available.

Course Requirements and Thesis A candidate for the M.A. degree may choose to take 24 hours of course work and write a thesis for six hours credit under the supervision of a
thesis advisor. The thesis may be creative (a novel or a collection of short stories, poems, or literary essays with an analytic introduction) or scholarly. A candidate may register for up to 12 hours of thesis credit, but only six hours can be included in the 30 hours required for the degree. Thesis hours are graded as S (satisfactory) or U (unsatisfactory). Students planning to write a creative thesis must first be admitted to the creative writing track of the M.A. program.

Students electing the thesis option are expected to defend their finished work before their thesis committees and any others who wish to attend the oral examination. The English Department requires no terminal examination. Instead, course distribution requirements and individual courses provide rigor and breadth, and only classes passed with a grade of B or better count toward the degree.

Language Requirement Two options are available for fulfilling the foreign language requirement. In the first option, students may take a graduate reading examination administered by the Department of Foreign Languages in French, German, classical Greek, Italian, Latin, Russian, or Spanish. In the alternative option, students may fulfill the language requirement by having successfully completed (with receipt of a grade of A or B in the last course) a second-year level of foreign language study at an accredited college or university (or its international equivalent) within the last five years.

Doctor of Philosophy
Admission Applicants for admission to the program will be judged on the bases of academic record, three recommendations from former teachers, a statement of purpose outlining their academic and professional goals, a sample of their academic writing, and the Graduate Record Examination General Aptitude Test, and Advanced Test scores. Nonnative English-speaking applicants must also present their TOEFL scores. All decisions on admission are made by the Ph.D. admissions committee.

Examinations and Requirements The doctoral program can be completed in three years of full-time study beyond the master’s degree or its equivalent. During the first year in residence, students must enroll in English 499 Graduate Colloquium, and pass the qualifying examination. Thirty credit-hours must be taken prior to the examination for formal admission to candidacy. Full-time students are expected to enroll in nine credit-hours per semester. Only 300- and 400-level courses can be applied to the 30 credit-hours requirement; nine of these hours must be in 400-level seminars, one of which must be English 488 Current Directions in Literary Study. All doctoral candidates, unless they have previously taken an equivalent course, must take English 492 Introduction to Literary Research. Neither English 490 (required of all teaching assistants) nor English 492 may be substituted for the seminar requirements. Doctoral students must teach successfully in the department. Concurrent with the teaching practicum, six hours of teaching practicum (three for teaching composition and three for teaching literature) are also required. This requirement can be waived for those candidates with teaching experience approved by the department. Students are permitted only six hours of independent study, however. The dissertation carries 12 hours; thus, the typical Ph.D. program includes 48 credit hours.

Upon approval by the plan of study committee, students may choose to complete a minor, not to exceed 12 hours in 300- or 400-level courses, in a related subject offered by another department.

Language Requirement The foreign language options are the same as for the master’s program and must be completed prior to taking the examination for formal admission to candidacy.
Doctoral Dissertation After completing course work, passing the examination for formal admission to candidacy, and fulfilling the language and teaching requirements, the student, under the direction of the dissertation committee chairperson, writes a prospectus of the final project. The dissertation, meant to be an original contribution to scholarship in its field, should be able to be completed in one year.

The final examination (oral defense of the dissertation) is scheduled by the dissertation director and is open to the public.

Core Courses
301. The Graduate Writing Workshop
310. Old English 1
312. Medieval Literature
313. Renaissance Literature
314. Restoration and Eighteenth-Century Literature
315. Romantic Literature
316. Victorian Literature
317. Twentieth-Century British Literature
320. Studies in Composition and Rhetoric
350. Shakespeare
370. American Literature to 1865
371. American Literature, 1865 to 1915
372. American Literature, 1915 to Present
383. Recent Literary Criticism

Author, Topic, Genre Courses
311. Old English 2
321. Studies in Drama
322. Studies in Poetry
323. Studies in the Novel
324. Studies in Nonfiction Prose
325. Study of Selected Authors
392. Special Topics

Seminars
440. Seminar in Medieval Studies
446. Seminar in Renaissance Studies, 1550–1660
460. Seminar in Restoration and Eighteenth-Century Studies
470. Seminar in British Romanticism
476. Seminar in Victorian Studies
484. Seminar in American Studies
485. Seminar in Twentieth-Century British Studies
488. Current Directions in Literary Study
492. Introduction to Literary Research
493. Folger Institute Seminar
494. Seminar
499. Graduate Colloquium

English (ENGL)
301. Graduate Writing Workshop. I, II. 3 Hr. (With departmental consent, may be repeated for a maximum of 6 credit hours.) Advanced workshop in creative writing. Genre and focus vary from semester to semester. PR: Instructor consent.
310. **Old English 1.** I, II. 3 Hr. Study of Anglo-Saxon with selected readings from the literature of the period.

311. **Old English 2.** I, II. 3 Hr. PR: ENGL 310. Beowulf and other texts in Old English.

312. **Medieval Literature.** 3 Hr. Readings in the literature of the Medieval period; attention to major writers and genres; focus on literary history. (3 hr. lec.)

313. **Renaissance Literature.** 3 Hr. Readings in the literature of the English Renaissance; attention to major writers and genres; focus on literary history. (3 hr. lec.)

314. **Restoration and Eighteenth-Century Literature.** 3 Hr. Readings in the literature of England during the Restoration and the eighteenth century; attention to major writers and genres; focus on literary history. (3 hr. lec.)

315. **Romantic Literature.** 3 Hr. Readings in the literature of England during the romantic period; attention to major writers and genres; focus on literary history. (3 hr. lec.)

316. **Victorian Literature.** 3 Hr. Readings in the literature of England during the Victorian period; attention to major writers and genres; focus on literary history. (3 hr. lec.)

317. **Twentieth-Century British Literature.** 3 Hr. Readings on the literature of England during the twentieth century; attention to major writers and genres; focus on literary history. (3 hr. lec.)

320. **Studies in Composition and Rhetoric.** 3 Hr. Integration of theory with pedagogy for effective instruction, composition, and rhetoric. Historical development of composition theory and current issues in rhetoric. (3 hr. lec.)

321. **Studies in Drama.** 3 Hr. Advanced study in the genre of drama, with emphasis varying from year to year. Course may include textual, historical, critical, formalist, and/or theoretical study. Not restricted to any one period or century.

322. **Studies in Poetry.** 3 Hr. Advanced study in genre of poetry, with emphasis varying from year to year. Course may include textual, historical, critical, formalist, and/or theoretical study. Not restricted to any one period or century.

323. **Studies in the Novel.** 3 Hr. Advanced study in the genre of the novel, with emphasis varying from year to year. Course may include textual, historical, critical, formalist, and/or theoretical study. Not restricted to any one period or century.

324. **Studies in Nonfiction Prose.** 3 Hr. Advanced study in the genre of nonfiction, with emphasis varying from year to year. Course may include textual, historical, critical, formalist, and/or theoretical study. Not restricted to any one period or century.

325. **Study of Selected Authors.** 3 Hr. Advanced study of one or more major authors.

330. **Topics in Humanities Computing.** 3 Hr. Topics rotate by semester; check with instructor. Topics include: literary studies (electronic editions, hypertext, computer games, virtual environments); critical theory (techno-theory, narrative theory); composition theory (rhetoric of on-line media, pedagogy); creative writing in digital media.

350. **Shakespeare.** I, II. 3 Hr. Intensive study of selected plays. Special attention to textual problems and to language and poetic imagery, together with the history of Shakespearean criticism and scholarship.

370. **American Literature to 1865.** 3 Hr. Readings in the literature of America from its beginnings to 1865; attention to major writers and genres; focus on literary history.
371. American Literature, 1865-1915. 3 Hr. Readings in the literature of America from 1865-1915; attention to major writers and genres; focus on literary history.

372. American Literature, 1915-Present. 3 Hr. Readings in the literature of America from 1915 to the present; attention to major writers and genres; focus on literary history.

383. Recent Literary Criticism. 3 Hr. Brief survey of theories of major schools of recent criticism and an application of these theories to selected literary works.

392 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

400. Thesis or Dissertation. I, II. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their students’ reports, theses, or dissertations. (Grading may be S/U.)


446. Seminar in Renaissance Studies, 1550-1660. I, II. 3 Hr. Studies in major authors and special topics in the Renaissance.

460. Seminar in Restoration and Eighteenth-Century Studies. I, II. 3 Hr. Studies in major authors and special topics.

470. Seminar in British Romanticism. I, II. 3 Hr. Studies in major authors and special topics in the field of British Romanticism.

476. Seminar in Victorian Studies. I, II. 3 Hr. Research and discussion in selected topics in the literature and history of the period.

484. Seminar in American Studies. I, II. 3 Hr. Seminar in principal authors and movements in American literature.

485. Seminar in Twentieth-Century British Studies. 3 Hr. Seminar in principal authors and movements in twentieth-century British literature.

488. Current Directions in Literary Study. II. 3 Hr. PR: Advanced graduate standing (English 383 recommended). Intensive study of one or more current approaches to literature and theories of criticism, with some emphasis on the interrelations of literary study with other disciplines.

490. Teaching Practicum. I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of English. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491 A-Z. Advanced Topics. I, II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492 A-Z. Directed Study. I, II. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.
498. Thesis or Dissertation. I, II. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their students' reports, theses, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

Foreign Languages

Frank W. Medley, Jr., Chairperson of the Department
205-B Chitwood Hall
Johan Seynnaeve, Graduate Coordinator
316 Chitwood Hall
www.as.wvu.edu/forlang

Degree Offered: Master of Arts

The Department of Foreign Languages offers the degree of master of arts with emphasis in the following areas: French, German, Spanish, TESOL, Linguistics, and comparative literature. The degree is intended for those students who seek more specialized knowledge in order to teach in their chosen area, and it serves as the basis for doctoral study. The graduate program in foreign languages seeks to prepare students for both options by offering courses in language teaching methodology and applied linguistics as well as in theoretical linguistics, literary criticism, and literature and culture. Students also have opportunity to engage in research projects that reflect their interests within a given subject and which serve to complement and augment the information imparted through in-class activities.

There is a limited number of graduate teaching assistantships (primarily in ESL, French, German, and Spanish, and occasionally in Chinese, Japanese, linguistics, and Russian) available to help defray the cost of graduate study. The assistantships carry full tuition remission and a nine-month stipend (August-May); there are also opportunities to teach during the University's summer sessions. Assistantships are awarded annually to those students who have potential to become effective teachers.

In addition to graduate teaching assistantships, limited financial aid is available to graduate students in the department on a competitive basis. For information on stipends, contact the department chair. A limited number of meritorious tuition waiver awards are sometimes available from the Eberly College of Arts and Sciences through the Department of Foreign Languages; these awards are based on academic performance and financial need. (Recipients of tuition awards who will be enrolling for fewer hours than those paid for in their award must notify the department immediately. Failure to do so will result in disqualification for future tuition waivers.)

Admission Information

To be admitted to the graduate program, a student is expected to have an undergraduate degree in the desired area of study (or an acceptable related area) with a GPA of 3.00 (overall as well as within the major). The student must complete the university admission application, including payment of the required fee, and the departmental application form, which includes a 300-word statement of purpose.

All international students whose native language is not English must demonstrate proficiency in English by scoring a minimum of 550 on the TOEFL in order to be admitted to
the University. **Note:** International students whose native language is not English applying to study TESOL (or a TESOL combination) must score a minimum of 580 on the TOEFL in order to concentrate in that area of study.

To be considered for a graduate teaching assistantship (GTA), the student must complete the GTA application form and submit a writing sample and a cassette tape, both in the language to which the student is applying. In addition, the student must have three letters of recommendation forwarded by the writers to the Department of Foreign Languages. **Note:** Consideration for a GTA is contingent upon admission to the graduate program.

All necessary forms may be obtained from the Department of Foreign Languages. No applications will be processed until the file is complete.

**General Academic Information**

**Advising**

All graduate students will have a primary advisor (usually assigned by the chair when the student is accepted into the program). Students should consult with their advisor when they register for, or need to add or drop, courses. In addition, the graduate program coordinator is available to answer questions regarding the degree program, requirements, comprehensive examinations, graduation, etc. Students may consult with the chairperson regarding departmental matters.

**International students**

An F-1 student visa is required for study in the U.S. This form must be obtained in the student's home country with an I-20 form from the WVU Office of Admissions and Records. The I-20 will be sent by Admissions and Records to the student's home address once all academic, English proficiency, and financial requirements have been satisfied.

International students studying in the department on an F-1 visa should remember that they are required to carry a minimum course load of nine hours each semester (excluding the summer) in order to maintain their legal status for their visa. International students who may be forced to withdraw from a course and thus fall below nine hours in any semester, must first check with the department chair or associate chair and also see the International Student Office in E. Moore Hall. Exceptions may be possible in the student's final semester of study.

Students graduating from the program who wish to receive a practical training visa must apply for it within 60 days before or after graduation. See the International Student Office for necessary application papers and any possible changes in policy.

**Academic Requirements**

Students must meet all University and College requirements as outlined in the *WVU Graduate Catalog* as well as the specific departmental requirements described below.

**General**

A minimum of 36 credit hours at the graduate level, of which 24 hours of course work must be taken within the Department (exclusive of 391 Advanced Topics and 397 Master's Degree Research). In addition, no more than 12 hours of course work done at the 200 level will be counted toward the degree.

No more than three hours of independent study will be applied to the degree, unless approved by the departmental chairperson. **Note:** Independent studies will be permitted only in special circumstances; in most instances students must enroll in the regularly scheduled courses.
No courses for the degree may be taken pass/fail. No more than six hours of thesis research credits (397) can be applied to the degree. A 3.00 GPA is required for graduation. All requirements for the master’s degree must be completed within eight years of the student’s initial matriculation.

**Foreign Language Requirement**
Students in French, Spanish, or German (that is, those who are not native speakers of the language of study) must demonstrate proficiency in that language by passing the departmental foreign language examination prior to graduation.

Native speakers of English in TESOL, linguistics, comparative literature, or a TESOL combination, must demonstrate proficiency in a second language prior to graduation. This may be done in a number of ways:

1. If you have an extensive background in the foreign language, you must take and pass the departmental graduate student foreign language exam;
2. If you have no background in a foreign language, you must complete four semesters of one foreign language with at least a B average;
3. If you have a limited background in the foreign language, you must take the placement exam and complete the FL instruction through level four with at least a B average, or
4. If you place beyond level four, you must complete one class beyond level four with at least a B average. If you take a graduate level course in the foreign language, it may count for elective credit four.

These foreign language courses are to be taken during the student’s enrollment in graduate study.

Native speakers of English in TESOL or a TESOL combination must take the English Grammar Examination during their first semester; those students who do not pass this examination must complete The Grammar of English course (ENGL 392) at their earliest opportunity. (Note: This course does not count toward the 36 hours required for graduation.)

International students whose native language is not English are considered to have satisfied the Foreign Language requirement upon admission by virtue of their TOEFL score.

**Research Requirement**
Students are required to demonstrate their ability to carry out research and to write at a level appropriate to the master’s degree. They may satisfy this requirement in one of the following ways:

Successful completion of Bibliography and Research 365 (3 hrs.)
Presentation of an acceptable master’s thesis (6 hrs.)
Grade of A in a 397 course—Master’s Degree Research (3 hrs.)

This course requires submission of two research papers, written under the direction of the course instructor who will be solely responsible for topic approval and grading. A student must petition a faculty member to direct the research, and registration is contingent upon the instructor’s permission.

**Areas of Emphasis**
Students must sign a formal plan of study (available in 205 Chitwood) as soon as possible during their first semester of graduate work. This document lists the requirements within the individual areas of emphasis, and it is the students’ responsibility to fulfill these requirements. (A student can change her/his area of emphasis prior to the semester s/he intends to graduate. Please note, however, that teaching assistantships are awarded on the basis of the students’ area of emphasis, and a change may affect reappointment.) The specific requirements for each area of emphasis are listed below.
French
LING 247 *Structure of Modern French* or
LING 341 *History of the French Language*
FRCH 217 *French Culture* or
FRCH 392 *French Civilization*
FRCH 344 *Explication de Textes* or
FRCH 326 *Literary Criticism*
Four courses, minimum, in French literature

German
GER 211 *German Culture since 1945*
LING 257 *Structure of German* or
LING 351 *History of the German Language*
Four courses, minimum, in German literature

Spanish  (Students may elect to work in Spanish American or Peninsular Spanish literature and culture, or they may take a combination of courses from these areas.)
LING 217 *Structure of Spanish* or
LING 311 *History of Spanish*
SPAN 324 *Explication de Textes*
SPAN 316 *Spanish Culture* or
SPAN 392 *Spanish American Culture*
Four courses, minimum, in Hispanic literature

TESOL
A.  The following courses will be taken by all students in the TESOL Program (21 hours):

**Core Courses**
LING 330 *ESL Linguistics*
LANG 341 *ESL Theory*
LANG 321 *ESL Methods*
LING 202 *Phonology* or
LING 323 *ESL Phonetics*
ESL 380 *American Culture*
BIBY 365** *Methods of Research* or
LANG 397 *Research*
English an American literature course

B.  Students will choose three to six hours of seminars in applied linguistics, including but not limited to:
LING 387 *Psycholinguistics*
LING 336 *Discourse Analysis*
LING 288 *Sociolinguistics*
LING 331 *Applied Linguistics*
C. Students will choose six to nine hours in advanced topics in ESL, including but not limited to:

- LANG 325 Materials Development and Syllabus Design
- (LANG 326)* Teaching Language through Literature
- (LANG 327)* L2 Testing and Assessment
- (LANG 328)* Teaching L2 Reading
- (LANG 329)* Second Language Writing
- (ESL 490)* ESL Practicum

* Parentheses () indicate proposed course numbers.
** Six thesis credits can be taken if the thesis option is chosen: three credits would count under the core courses and three credits would count as electives.

**Linguistics**

- LING 202 Phonology
- LING 302 Advanced Phonology
- LING 283 Transformational Grammar
- LING 383 Advanced Transformational Syntax
- Two additional courses, minimum, in linguistics
- One culture course
- Four additional courses in literature, linguistics, or any combination thereof, beyond the minimum linguistics requirement.

**Comparative Literature**

- Seven courses in literature (of which five must be within the department)
- FLIT 369 Comparative Literature: Theory and Practice
- One culture course
- One of the following:
  - ENGL 211 History of English
  - LING 313 Old Spanish
  - ENGL 310 Old English (Anglo Saxon)
  - LING 341 History of French
  - ENGL 311 Old English (Beowulf)
  - LING 343 Old French
  - LING 311 History of Spanish
  - LING 351 History of German

**TESOL/Language**

A. The following courses will be taken by all students in the TESOL and Language program: (36 hours)

**Core Courses in TESOL**

- LING 330 ESL Linguistics
- LANG 341 ESL Theory
- LANG 321 ESL Methods or
- LANG 421 Teaching Foreign Language in College
- LING 202 Phonology or
- LING 322 ESL Phonetics

- One elective from group B or group C.
Core Courses in Language
One Linguistics course in the language:
Structure of Language or
History of Language
Four literature courses in the language

Other requirements
ESL 380 Studies in American Culture or
Culture in the language
BIBY365** Methods of Research or
LANG 397 Research

B. Seminars in applied linguistics, including but not limited to:
LING 387 Psycholinguistics
LING 336 Discourse Analysis
LING 288 Sociolinguistics
LING 331 Applied Linguistics

C. Advanced Topics in ESL, including but not limited to:
LANG 325 Materials Development and Syllabus Design
(LANG 326)* Teaching Language through Literature
(LANG 327)* L2 Testing and Assessment
(LANG 328)* Teaching L2 Reading
(LANG 329)* Second Language Writing
(ESL 490)* ESL Practicum

* Parentheses () indicate proposed course numbers.
** Six thesis credits can be taken if the thesis option is chosen: three credits would count under the Other Requirements and three credits would count as elective credits in either of the Core Courses groups.

TESOL/Linguistics
A. The following courses will be taken by all students in the TESOL and Linguistics program: (36 hours)

Core Courses in TESOL
LING 330 ESL Linguistics
LANG 341 ESL Theory
LANG 321 ESL Methods
One elective from Group B
One elective from Group C

Core Courses in Linguistics
LING 202 Phonology
LING 283 Syntax
LING 302 Advanced Phonology or
Linguistics 383
Two LING electives

Other requirements
ESL 380 American Culture
BIBY 365** Research: Bibliography 365 or
LANG 397
B. Students will choose three hours of seminars in applied linguistics, including but not limited to:
LING 387 Psycholinguistics
LING 336 Discourse Analysis
LING 288 Sociolinguistics
LING 331 Applied Linguistics

C. Students will choose three hours in advanced topics in ESL, including but not limited to:
LANG 325 Materials Development and Syllabus Design
(LANG 326)* Teaching Language through Literature
(LANG 327)* L2 Testing and Assessment
(LANG 328)* Teaching L2 Reading
(LANG 329)* Second Language Writing
(ESL 490)* ESL Practicum

* Parentheses () indicate proposed course numbers.
** Six thesis credits can be taken if the thesis option is chosen: three credits would count under the Other Requirements and three credits would count as elective credits in either of the Core Courses groups.

Students may petition for a plan of study which is not described above but which falls within the general guidelines and includes at least one linguistics course, one culture course, and four literature courses. The petition must include justification for the combination and a detailed description of the proposed course work. The petition must be submitted to the graduate coordinator and approved by the graduate coordinator, the chair, and the dean.

Information for Graduate Teaching Assistants

The department values the contributions made by our graduate assistants and strives to help them become effective teachers. All graduate assistants work under the supervision of a coordinator. The coordinator will conduct orientations and organizational meetings with graduate assistants and provide course materials (such as syllabi). In addition, the coordinator will periodically observe individual classes in order to assess the graduate assistants' performance and to provide encouragement and assistance.

Requirements and responsibilities

Graduate assistants normally teach two courses (six class hours per week), they are uniquely responsible for their courses (including evaluating their students’ work).

All graduate assistants must register for a LANG 421 (LANG 321 for TESOL students) during their first semester. In addition, graduate assistants must register for LANG 490 each semester of employment; please note that this course does not count toward the degree.

Students who will be teaching English, French, German, or Spanish must take a test in that language (unless they have previously demonstrated an acceptable level of knowledge of the grammar of the language). If the results are below the acceptable level, they will be required to enroll in an appropriate language course; this course is deemed a deficiency course and does not count toward the degree.

If a graduate student is teaching in a language area different from her/his area of emphasis (and does not hold a master’s degree in the language), s/he must register for at least one graduate-level course per year in that language.

Students who have already received an M.A. in foreign languages from West Virginia University are ineligible for an assistantship in this department.
The responsibilities of the graduate assistant include:
• Prompt attendance at all required meetings.
• Maintaining full-time student status (minimum nine hours per semester.)
• At least six hours per semester must be at the graduate level.
• No more than three hours per semester may be taken outside the department without consent.
• Maintaining a minimum grade-point average of 3.0 each semester.
Please remember that the graduate teaching assistantship is a privilege and must be renewed yearly. If a graduate assistant is found to be negligent in any area, his/her assistantship will not be renewed.

Comprehensive Examinations
The comprehensive examinations are intended to evaluate a student’s knowledge, including the ability to synthesize and evaluate ideas, in her/his area of emphasis. The examinations are based on standardized reading lists (available in 205 Chitwood). Although some of the works may be covered in course work, independent research will be necessary.

Students must take the comprehensive examinations the semester they intend to graduate. Prior to that, each student must select an examination committee. This committee is comprised of at least three professors from the student’s area of emphasis, one of whom will act as the committee chair; the chair must be a regular member of the graduate faculty (see appendix). The student will meet with her/his committee in order to select the content areas of the examinations. The committee is responsible for preparing and grading the student’s examination.

The comprehensive examinations will be administered on a Saturday around the 10th week of the semester and is divided into three two-hour periods. At least two of the sections are to be done in writing. The third section may be written or oral (to be decided in consultation with the committee), and in the latter case the student will schedule an examination time with her/his committee. At least one examination must be written in the language(s) of study (including the TESOL/Language option), and students will be expected to demonstrate appropriate command of the language(s).

If any student fails one written examination, s/he must pass an oral examination on the section failed; if a student who has elected to take two written and one oral examinations should fail the oral, s/he must schedule a make-up examination with the committee. Any student who fails two or more examinations, written or oral, must retake all comprehensive examinations in a later semester.

Thesis
As mentioned above, a student may elect to write a thesis in order to satisfy the research requirement. Under this option, the student is not required to take the written comprehensive examinations but is still responsible for the reading list for her/his area(s). For more information about this option, see the document Information Regarding Theses (available in 205 Chitwood).

Graduation
During the semester in which a student plans to graduate, he/she must register for graduation with the Eberly College of Arts and Sciences (103 Woodburn) and fill out an application requesting a shuttle sheet from the College (available in 205 Chitwood). The student will then be notified of any deficiencies and will be responsible for correcting them by the appropriate deadlines. The student must also pay graduation fees.
Note: All students must be enrolled for at least one credit hour the semester they intend to graduate.
Bibliography and Research (BIBY)

301. Introduction to Research. I. 1-3 Hr. (For seminar credit, counts as 1 hour; for a specific project carried out during the course, counts as 3 hours.) PR: Graduate standing. Pro-seminar in graduate-level research in foreign languages, literature, and linguistics.

365. Methods of Research. I. 3 Hr.


397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

490. Teaching Practicum. 1-3 Hr.


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Classics (CLAS)

391. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

392. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

397. Research. I, II. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)
490. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of classics. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. Directed Study. 1-6 Hr. Directed study, reading and/or research.

493. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U).

499. Graduate Colloquium. 1-6 HR. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Gradings S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**English as a Second Language (ESL)**

380. American Culture. 3 Hr. Advanced readings concerning the diversity of American culture with a focus on critical inquiry.

391. Advanced Topics. I, II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. Research. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

**Foreign Literature in Translation (FLIT)**


392 A-Z. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

French (FRCH)

326. Literary Criticism. II. 3 Hr. PR: B.A. in French or consent.

338. Francophone Literature. 3 Hr. PR: BA in French or consent. Readings in French literature from regions outside of metropolitan France, such as Africa, Quebec, and the Caribbean.

344. Explication de Textes. II. 3 Hr. PR: 24 Hr. of French or equivalent.

371. The Modern Novel to 1930. I. 3 Hr. PR: B.A. in French or consent.

372. The Novel After 1930. II. 3 Hr. PR: B.A. in French or consent.

374. French Women Writers. 3 Hr. PR: B.A. in French or consent. Selected works of French women writers.

381. Medieval French Literature. II. 3 Hr. PR: LING 342 or consent.

391. Advanced Topics. I, II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

392 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

397. Research. I, II. 1-15 Hr. PR: Consent. Research activities leading to a thesis, problem report, research paper, or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

490. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of French. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

498. Thesis. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
German (GER)

348. Postwar German Drama. 3 Hr. An exploration of postwar German drama with discussion and analysis of noted plays since 1945.

376. The German Novel. 3 Hr. A study of representative novels from various periods.

385. German Democratic Republic Literature. 3 Hr. A literary-historical study of representative works from the German Democratic Republic (1945-1990).


392 A-Z. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of German. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Special Seminars. 1-6 Hr.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

498. Thesis. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

500. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted again credit requirements for master's programs.

Language Teaching Methods (LANG)

321. ESL Methods. I, II, S. 3 Hr. Theory and practice of teaching English as a second language; techniques and approaches for teaching speaking, listening, reading, and writing skills.

325. ESL Materials/Syllabus Design. 3 Hr. PR: LANG 321. Theory and design of syllabi and materials applied to diverse ESL and EFL teaching situations. Students produce and evaluate all aspects of integrated instructional units.

391 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

392 A-Z. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

421. **Teaching Foreign Language in College.** I, II. 1-6 Hr.* Methods and techniques of teaching a foreign language at the college level.

490 A-Z. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Languages. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)

491. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

498. **Thesis or Dissertation.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing if their student’s reports, thesis, or dissertations. Grading may be S/U.

499. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**Linguistics (LING)**

302. **Advanced Phonology.** 3 Hr. PR: LING 202. The form of phonological rules and their organization within a grammar, the structure of phonological representations, and the role of language universals in models of language acquisition.

311. **History of the Spanish Language.** II. (Alternate years.) 3 Hr. PR: 18 Hr. of Spanish and LING 111 or consent. Evolution of Castilian from Vulgar Latin to its modern standard form through a study of historical phonology, morphology, and syntax, together with the external factors which influenced the development of the language.

313. **Old Spanish.** II. 3 Hr. PR: Consent.
322. ESL Phonetics. I. 3 Hr. PR: LING 111. Analysis of American English phonetics including sound segments, stress, rhythm, intonation, and positional variants. Techniques and practice offered for teaching pronunciation to non-native speakers.

330. ESL Linguistics. I. 3 Hr. PR: LING 1. Analysis of English structure for the purpose of teaching it to non-native speakers. Includes identification of problematic aspects and procedures for teaching them effectively.

331. Applied Linguistics. 3 Hr. PR: LING 111 and prior second language study. Study of the application of linguistic analysis in the areas of language acquisition, instruction, and use.

334. History of the French Language. II. (Alternate years.) 3 Hr. PR: 18 Hr. of French and LING 111 or consent. Evolution of French from Vulgar Latin into the Modern French standard through a study of historical phonology, morphology, and syntax, together with the external factors which influenced the development of the language.


351. History of the German Language. II. (Alternate years.) 3 Hr. PR: 18 Hr. of German and LING 111 or consent. Historical development of standard German languages and dialects.

353. Middle High German 1. I. 3 Hr. PR: 18 Hr. of German and LING 111 or consent. Study of the linguistic developments of Middle High German from the eleventh to the fifteenth centuries with illustrative readings from the Niebelungenlied.

354. History of the Russian Language. II. (Alternate years.) 3 Hr. PR: 18 Hr. of Russian and LING 111 or consent. Development of Russian from Indo-European to the present.

363. Language Change and Reconstruction. 3 Hr. PR: LING 111 or equivalent. Exploration of the mechanisms of language change, theories of diachronic linguistics, and techniques for reconstructing unattested languages; concentration on the Indo-European family and its history.

383. Advanced Syntax. I. 3 Hr. PR: LING 282 or consent. Examination and discussion of theoretical issues in generative-transformational syntax. Focus on specific proposals advanced within the framework of Government-Binding Theory.

387. Psycholinguistics. I. 3 Hr. PR: LING 111 or consent. Provides an insight into the many areas of psycholinguistics study, including language acquisition, sentence processing, animal communication, dichotic listening, aphasia, and semantics.


397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Linguistics. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

492. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to be assembled faculty and graduate student body of his/her program.

498. **Thesis or Dissertation.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her departments 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**Russian (RUSS)**

391. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

**Spanish (SPAN)**

315. **Lyric Poetry.** I. 3 Hr. PR: 24 Hr. of Spanish or equivalent.

316. **Spanish Civilization.** II (Alternate years). 3 Hr. Diachronic study of Spanish civilization with particular attention to literary and artistic movements and their relation to the socio-political sphere. (Course taught in Spanish.)

324. **Explicacion De Textos.** II. (Alternate years.) 3 Hr. PR: 24 Hr. of Spanish or equivalent.

326. **Cervantes.** II. 3 Hr. PR: 24 Hr. of Spanish or consent.

330. **Latin American Short Story.** 3 Hr.

331. **Latin American Novel to 1960.** 3 Hr.

332. **Latin American Novel Since 1960.** 3 Hr.

333. **Latin American Poetry.** 3 Hr.

334. **Latin American Theatre.** 3 Hr.

335. **Latin American Nobel Prize Winners.** 3 Hr.

336. **Latin American Women Writers.** 3 Hr.

337. **Latin American Culture.** 3 Hr. A study of history, culture, politics, economics, and development of the Latin American continent.
340. 19th-Century Spanish Literature. 3 Hr.
341. Contemporary Spanish Narrative. 3 Hr.
342. Modern Spanish Poetry. 3 Hr. Study of poetry of the eighteenth century to the present.
343. Modern Spanish Theatre. 3 Hr. Study of selected plays from the eighteenth century to the present.
344. Spanish Women Writers. 3 Hr.
350. Hispanic Literature and Film. 3 Hr.
392 A-Z. Seminar. 1-6 Hr.* PR: Consent. Special topics.
397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)
490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Spanish. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)
491. Advanced Study. 1-6 Hr.
492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.
493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.
495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.
498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)
499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her department, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

Foreign Languages 145
Geography
Trevor Harris, Chairperson of the Department of Geology and Geography
Ann Oberhauser, Associate Chairperson for Geography
425 White Hall, P.O. Box 6300
www.geo.wvu.edu

Degrees Offered: Master of Arts, Doctor of Philosophy with a major in Geography

The graduate program in geography at West Virginia University provides students with the opportunity to study for a master of arts or a doctor of philosophy degree with an area of emphasis in one or more of the following fields.

- Geographic information systems, remote sensing, and related fields.
- Regional development, planning, and related fields.
- Environmental and resource geography, and related fields.

Research
Students who are interested in pursuing research in an area other than these may do so provided the research area matches the interest of a faculty member in the department who agrees to supervise the student’s program. Students who wish to focus their research on a particular region are encouraged to do so. The graduate program in geography at WVU has strong links with the University’s Regional Research Institute, the geology program, the Water Research Institute, the international studies program, the West Virginia Geological and Economic Survey, the Center for Women’s Studies, and the Center for Black Culture and Research.

Admission/Application Requirements
Master of arts applicants must submit GRE scores, a personal two-page statement defining the applicant’s interest in geography and career intentions, and two letters of recommendation from people who are familiar with the student’s undergraduate training. Ph.D. applicants should send three letters of recommendation, GRE scores, and a personal, two-page statement defining the applicant’s interest in geography and career intentions. This material should be forwarded directly to the coordinator of the geography graduate program at West Virginia University 425 White Hall, P.O. Box 6300, Morgantown, WV 26506. All application materials must be received by May 1 for fall admission.

Prospective students must have an overall undergraduate GPA of 3.0 and a 3.0 GPA for undergraduate geography courses. Students with degrees in other disciplines are encouraged to apply although they may be asked to make up deficiencies in geography during the first year in the program.

Master of Arts
The M.A. degree program in geography was designated a program of excellence by the West Virginia Board of Trustees in 1998. This award is given to only a handful of degree programs throughout the state in recognition of their contribution to higher education in West Virginia.

Each incoming student is interviewed prior to the first semester to ascertain the student’s interests and to assess whether the student has academic deficiencies. All students are initially supervised by the coordinator of the graduate program until the student develops a more clearly defined research interest. During the early part of the second semester of residence, a first year progress interview will be held with Department of Geography graduate studies committee. The purpose of the meeting is to discuss student progress in the program and to facilitate the process of choosing an M.A. thesis advisor and committee. Two of the three committee members (including the advisor) must be geography faculty
members at WVU. Students may change their advisor or committee members after consultation with the advisor and the Department of Geography graduate studies committee. In cases where a student is performing significantly below expectations, the progress interview may result in non-continuance in the program.

Course Work A student will be awarded the master of arts degree after completing 30 hours of graduate credit. The student is required to take the following courses: Geographic Traditions (GEOG 301), Geographic Design (GEOG 302), and four semesters of the Colloquium (GEOG 300). The student will also select four elective courses, three of which must be in geography, that provide training in the student’s area of specialization.

Thesis The thesis and thesis defense will represent the outcome of independent research undertaken by the student. The thesis must reflect the student’s knowledge of relevant literature and be regarded by the student’s program committee as a contribution to the discipline of geography. The student’s committee will determine the proposal’s acceptability. If it is deemed unacceptable, a further presentation may be required. The proposal must be typed and copied to the committee at least two weeks prior to the presentation. A full proposal of the thesis research will be presented to the faculty in an oral presentation at the end of the second semester or beginning of the third semester. The defense of the thesis will take place when the student and his/her committee agree that a defensible copy of the thesis is complete. The thesis examination is graded on a pass/provisional pass/fail basis by a majority vote of the committee. A student who fails may submit another thesis or a revised version upon the approval of the student’s committee. No student may be reexamined more than once. A student who is given a provisional pass will generally be required to make minor revisions or corrections to the thesis. It is expected that full-time students shall not need more than two years to satisfy all program requirements.

Doctor of Philosophy Prospective doctor of philosophy students must have a master’s degree. Students with degrees in other disciplines are encouraged to apply, but they may be asked to make up deficiencies in geography during their first year in the program. Incoming geography students may also be asked to make up deficiencies if any are found during the student’s entry interview with faculty. This interview is immediately prior to the first semester of the program.

Students are expected to be well grounded in one of the program’s areas of emphasis, and also in the history and philosophy of geography. Students will be awarded a Ph.D. after obtaining 54 hours of graduate credit, completing certain required courses, passing comprehensive examinations, and writing a dissertation. These steps are discussed in more detail below.

Course Work The courses Geographic Traditions (GEOG 301) and Geographic Research Design (GEOG 302) are required, as well as three general electives and two method electives. An additional 11 hours of other courses, which may include seminars and directed study courses, must also be completed. A limited number of the required courses may be waived if the student has already completed an equivalent course and can demonstrate proficiency with the material.
Examinations and Dissertation

The student is required to pass an oral and three written comprehensive examinations. The student will be examined on two areas of specialization and the student’s dissertation research topic. Upon successful completion of the comprehensive examination the student will be expected to defend a dissertation research proposal. The award of the Ph.D. is granted upon the successful defense of the dissertation itself.

Teaching Assistantships

The geography graduate program has available several teaching and research assistantships each year, which are allocated to qualified students on a competitive basis. These awards include a full tuition waiver. Teaching assistantships are awarded annually and for no more than four semesters for M.A. students and six semesters for Ph.D. students. Assistantships are reconfirmed each year based on performance in the previous year with respect to both assistantship duties and academic progress. Additionally, meritorious tuition waivers are offered on a competitive basis to outstanding students who do not receive assistantships. Requests for teaching assistantships and tuition waivers should be sent directly to the coordinator of graduate studies in geography. The deadline for receipt of the latter application is March 1.

Research Assistantships

Research assistantships must be applied for through the faculty member whose research is providing the funding. The geography faculty are engaged in numerous funded research projects, many of which provide graduate students with opportunities for obtaining research skills and experience as well as employment and tuition aid. Furthermore, the professional contacts made in the course of faculty research frequently provide graduate students with opportunities for career development.

Computing Facilities

The geography program’s computing facilities are based on an NT local area network. Twelve unix workstations are clustered via ethernet. The teaching laboratory is based upon INTEL Pentium PCs networked via ethernet to the cluster and supporting graphic terminal emulation. The system has in excess of one hundred gigabytes of online storage and magnetic tape drives. It supports four digitizers, a color scanner, a 36" color electrostatic plotter, and a dye sublimation printer. Major hardware upgrades are continuously scheduled.

The computer equipment is housed in recently renovated computer laboratories within the department. The labs represent state-of-the-art computing facilities funded by the NSF and WVU. The laboratory provides hands-on capability for research and teaching as well as computer-based lecture facilities and is among the most sophisticated facilities in the country.

The laboratory operates ESRI’s ARC-INFO in both multi-user and workstation environments. T YDAC SPANS raster GIS operating under OS/2 is supported on the personal computers. ERDAS Imagine and GRASS are installed on the workstations. The laboratory has SAS, SAS-Graph, Surface III, Oracle, and extensive database, graphics, spreadsheet, and statistical packages. Dynamic Graphics 3-D EMOD software is currently being installed on a dedicated workstation for GIS applications.

The remote sensing program operates two full-range, portable spectroradiometers, an ASD full range, and a GER MK IV. An ADAR Aetrial Digital Imaging System is shared with resources management and the department of biology.
Geography (GEOG)

300. Geography Research Colloquium. I, II. 1 Hr. PR: Consent. Lectures and presentation on recent and current research by resident and visiting scholars.

301. Geographic Traditions. I. 3 Hr. PR: Consent. Review of the major approaches in geographic scholarship.

302. Geographic Research-Design. II. 3 Hr. PR: GEOG 200 and GEOG 301. Choosing, preparing, and developing research problems of geographic interest. Emphasizes proposal writing and research design alternatives.

309. Advanced Industrial Geography. 3 Hr. PR: GEOG 209 or consent. Examination of theoretical perspectives and applied research in industrial geography, focus on international industry and employment trends with case studies from developed and underdeveloped regions.

315. Development Geography. 3 Hr. PR: Consent. Analysis of the concept and practice of development. Alternative people-centered approaches to social change are investigated.

321. Advanced Fluvial Geomorphology 1. 4 Hr. PR: GEOL 221 or GEOG 221 or consent. Analysis of stream processes, landforms, deposits, including paleohydrology and Appalachian surficial geology. (Fall semester of odd numbered years; required weekend field trips at student’s expense; also listed as GEOL 321.)

322. Surficial and Glacial Geology 1. 4 Hr. PR: GEOL 221 or GEOG 221 or consent. Analysis of late Cenozoic landscapes, especially those caused by glaciers or otherwise influenced by global climate change. (Fall semester of even-numbered years; required weekend field trips at student’s expense; also listed as GEOL 322.)

325. Planning Theory and Process. (Alternate years.) 3 Hr. PR: GEOG 225 or consent. A survey of the historical development of planning theory, the various roles planners play, and the ethical dilemmas they face.

329. Problems in Geomorphology. I, II. 1-4 Hr. (Also listed as GEOL 329.)

351. GIS Technical Issues. 3 Hr. PR: GEOG 250. Current issues in GIS research. Technical aspects of GIS operations, algorithms, theory of geographical data structures, and error handlings. Labs focus on tools, data structures, database languages, and macros. (2 hr. lec., 1 hr. lab.)

399. Advanced Research Methods. 3 Hr. PR: GEOG 301 and consent. Review of quantitative and qualitative methods used in geographic research.

411. Regional Development. 3 Hr. PR: Consent. Review of contemporary geographic theories of uneven spatial development of capitalism.


452. Advanced GIS. I. 3 Hr. PR: GEOG 252 or GEOG 351, or consent. Functional strengths and weaknesses of GIS. Related geographical information science technologies, GPS, remote sensing, multimedia, spatial statistics, and expert systems. Multi-dimensionality (4-D GIS), temporality social implications of GIS.

455. Advanced Remote Sensing. II. 3 Hr. PR: GEOG 255 or GEOL 255 or consent. Collection, processing, and classification of remotely sensed data, including optical, thermal, radar, and topographic information. (2 hr. lec., 1 hr. lab.) (Also listed as GEOL 455.)

489. Geography Graduate Student Internship. I, II, S. 1-6 Hr. PR: Consent. Internship in the private or public sector designed for practical application of geographic training.
491. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. **Directed Study.** I, II, S. 1-3 Hr. Directed study, reading, and or research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. **Seminars.** I, II, S. 1-3 Hr. Seminars arranged for advanced graduate students.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496 A-Z. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least on seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. **Thesis.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. **Graduate Colloquium.** 1-6 Hr.

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**Geology**

*Trevor Harris, Chairperson of the Department of Geology and Geography*

*Robert E. Behling, Associate Chairperson for Geology*

425 White Hall

[www.geo.wvu.edu/](http://www.geo.wvu.edu/) (*Home page for department.*)

[www.geo.wvu.edu/~donovan/grad-admissions.htm](http://www.geo.wvu.edu/~donovan/grad-admissions.htm) (*Graduate admissions page.*)

**Degrees Offered: Master of Science, Doctor of Philosophy**

The graduate program in geology at WVU provides study opportunities in the following areas:

- Hydrogeology and environmental geology, with strengths in flow and contaminant-transport modeling, mine reclamation, floods and debris flows, landfill siting, and monitoring.
- Basin analysis, with strengths in seismic modeling, basin structures, deposystem analysis, sequence stratigraphy, biostratigraphy, diagenesis, and plate tectonics.
- Energy geology, with strengths in the exploration and development of oil, gas, and coal.

**Admission Procedures and Prerequisites**

Applicants for graduate studies in geology must have as a minimum requirement a bachelor’s degree and an overall grade-point average of at least 2.75. Acceptance by the Department of Geology and Geography is necessary before admission of any prospective student to the program. All candidates for a graduate degree in geology must submit scores in the general aptitude tests of the Graduate Record Examination. Applicants seeking admission and financial support for the fall semester should apply by February 15. For spring semester, apply by October 1. Write to the department for an application package.
Students seeking admission to the master’s program or the Ph.D. program must complete the equivalents of all allied science and mathematics courses required for the B.S. in geology at WVU, plus the following geology courses: Geology 1, 2, 3, 4, 152, 184, 185, 261, and 266. Similar courses from other universities or relevant experiences may be substituted if approved by the departmental graduate curriculum committee. In some cases a requirement may be waived by the committee if the student can demonstrate competence in that subject area.

**GPA Requirements**

A minimum grade-point average of 3.0 must be maintained in required formal courses in geology and cognate fields for the master’s degree, and 3.3 for the Ph.D. Loads of nine to 12 hours are required and no withdrawals are permitted after the first two weeks of a semester. A student who fails to maintain the required average at the completion of any semester during the graduate program will be allowed one academic year (two semesters) to attain the required average. Failure to attain this average by the end of the probationary period will permanently eliminate the student as a candidate for a graduate degree in this department.

**Master of Science**

**Distribution Requirements** Students are required to take certain courses specified by their advisory committee. Students must take graduate courses from at least five different faculty.

Approved graduate courses in biology, chemistry, physics, computer science, mathematics, engineering, soil sciences, or law may be taken as outside courses by geology graduate students. Students are free to take as many courses as they choose outside the department as long as the coursework is approved by their advisory committee.

No later than the beginning of the second semester in residence, the prospective candidate must choose one of the options leading to the master of science (M.S.) degree in geology.

**Research Option** This has been the traditional option for the master of science in geology. Students considering continued studies (doctor of philosophy) should choose this option. A minimum of 24 formal course hours or seeking employment in an area of geological research and six research hours are required for graduation. A thesis based on original research also is required. With consent of the candidate’s advisory committee, the field work need not be done while in residence at WVU.

**Required to graduate: 30 hours including certain required courses specified by the advisor.**

**Professional Studies Option** This option is designed specifically for students seeking experience in preparing and presenting professional problems. Students choosing this option would be seeking employment in technical fields rather than continuing studies for a higher degree. A minimum of 34 formal-course hours and eight problems hours (GEOL 392) are required for graduation. The problems hours are in lieu of a thesis and are designed to simulate the work of professional geologists as they seek solutions to open-ended problems within a limited time frame. Experience in presentation of problems and solutions is an integral part of the program. Problems credits may be earned in conjunction with off-campus experiences by consent of the candidate’s advisory committee.

**Required to graduate: 42 hours including certain required courses specified by the advisory committee.**
Doctor of Philosophy

Program The candidate for the doctor of philosophy must complete a program of courses outlined by the candidate’s doctoral committee. Written and oral comprehensive examinations must be successfully completed. Work on original research is to be presented in a dissertation and defended in an oral examination. A graduate seminar is required.

Cooperative Projects

The National Research Center for Coal and Energy is located on the WVU campus. Research funding for graduate students is obtained by graduate faculty through the NRCCE’s National Mine Land Reclamation Center and Water Research Institute. Close cooperation between the West Virginia Geological and Economic Survey, located on Cheat Lake near Morgantown, and the Department of Geology and Geography makes a large amount of material available for laboratory investigation, including the fossil collections of the department and the survey. A large number of samples of drill cuttings from deep wells in West Virginia and adjoining states are housed in the survey. Complete analytical geochemical equipment is available through a University analytical laboratory available to the department. The department also has a number of cooperative projects with the Morgantown Energy Technology Center of the U.S. Department of Energy. Morgantown is conveniently situated for detailed studies of Mississippian, Pennsylvanian, and Permian formations. Mineral products of the region near Morgantown include coal, petroleum, natural gas, and limestone. The occurrence and utilization of these materials can be studied by graduate students interested in economic geology.

Equipment and Facilities

Department geophysical equipment includes a geometrics magnetometer, a Worden gravimeter, an engineering seismograph, and a three-component short period seismograph. A permanent summer field camp (Camp Wood) is located in the folded Appalachians at Alvon (Greenbrier County), West Virginia, although its basic field course also includes mapping of metamorphic and igneous rocks along the Maine sea coast.

Computing Facilities

Hardware and Network

Both research and teaching computing facilities are new (1995-97), state-of-the-art, and outstanding for a department of less than 100 graduate students. These facilities are centered around a newly-installed (1997) Windows NT client-server network. The research cluster has access to 325 gigabytes of redundant networked storage based on a Sun RAID, as well as networked printers (QMS 860, HP Deskjet 1120C and DesignJet 2500C, Tektronix Phaser III and Phaser 480), plotters (Calcomp 1044), large format digitizers (Calcomp 9100 and Drawingboard III), and scanners (Microtek Scanmaker III, Polaroid SprintScan 35LE). The teaching cluster provides interactive computing resources for 26 students on networked Pentium-based computers with privacy workstations. Classroom demonstration facilities are available in the teaching labs. The research cluster includes workstation-class Pentium machines as well as a smaller number of SUN UltraSparq, HP Apollo, and DEC Alpha workstations. Both clusters are linked across the NT intranet to the University backbone. Ethernet cabling reaches virtually every lab, office, and classroom in the building. Pending additions include a 30-workstation graduate/undergraduate multimedia lab.
Software Resources

The department maintains software for instructional and research usage. A full range of common applications software is available on all network machines. In addition, statistical packages (SAS, Minitab, and NTSYS) allow students to undertake detailed statistical analysis, while graphical analysis packages (Surface III, Mapping Contour System, TruFlite, and Surfer) enable users to render both 2-D and 3-D surfaces. GIS licenses include ARC-INFO, IDRISI, GRASS, and SPANS, accessible to students for integration of complex geological and geophysical data. ERDAS IMAGINE provides a suite of image processing tools for analyzing remotely-sensed data. Dynamic Graphics EarthVision provides an interactive 3-D visualization environment. AutoCAD, CorelDraw, and other graphics design packages allow accurate rendering of technical diagrams.

State-of-the-art geophysical modeling and processing software are available for instructional and research use. GX Technologies' Advanced Interpretive Modeling System (AIMS) and Landmark Geophysical's MIRA help in the analysis of seismic reflection data. Seismic processing is performed using internally developed software in addition to Western Geophysical's Sierra Seis and ICI's Eavesdropper. Interpex's MAGIX is used for forward and inverse modeling of gravity and magnetic data, while RESIXIP and EMIX34 provides forward and inverse modeling of resistivity and terrain conductivity data.

Software for groundwater simulation includes both public-domain and state-of-practice commercial packages, applied to both research and professional training. Supported are aquifer characterization packages (AQTESOLV), finite-difference flow codes (MODFLOW), particle-tracking and pathline analysis codes (MODPATH3), and solute transport codes (MT3D, MODFLOWT). Commercial preprocessors (Groundwater Vistas) and postprocessors (SURFER, Spyglass TRANSFORM, and EarthVision) are available for visualization of modeling results. Streamflow modeling capabilities includes HEC-2 step-backwater and peak value flood frequency software.

Geology (GEOL)

321. Advanced Fluvial Geomorphology. I. 4 Hr. PR: GEOL 221 or GEOG 221 or consent. Analysis of stream processes, landforms, deposits, including paleohydrology and Appalachian surficial geology. (Fall semester of odd-numbered years; required weekend field trips at student's expense; also listed as GEOG 321.)

322. Surficial and Glacial Geology. I. 4 Hr. PR: GEOL 221 or GEOG 221 or consent. Analysis of late Cenozoic landscapes, especially those caused by glaciers or otherwise influenced by global climate change. (Fall semester of even-numbered years; required weekend field trips at student's expense; also listed as GEOG 322.)

329. Problems in Geomorphology. I, II. 1-4 Hr.

332. Paleoecology. II. 3 Hr. PR: GEOL 231 and GEOL 261 or consent. Methods of paleoecologic analysis in sedimentary geology. Topics include trace fossil analysis, shell biogeochemistry, community paleoecology, biofacies analysis of basins, and Precambrian paleoecology.

340. Advanced Stratigraphy. 3 Hr.


346. Advanced Sedimentation. I. 4 Hr. PR: GEOL 261 or consent. (Required field trips at student’s expense.) Origin of sedimentary rocks; principles involved in interpretation of ancient geography, climates, animals, and plants. Emphasis on detrital sediments and rocks.

351. Tectonics. II. 3 Hr. PR: GEOL 152 and GEOL 261; undergraduates need consent. Investigation of patterns and processes of large-scale deformation mechanisms that shape the earth. Focuses on the structural evolution and modeling process of various plate boundaries. Offered in spring of even years.

352. Environ and Expl Geophysics 2. I. 3 Hr. PR: PHYS 2 and (MATH 16 or GEOL 161) or consent. Basic and applied studies of reflection and refraction seismology and ground penetrating radar methods will be covered with an emphasis on the use of computers in the modeling and interpretation of seismic data.

354. Advanced Structural Geology. II. 3 Hr. PR: GEOL 253. Theoretical and observational aspects of the development of geological structures. Problems ranging from the microstructural to the orogenic scale will be addressed. (Offered in alternate years.)

357. Basin Structures. I. 4 Hr. PR: GEOL 152, and GEOL 261, or equivalent. The origin, development, and distribution of basins and the structure found within basins throughout the world are studied. The distribution of energy-related minerals related to basins and structural accumulations is emphasized.


364. Environmental Hydrogeology. II. 4 Hr. PR: GEOL 1 and GEOL 2 and GEOL 263, or consent (PR or Conc: GEOL 362). Seminar reviewing groundwater occurrence, flow, quality, and exploration in various geologic terrains; groundwater pollution and dewatering; and groundwater technology. Includes topical literature review.


366. Karst Geology. I. 3 Hr. PR: Consent. Review of karst terrain hydrogeology and geomorphology, emphasizing origins and nature of caves, sinkholes, and other karst landforms, environmental problems of karst, and its water and mineral/petroleum resources.

385. Optical Mineralogy and Petrology. II. 3 Hr. PR: GEOL 185. Introduction to the optical properties of minerals and the use of the petrographic microscope. Interpretation of sedimentary, igneous, and metamorphic rocks based on microscopic examination of thin sections. (Offered alternate years.)

395. Aqueous Geochemistry. II. 3 Hr. PR: GEOL 1 and CHEM 12 or CHEM 16, or consent. Review of basic chemical principles as they apply to aqueous geochemical environments. Properties of water and the types, sources, and controls of the common and environmentally significant chemical species dissolved in water.

399. Quantitative Methods in Geo-Sciences. II. 3 Hr. PR: STAT 212 or STAT 311, or consent. Brief review and introduction to multivariate quantitative techniques as applied to geology and geography.


455. Advanced Remote Sensing. II. 3 Hr. PR: GEOG 255 or GEOL 255 or consent. Collection, processing, and classification of remotely sensed data, including optical, thermal, radar, and topographic information. (2 hr. lec., 1 hr. lab.) (Also listed as GEOG 455.)

490. Teaching Practicum. 1-3 HR. PR: Consent. Supervised practice in college teaching of Geology. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491. Advanced Study. 1-6 HR. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

493. Special Topics. 1-6 HR. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

494. Seminar. 1-6 HR. Seminars arranged for advanced graduate students.

495. Independent Study. 1-6 HR. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I,II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Thesis. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. 1-6 HR. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

History
Robert Maxon, Chair of the Department
202 Woodburn Hall
www.wvu.edu/history

Degrees Offered: Master of Arts, Doctor of Philosophy

The Department of History offers graduate courses in the history of the United States, Appalachia/regional, Europe, Africa, Asia, Latin America, science and technology, and in public history. Courses are designed to prepare students in historiography, research methods, and interpretation. Students can select concentrations leading to preparation for careers in teaching and scholarship and as specialists for various branches of government, business, and public service. Students in the program are normally expected to pursue the degrees of master of arts or doctor of philosophy.
Master of Arts

Admission Students seeking admission to the master of arts program should have the equivalent of a bachelor’s degree in history. Application requirements include transcripts (a minimum of a 3.0 average in history courses is expected), three letters of recommendation, statement of purpose, writing sample, and combined scores of 1500 on the Graduate Record Examination General Aptitude Test.

Requirements This program requires the completion of a minimum of 30 hours of course work with at least a 3.0 average and achievement of proficiency in one foreign language. All 30 hours may be in history, or students may select up to six hours outside of the department. The history course work shall include a well-defined core area (selected from the fields listed for comprehensive examinations or approved by the graduate studies committee) of at least 12 hours, including one readings/research seminar sequence. In addition, students are expected to enroll continuously in HIST 499 Department Colloquium for at least two semesters. Credit for this course does not count towards the degree. Students are also required to complete a master’s thesis. A maximum of six hours of credit for HIST 397 Research can be taken for writing the thesis and for fulfilling the 30-hour M.A. requirement. Candidates for the M.A. are required to pass a final oral examination on their core area of study and thesis.

Public History Program The department also offers a 36-hour M.A. with an emphasis in public history, intended to provide enhanced employment opportunities to graduate students interested in using their education in history in a profession such as historic preservation, contract history work, archives, or historic site administration. The public history program works closely with WVU’s Institute for the History of Technology and Industrial Archaeology. This is the only complete public history graduate curriculum in West Virginia.

Students apply for admission as they would for the regular M.A. program and should indicate on their application that they are interested in public history. In addition, students should submit a two-page letter of application, which should indicate the student’s background in history or public history and why the student wants to be admitted to the public history program; this letter should be addressed to the director of graduate studies of the Department of History. Students may be admitted to graduate study who do not have an undergraduate major in history by making up deficiencies in their course work for undergraduate credit; these courses may be taken while the students are enrolled for graduate classes, or students may be able to test out of some courses.

The public history emphasis consists of 15 hours of public history courses (introduction to public history, two methods courses, and a six-hour supervised internship). Some courses may be taken outside the Department of History. Public history students are not required to meet the foreign language requirement. Students are required to take a 300-400 level readings/research seminar sequence in one subject area in the Department of History outside public history. Course descriptions, syllabi, policies and procedures, and a list of internship possibilities are available at the Department of History on request by contacting the coordinator of the public history program.

Doctor of Philosophy

Program Students seeking admission to the doctor of philosophy program should have the equivalent of a M.A. in history. Application requirements include a transcript (a minimum of a 3.0 average in graduate history courses is required), three letters of recommendation, and combined scores of 1500 on the Graduate Record Examination General Aptitude Test. Students should also include a statement of purpose and an example of their written work as a part of the application.
Requirements Requirements for the Ph.D. degree in history include the general WVU requirements; achievement of proficiency in one foreign language with a second language at the discretion of the department; completion of two readings/seminar sequences beyond those offered for the M.A.; continuous enrollment in HIST 499 Department Colloquium for all full-time students (part-time students must attend for at least four semesters); passing the Ph.D. comprehensive examination of two parts (oral and written) administered by a committee of faculty members (normally at the end of a full-time student’s second year of study); preparation of an acceptable dissertation based on original investigation; and successful defense of the dissertation in a final examination.

Fields of Study A candidate must offer a program of study in four fields, at least three of which must be in history; the other may be in a related field approved by the department. Doctoral students must maintain a 3.0 grade-point average to remain in good standing. Fields available in the department include but are not limited to Europe, United States, Africa, East Asia, Latin America, Appalachia/regional, and science and technology. At least one field must be in a geographic area outside the major field of concentration for dissertation work.

Dissertation Dissertation work should normally be in United States history, twentieth-century Europe, European social history, Appalachia/regional, science and technology, or modern Africa. Students working in these areas, either at the M.A. or Ph.D. level, have the opportunity to study with adjunct professors and faculty from other departments and universities.

History (HIST)
301. Readings in Medieval History. 3 Hr. Examination of the literature, bibliography, sources, and research methods on selected problems in medieval history, using discussion and written reports on assigned readings. (May be repeated for a maximum of 6 hours.)

305. Readings in English History. 3-6 Hr. Directed readings of scholarly books and articles on the history of England from about 1450 to about 1700, but with some opportunity for students to fill gaps in their knowledge of other periods of English history.

309. Readings in Central European History. 3-6 Hr. All students will read and discuss selected works illustrating outstanding scholarship or interpretative problems related to modern Central European History. Opportunity will be also provided for individual reading projects. (May be repeated once)

310. Historic Site Interpretation and Preservation. 3 Hr. PR: HIST 212. Introduction to historic site interpretation and preservation, including establishing criteria, site inventory, and recording techniques using the “case study” method. Lectures, films, discussions, and field projects will introduce students to the rapidly growing area, including environmental impact work.

311. Archival Management. 3 Hr. PR: HIST 212. Principles and practices of archival work within a laboratory context. Includes lectures and selected readings illustrated by holdings and policies of West Virginia and Regional History Collection of the WVU Library.

312. Practicum in Historical Editing. 3 Hr. PR: HIST 212. Principles and practices of historical editing in a laboratory context. Includes lectures and readings with illustrations from ongoing editing projects.

313. Local History Research Methodology. 3 Hr. Emphasis on research methods applicable to any locality; includes legal records, oral records, secondary sources, photographs, maps, and government documents.
314. Readings in Eastern European History. 3-6 Hr. Intensive readings on specific topics in Russian, Soviet, or East European history. Students should normally have had History 117 and 118, or their equivalents. Primarily designed for graduate students and selected undergraduates.

317. Readings in Western European History. 3 Hr. This course, primarily for graduate students and selected undergraduates, is designed for an intensive reading program on special problems in western European history. (May be repeated once.)

321. Readings in Asian History. 3 Hr. Intensive readings in the history of East Asia (especially China and Japan) since the nineteenth century; students should normally have had HIST 225 and 226, or their equivalents; reviews, as well as bibliographical and historiographical essays, required. (May be repeated once.)

325. Readings in African History. 3 Hr. This course will normally focus on readings and discussion on problems in the history of pre-colonial Africa, the major works in African history, and recent interpretations in the field. (May be repeated once.)

330. Readings in Latin American History. 3 Hr. PR: Graduate status. Critical examination of selected sources and topics for understanding and interpreting Latin American history. (May be repeated once.)

331. Readings in American History, 1585-1763. 3 Hr. Supervised readings and reports designed to prepare students for intensive study in a seminar or for field examinations in colonial American history. (May be repeated once.)

345. Readings in American Labor History. 3 Hr. PR: Consent. Readings seminar designed to provide a broad knowledge of American labor and working class history by focusing on conceptual issues and methods of research that have shaped the development of this field. (May be repeated once.)

355. Readings in American History, 1763-1800. 3 Hr. Readings and reports designed to prepare students for an intensive study in a seminar or field examination. (May be repeated once.)

356. Readings in U.S. History 1787-1850. I. (Alternate years) 3 Hr. Critical examination of major works and themes on the political, economic, social, and legal formation of the nation. (May be repeated once.)

359. Readings in U.S. History, 1840-1898. 3 Hr. Survey of interpretative literature on Sectionalism, Civil War, Reconstruction, and Gilded Age. Assignments are both oral and written reports on assigned readings and a critical essay on some aspect of American historiography for this period.

363. Readings in United States History, 1898 to Present. 3 Hr. Readings and class-led discussion of one paperback book per week, and preparation of a paper based on these books and the class discussion of them. (Course may be repeated for credit.)

373. Readings in Appalachian Regional History. 3 Hr. A course for graduate students and seniors in the history of West Virginia and neighboring states, which form what is known as the Trans-Allegheny or Upper Ohio region. (May be repeated once.)

375. Readings in Science and Technology. 3 Hr. Examination of the literature, bibliography, and sources on selected topics in the history of science and technology. Class discussions and written reports on assigned topics. (Course may be repeated for credit.)

382. Readings in Social history of the United States. 3 Hr. The objective of the course is to establish for graduate students usable frames of reference for selected topics in social history by examining the ways in which historians have written about these topics. (Course may be repeated for credit.)

385. Readings in Environmental History. II. (Alternate years) 3 Hr. Examines broad themes including settlement patterns, attitudes toward nature, the rise of ecological science, and agricultural and industrial practices. Explores historiographical and methodological issues. (May be repeated once.)

Research. I, II, S. Variable 1-15 Hr. PR: Consent. Research activities leading to a thesis, problem report, research paper or equivalent scholarly project, or dissertation. (Grading may be S/U.)

Seminar in Medieval History. 3 Hr. PR: Hist 301; (Reading knowledge of Latin and a modern European language strongly recommended.) Directed examination of bibliographic sources and historiographical issues on selected aspects of the Middle Ages, leading to preparation of a research paper based on primary sources.

Seminar in English History. II. 3 Hr. Research seminar in selected topics in English history from about 1450 to about 1700. One major paper and extensive reading based on available source material is required.

Seminar in Medieval History. 3 Hr. An intensive survey of the bibliographical aids and printed source materials available in the field. A research paper and a bibliographical essay will be presented by each student. Reading knowledge of German and French strongly recommended. (May be repeated once.)

Internship in Public History. 6 Hr. PR: HIST 212 and two intermediate public history courses. A professional internship at an agency involved in a relevant area of public history. Supervision will be exercised by both the Department of History and the host agency. Research report or finished professional project required.

Seminar in Eastern European History. 3 Hr. PR: HIST 117, 118 or equivalent. Research seminar on selected topics in Russian, Soviet, or Eastern European history. One major paper and extensive reading based on available source materials is required. (May be repeated once.)

Seminar in Western European History. 3 Hr. A research seminar in selected topics in western European history. One major paper and extensive reading based on available source material is required. A reading knowledge of the appropriate language is required, if applicable.

Seminar in Asian History. 3 Hr. Advanced readings in East Asian history; specific emphasis on research tools and techniques; research paper based on English-language sources required; students should normally have had HIST 225 and 226 or their equivalents. (May be repeated once.)

Seminar in African History. 3 Hr. The seminar will normally focus on eastern Africa in the colonial period. Location and use of source materials will be emphasized as well as economic and political developments. Students will spend considerable time in research and writing on selected aspects of eastern African history. (May be repeated once.)

Seminar in American History 1585-1763. 3 Hr. PR: HIST 331 or consent. Directed research on colonial American history, using original and secondary materials. (May be repeated once.)

Seminar in Latin American History. 3 Hr. PR: Consent. Survey of Latin American historiography, location and use of primary source materials, discussion of research techniques, and the writing of a research paper. Reading knowledge of Spanish, Portuguese, or French will be helpful. (May be repeated once.)

Seminar in American History 1763-1830. 3 Hr. PR: HIST 355 or consent. Advanced readings and research in revolutionary and early national American history. (May be repeated once.)

Seminar in U.S. History 1787-1850. II. (Alternate years.) 3 Hr. Directed research in early United States history. Research will include primary and secondary sources. (May be repeated once.)

Seminar in United States History 1850-1898. 3 Hr. Directed research in mid- and late 19th century American history, including guidance in methods of research and manuscript preparation. (May be repeated once.)
464. **Seminar in United States History, 1898-Present.** 3 Hr. Directed research in recent American history including guidance in method of research and manuscript preparation. (May be repeated once.)

474. **Seminar in Appalachian Regional History.** 3 Hr. A seminar for graduate students in the history of West Virginia and neighboring states, which form what is known as the Trans-Allegheny or Upper Ohio region. (May be repeated once.)

476. **Seminar in Science and Technology.** 3 Hr. PR: HIST 375 or consent. Research seminar in the history of science and technology. Discussion of methods and sources; presentation and critique of research papers based on primary sources. (Course may be repeated for credit.)

481 A-Z. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

482 A-Z. **Directed Study.** 1-6 Hr. Directed study, reading and/or research.

486. **Seminar in Environmental History.** II. (Alternate years.) 3 Hr. Directed research involving primary and secondary sources. Will focus on regional case studies and examination of broad intellectual and policy themes. (May be repeated once.)

489. **Folger Institute Seminar.** 3 Hr. PR: Graduate standing. (Enrollment is by special application only. Contact department chairperson for information.) Seminar conducted by distinguished scholars and held at the Folger Institute of Renaissance and Eighteenth Century Studies in Washington, D.C. Topics vary. (Also listed as ENGL 493.)

490. **Teaching Practicum.** 1-3 Hr. PR: Consent. Supervised practices in college teaching of history. (Note: This course is intended to ensure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibilities.) It will also present a mechanism for students not an assistantships to gain teaching experience. (Grading will be S/U.)

491 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation in advanced topics not covered in regularly scheduled courses.

492. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

497. **Graduate Seminar.** 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate students body of his/her program.

497. **Research.** 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or dissertation. (Grading may be S/U.)

498. **Thesis.** 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)
Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Humanities (HUM)
Although humanities has no graduate program, the following graduate courses are available.
290. Special Topics. I, II. 1-3 HR.
391. Advanced Topics. 1-6 HR.
397. Research. 1-15 HR.

Liberal Studies
Richard Montgomery, Director
252 Stansbury Hall
Degree Offered: Master of Arts in Liberal Studies

The master of arts in liberal studies (M.A.L.S.) offered at West Virginia University is an interdisciplinary degree that provides the opportunity for highly-motivated students to continue their studies in the liberal arts beyond the baccalaureate within a coherent, structured program, but without an exclusive concentration in one discipline. Studies for this degree should focus primarily on theoretical issues in the fine arts, the social sciences, and the humanities (English, foreign languages, history, philosophy, religious studies, women’s studies).

This is a highly personalized degree program that allows applicants to create their own unique interdisciplinary programs of study. Topics might include area studies, such as American studies, Appalachian studies, and French culture; period studies, such as the Renaissance, the Enlightenment, and the American Revolution; or other special interests, such as ethnic and race studies, media studies, or women’s studies, that tie together work in various areas. Such topics, by their nature, cross disciplinary lines and may require courses in several academic units.

Topics of study within the M.A.L.S. program are limited only by the student’s imaginations and the breadth of the course offerings that are available in the relevant graduate programs at WVU.

This program is administered by a multi-disciplinary committee, which is appointed by the program director and approved by the dean of the Eberly College of Arts and Sciences. This seven member committee serves as the program’s admissions committee and plays a role which is, in some ways, like that of an academic department in a more traditional degree program. WVU faculty members from a wide range of disciplines, both within and outside of the Eberly college, effectively serve as the faculty for the program, and many of those faculty members are eligible to serve as members of a M.A.L.S. student’s master’s committee.
Admission Requirements and Procedures

A. Requirements for admission:

1. A bachelor’s degree from an accredited institution.
2. A minimum undergraduate grade-point average of 3.0 on a 4.0 scale. (Probationary status may be granted to students who do not meet this minimum standard, but who exhibit clear potential for graduate work.)
3. Scores on the GRE General Test that clearly demonstrate the ability to do graduate work.
4. A detailed, preliminary study plan for the degree which has been approved by the M.A.L.S. committee. The nature of this study plan is described below.

B. Procedures for Admission.

1. Submit to the Office of Admissions and Records an Application for Graduate Admission, along with undergraduate transcripts, transcripts from any prior graduate work, and GRE scores. Applications are accepted at any time.
2. Submit to the M.A.L.S. committee an essay detailing the proposed plan of study. This plan must describe the central focus of the study in some detail and must include a preliminary identification of all courses to be taken, along with an indication of how each course relates to the central theme.

The central focus or theme is essential to the degree plan. It ensures that studies will be pursued in depth and justifies the granting of a graduate degree. Degrees cannot be awarded for a loosely related sequence of courses. In your essay, you must indicate why the course of study with your proposed focus should be undertaken within the interdisciplinary M.A.L.S. program rather than within another WVU graduate program. In addition, the essay may describe how the degree plan relates to your professional experience and future goals.

One of the criteria for admission to the program is that the proposed plan of study can be carried through at West Virginia University. When considering whether or not to make an application, you should check the WVU Graduate Catalog to determine whether the course offerings are adequate in your area of interest; in some cases the necessary courses may not be available.

Once you are admitted to the M.A.L.S. program, you will choose an advisor and a master’s Committee with the assistance of the M.A.L.S. committee, and will then draw up a final plan of study with the help of the advisor. If, before you complete your application, you are able to make informal agreements with faculty members to serve on your master’s committee, you should mention that in your application essay. Such information provides further evidence that your plan of study can be carried through at WVU. Check the Graduate Catalog to determine who is eligible to serve on a master’s committee.

Degree Requirements

There are several general requirements listed in the Graduate Catalog for all graduate programs at WVU; the most important of these are listed below, but you should check the catalog to be sure your proposed plan of study will meet all requirements. In addition, there are several requirements specific to the M.A.L.S. program; these are also listed below.

A. General University Requirements

1. Graduate credit is awarded only for courses at the 200 level or above.
2. No more than 40 percent of course credits counted toward a graduate degree may be at the 200 level.
3. A maximum of 12 hours of course work taken before admission to a graduate program may be approved for credit toward that degree.
B. Specific Requirements for the M.A.L.S. Degree

1. At least 36 semester hours of approved course work, subject to the following limitations:
   a. Because the degree is intended to be interdisciplinary, no more than 18 hours will be approved from a single department.
   b. No more than 12 hours of independent study will be approved. (Thirteen hours may be earned by applicants who are granted provisional admission under the conditions described elsewhere in this catalog and who register for one credit of independent study in order to complete their admissions essay.)
   c. The program must include three hours of course work in research methodology.
2. A minimum 3.25 grade-point average for all course work in the degree program.
3. Fulfillment of all requirements of the study contract.
4. Successful completion of a final project (e.g., a master’s thesis, a comprehensive examination, a lecture, a recital, or a portfolio of creative work).

Provisional Admission

You may apply for a one-semester provisional admission to the M.A.L.S. program. During that semester you will take approved courses in your area of interest, and you will complete your admissions essay with the help of the M.A.L.S. program director, a member of the MALS Committee, or a faculty advisor approved by the M.A.L.S. committee.

Before the end of the semester for which you are admitted, you will be considered for regular admission to the program. In order to continue in the program, you must, at that time, meet the requirements for regular admission. If you wish to be considered for provisional admission under the conditions described here, you must submit the following material:

1. An Application for Graduate Admission, required transcripts, and GRE scores (submitted to the Office of Admissions and Records);
2. An Application for Provisional Admission (submitted directly to MALS Committee). Application forms (available from the program director’s office) require the following information:
   a. A description of your area(s) of academic interest;
   b. A statement concerning why pursuit of those interests requires a multi-disciplinary program;
   c. A brief description of proposed master’s project, if known;
   d. A proposed schedule of six to 12 credit hours of WVU courses, including courses in more than one discipline, that will be offered in the semester for which admission is sought; and
   e. The name of a faculty member at WVU who has agreed to advise you on the research and writing of the admissions essay.

Provisional admission to the M.A.L.S. program is contingent upon possession of the minimum undergraduate GPA required for regular admission, satisfactory performance on the GRE exam, and appropriateness of the M.A.L.S. program to the applicant’s academic interests. If you are granted provisional admission, you will register for the six to 12 credit hours of regular courses described in your application, and you may also, if you wish, register for one additional credit hour for writing your admissions essay.
Legal Studies
Joan Gorham, Associate Dean, Eberly College of Arts and Sciences
201 Woodburn Hall

Degree Offered: Master of Legal Studies
West Virginia University's master of legal studies degree program is designed to develop knowledge and skills of individuals and professionals who work with, though not necessarily in, the legal system; this is neither a pre-law nor a paralegal program of study. The program is jointly administered by the WVU Eberly College of Arts and Sciences and College of Law. The master of legal studies (M.L.S.) degree is conferred through the Eberly College of Arts and Sciences.

Legal studies coursework is currently offered only off-campus, in Charleston, WV.

Admission
Before you can register for classes in the Legal Studies Program you must first be admitted to the University as a graduate student. Admission as a degree-seeking graduate student at West Virginia University requires completion of a baccalaureate degree with a cumulative GPA of at least 2.75 on a 4.0 scale. If your undergraduate GPA is below 2.75, or you have not yet applied for admission to the master of legal studies degree program, you may be admitted to WVU as a non-degree student so that you may register for classes. Acceptance as a non-degree student does not guarantee acceptance into the Legal Studies Program. Applications for admission to WVU are available on line at http://www.applyweb.com/aw?wvu.

Application for acceptance into the master of legal studies degree program is separate from application for admission to West Virginia University; however, you may initiate both applications at the same time.

The master of legal studies program is designed for students interested in gaining greater understanding of law and the legal system, to perform their jobs more effectively, and/or to pursue further career or personal goals. Students with any undergraduate major may be admitted. The admissions committee considers several relevant factors in making its admissions decisions: undergraduate GPA, standardized test scores, graduate educational experience, professional experience, letters of recommendation, and a personal statement on the subject of why and how the master of legal studies degree program will further the applicant's career or special interests. Results of any of the standardized graduate-level tests (i.e., LSAT, GRE, GMAT, or MCAT) will be accepted. An applicant may petition for waiver of the test requirement if he or she has extensive graduate education or professional work experience. You may request provisional admission to the M.L.S. program if your undergraduate GPA is below 2.75 but special considerations (e.g., subsequent professional experience, maturity) apply.

Further information and application forms are available from:
- WVU Extended Learning Office—Kanawha Valley Center, 101 Cox Hall on the University of Charleston campus (Dr. Pamela Cutright. Phone: (304) 558-3471. E-mail: pcutrigh@wvu.edu)
- Graduate Education Office, Eberly College of Arts and Sciences, WVU, 103 Woodburn Hall, PO Box 6286, Morgantown, WV 26506-6286 (Carol Hando. Phone: (304) 293-2505. E-mail: chando@wvu.edu)
Curriculum

The master of legal studies program requires 36 hours of coursework, including six core courses (18 hours), elective courses (15 hours), and an applied research capstone project (three hours). We recommend that Law and the Legal System and Researching the Law courses be taken at the beginning of the program.

For course schedule and registration information, contact Dr. Pamela Cutright, Coordinator, WVU Extended Learning Office—Kanawha Valley Center. Office: 101 Cox Hall on the University of Charleston campus. Phone: (304) 558-3471. E-mail: pcutrigh@wvu.edu.

Required Courses

Law and the Legal System. Introduction for non-lawyers to the law and its functions, the structure of the U.S. legal system, the actors in the legal system, the organized bar, the judiciary, civil litigation, criminal litigation, and the policy making role of constitutions and appellate courts.

Researching the Law. Provides experience in locating and interpreting primary (the law) and secondary (commentary on the law) legal authority: federal and state constitutions, legislative statutes, judicial case law, government agency rules and regulations, encyclopedias, legal periodicals, treatises, and restatements.

Alternative Dispute Resolution. A theoretical and practical examination of negotiation, court-annexed and private mediation and arbitration, summary jury and mini trial, and other alternative dispute resolution processes, including assessment of the appropriateness of ADR for particular legal disputes. Students will engage in the dispute resolution practices studied and develop conflict resolution skills which may be utilized to resolve individual or small work-group disputes or applied to developing organization-wide dispute resolution processes.

The Administrative Legal Process. Explores the role of administrative agencies in making law, the rule-making and administrative hearing functions of agencies, concepts of due process and grievance administration, and effects on corporations, citizens, government employees, and government agencies.

Law and Society. Explores how law develops; the relationship between legal rules and social norms; law’s role in defining deviance and establishing social control; issues of equality and the law; where people go to resolve their disputes; who goes to court, who does not, and why.

The Legislative Process. Examines how legislation develops, how laws are interpreted by the judicial and executive branches of government, the role of interest groups and lobbying, the use of legislative history in interpretation of law, and implications of recent legislative reform enactments and proposals.

M.L.S. Research Capstone. A three-credit individual research project that applies and/or extends knowledge gained across master of legal studies program coursework. A comprehensive written report of the project’s process and findings/results is required.

Elective Courses (Additional topics may be offered.)

Commerce and the Law. Survey of legal principles relating to the organization, operation, and management of business organizations, including the substantive law of agency, partnerships, limited liability companies, and corporations. Legal principles relating to commercial transactions, including sales and secured transactions, negotiable instruments, credit, and bankruptcy.

Constitutional Law. Examines the concept of constitutionalism, the role of the U.S. Supreme Court in the American polity, the division of powers among the three branches of the national government, the constitutional relationship between the national and state governments, and the role of the Constitution in protecting individual liberties (e.g., freedom of speech, religion, and press) in the face of government action.
Criminal Law and Procedure. Covers the investigative stages of search and seizure, interrogation, and identification. Familiarizes students with prosecutorial stages, including preliminary hearings, the grand jury, indictments, and discovery. Basic evidentiary issues regarding the admissibility of certain kinds of evidence at trial will also be discussed.

Employment Law. Explores law related to workers compensation, disability insurance, affirmative action/equal opportunity policies, workplace discrimination, the Americans With Disabilities Act (ADA), and related federal and state statutes.

Family Law. Examines the distribution of power and responsibility among parent, child, and the state as related to procreation, education, health care, child abuse and neglect, social service workers’ reporting obligations, emancipation, and adoption.

Healthcare Law. Examines trends in healthcare regulation intended to prevent fraud and abuse and to regulate relations with payors. Discussion of issues such as the right to health care, legal obligations of hospitals and doctors, managed care and the changing doctor-patient relationship, malpractice reforms, the right to die, and other biomedical issues.

Media and the Law. Survey of mass media law, including topics such as prior restraints on publication, defamation, privacy, compelled disclosure of sources, access to information, practical aspects of representing media clients, and implications of existing law and proposals for change.

Personal Finance and Law. Survey of legal principle and precedence associated with individual financial transactions and obligations, including contract law, laws of conveyance, estate planning, landlord-tenant relationships, and personal liability.

Legal Studies Internship. Students admitted to the M.L.S. degree program have the option of completing a program-related internship. Examples of internship placements include: the offices of clerks of courts, police departments, administrative agencies, other government offices, personnel departments, or private law firms. Placements must be in settings in which students will gain new perspective in applying knowledge gained in the M.L.S. program; internship credit may not be earned in conjunction with a student’s regular employment. A three-credit-hour internship requires 100 hours in the placement setting. A maximum of three credit hours of internship may be applied to the M.L.S. degree program.

Degree Completion
Master’s degree students are permitted to continue in a program for a maximum of eight years under their original application. A student is generally not allowed to count any course taken more than eight years prior to the conferring of a degree toward completion of that degree. Graduate students are expected to maintain continuous enrollment, excluding summer sessions. All graduate students must enroll for at least one credit hour during the term (or summer) of graduation. No course in which the grade earned is D, P (pass), F, or U (unsatisfactory) can be counted toward a graduate degree, nor can courses taken under the audit option. Students in the master of legal studies program are expected to earn at least a 3.0 GPA in all legal studies coursework to qualify for graduation.

Legal Studies (LEGS)
Note: Topical legal studies courses are offered under the LEGS 391 course number. 391. Advanced Topics. 3 hrs.

492. Directed Study. Variable 1-3 hrs. Legal studies internship, directed study, reading, and/or research.
493. Special Topics. Variable 1-6 hrs. Study of contemporary topics selected from recent developments in the field.

497. Research. 3 hrs. Research activities leading to a scholarly project applying and extending knowledge gained across master of legal studies program coursework.

Mathematics
Sherman D. Riemenschneider, Chairperson
370 Armstrong Hall
www.math.wvu.edu
Degree Offered: Master of Science, Doctor of Philosophy

Master of Science
Programs are available for students to study applied mathematics, pure mathematics, industrial/applied mathematics, or mathematics for secondary educators. For regular admission to the M.S. program, students should have the equivalent of an undergraduate major in mathematics. Students with deficiencies may be admitted provisionally, with deficiencies to be made up in the first year of study. To be in good standing, a student is expected to maintain at least a 3.0 average (B) in mathematics courses and to present at least a 3.0 average in all work offered in fulfillment of the degree program.

Advisory Committee Each student, upon beginning a graduate program, will be assigned an advisory committee consisting of at least three members of the graduate faculty. This committee will assist the student in designing a written plan of study that takes into account the student's interests and needs as well as the aims of the department's graduate programs. Later changes in the plan are possible only through mutual agreement of the student and the committee.

Programs The student's plan of study is developed in one of these programs: pure mathematics, mathematics for secondary educators, applied mathematics, and industrial/applied mathematics. The programs are designed either for students who intend to pursue a doctor of philosophy in mathematics or the mathematical science or for those planning to seek employment in education, government, or industry. Depending upon the program selected, 30 to 33 semester hours are required.

Note: MATH 490 may not be counted for credit to satisfy graduate course hour requirements.

Examinations/Theses/Projects With the exception of students in the mathematics for secondary educators program, all M.S. students must pass a basic exam in advanced calculus and linear algebra by the end of the first year of study. Depending on the program chosen, students must complete examinations or a thesis or a project as a graduation requirement.

Doctor of Philosophy
The doctor of philosophy is a research program in which the final product is an original, publishable research thesis. The program requires students to take 26 hours of course work. Students may specialize in a variety of areas of pure, applied, and discrete mathematics as reflected in the interests and expertise of the faculty.
Requirements
Applicants must have completed a graduate degree similar to the M.S. in mathematics outlined above. The following materials should be submitted:

- A WVU admission application.
- An application for financial support (Optional).
- Official undergraduate and graduate transcripts.
- Three letters of recommendation from individuals having experience of an applicant’s mathematical ability.
- GRE scores for the general test and for the mathematics subject test (recommended).
- TOEFL scores for students whose native language is not English.

All doctoral students must demonstrate that they are prepared to undertake doctoral work and research by passing an entrance examination, given each year in May and August, within the first year of study.

Twenty-six hours of course work are required of all doctoral students. The distribution of these courses is as follows:

- Twelve hours at the 400 level in the student’s major area.
- Six hours in each of two minor areas. With the approval of the director of graduate studies, up to one course in a minor area may be at the 300 level.
- Two hours of MATH 496 Seminar.

Dissertation Committee
After the above requirements are satisfied, a student must request that the director of graduate studies select a dissertation committee of at least five members, with a dissertation advisor as chairperson and one member from outside the department.

Examinations and Dissertation
The student must pass a qualifying oral and written examination on the major and minor areas of study. If examination results are unsatisfactory, the dissertation committee may reexamine the student once.

A Ph.D. candidate must complete a dissertation, representing at least 24 hours of 400-level credit, under the supervision of a dissertation advisor. The research upon which the dissertation is based must conform to scholastic standards and constitute an original and publishable contribution to mathematics.

Language Requirement
Each Ph.D. student must demonstrate a reading knowledge of French, German, or Russian. The graduate programs committee may approve the substitution of a different foreign language or a computer language for fulfillment of this requirement.

Applications should be received at the Department of Mathematics by February 15 to ensure full consideration for financial aid in the subsequent fall semester.

Further information may be obtained from the department’s web site at www.math.wvu.edu or by contacting the graduate director. Applications may be obtained by writing to the Graduate Director, Department of Mathematics or by sending e-mail to gradprog@math.wvu.edu.

Mathematics (MATH)


221. Numerical Analysis 2. II. 3 Hr. PR: MATH 220 or CS 216 and MATH 241 or consent. Solutions of linear systems by direct and iterative methods. Calculation of eigenvalues, eigenvectors, and inverses of matrices. Applications to ordinary and partial differential equations. (Equiv. to CS 221.)

224. Mathematics of Compound Interest. II. 3 Hr. PR: MATH 16 or MATH 128. A problem-solving course focusing on the measurement of interest, annuities, amortization schedules, and sinking funds, and the valuation of bonds and other securities.

228. Discrete Mathematics. II. 3 Hr. PR: MATH 163. Permutations, combinations, binomial theorem, inclusion-exclusion formula, recurrence relations, generating functions, elementary graph theory (connectivity, paths, circuits, trees, vertex and edge coloring, graph algorithms) matching theory, and discrete optimization. (Equiv. to CS 228.)

231, 232. Introduction to Mathematics for the Elementary Teacher. I, II. 3 Hr. per sem. PR: MATH 34. (Not open to students who have credit for MATH 131.) (For in-service elementary mathematics teachers.) Systems of numeration; sets, relations, binary operations, the algebraic structure of various number systems; the notions of length, area, and volume; coordinate geometry.

241. Applied Linear Algebra. I, II, S. 3 Hr. PR: MATH 17 and MATH 18. Matrix algebra with emphasis on algorithmic techniques and applications to physical models. Topics include solution of large systems of equations, orthogonal projections and least squares, and orthogonal projections and eigenvalue problems.


256. Complex Variables. II. 3 Hr. PR: MATH 18. Complex numbers, functions of a complex variable; analytic functions; the logarithm and related functions; power series; Laurent series and residues; conformal mapping and applications.

261. Mathematical Logic. 3 Hr.

269. Advanced Topics in Mathematics. I, II, S. 3-9 Hr. PR: Consent. An independent but directed study program the content of which is to be mutually agreed upon by the individual student and instructor.


303. Graph Theory. 3 Hr. PR: MATH 143 and MATH 163. Basic concepts of graphs and digraphs, trees, cycles and circuits, connectivity, traversibility, planarity, colorability, and chromatic polynomials. Further topics from among factorization, line graph, covering and independence, graph matrices and groups, Ramsey theory, and packing theory.

305. Theory of Numbers. I, II. 3 Hr., per sem. PR: One year of calculus. Introduction to classical number theory covering such topics as divisibility, the Euclidean algorithm, Diophantine equations, congruency, primitive roots, quadratic residues, number-theoretic functions, distribution of primes, irrationalals, and combinatorial methods. Special numbers such as those of Bernoulli, Euler, and Stirling.

307. Topics in Discrete Mathematics. 3 Hr. PR: MATH 143 and MATH 163. Topics may include algorithmic graph theory, combinatorial designs, matroid theory, (0,1)-matrices, and permanents.
308. Applied Discrete Mathematics. 3 Hr. Topics may include combinatorial optimization, applied coding theory, integer programming, linear programming, matching, and network flows.


315. Wave Propagation. 3 Hr. PR: MATH 251 or MATH 317. Study of waves in applied mathematics. The wave equation and geometrical optics, water waves, exact solutions, and interacting solitary waves. Basic concepts of hyperbolic and dispersive waves, conservation laws and scalar PDE’s shock waves, Bateman Burgers equation, and hyperbolic systems.

317, 318. Advanced Calculus. I, II. 3 Hr. per semester. PR: MATH 18. Primarily for engineers and scientists. Functions of several variables, partial differentiation, implicit functions, transformations; line surface and volume integrals; point set theory, continuity, integration, infinite series and convergence, power series, and improper integrals.


322. Numerical Solution of PDE. 3 Hr. PR: MATH 18 and computer language. Finite difference and finite element methods for elliptic, parabolic, and hyperbolic problems. Study of properties such as consistency, convergence, stability, conservation, and discrete maximum principles.

330. Introduction to Applied Mathematics. S. 1-6 Hr. PR: Calculus. (Designed especially for secondary-school mathematics teachers; others admitted with departmental approval obtained before registration.) Problem solving and construction of mathematical models in the social, life, and physical sciences. Examples illustrating the origins and use of secondary school mathematics in solving real world problems.

333. Modern Algebra for Teachers. I, S. 3 Hr. PR: Calculus. (Designed especially for secondary-school mathematics teachers. Others admitted with departmental approval obtained prior to registration.) Introduction to algebraic structures; groups, rings, integral domains and fields. Development and properties of the rational and real number systems.

334. Modern Algebra for Teachers. II, S. 3 Hr. PR: MATH 141 or MATH 333. Further investigation of algebraic structures begun in MATH 333. (Emphasis on topics helpful to secondary-school mathematics teachers.) Topics include Sylow theory, Jordan-Holder Theorem, quotient rings, field extensions, Galois theory, and solution by radicals.

335. Foundations of Geometry. S. 3 Hr. PR: Calculus. (Designed especially for secondary mathematics teachers; others admitted with departmental approval obtained before registration.) Incidence geometrics with models; order for lines and planes; separation by angles and by triangles; congruence; introduction to Euclidean geometry.

336. Transformation Geometry. S. 3 Hr. PR: MATH 141 or MATH 333. (Designed especially for secondary-school mathematics teachers; others admitted with departmental approval obtained before registration.) A modern approach to geometry based on transformations in a vector space setting. The course unifies the development of geometry with the methods of modern algebra.


351. *Theory of Functions of Real Variables*. I, II. 3 Hr. per sem. PR: MATH 181 and MATH 252. A development of Lebesgue integral, function spaces and Banach spaces, differentiation, complex measures, the Lebesgue-Radon-Nikodym theorem.


355. *Theory of Functions of Complex Variables*. I, II. 3 Hr. per sem. PR: MATH 252. Number systems, the complex plane and its geometry. Holomorphic functions, power series, elementary functions, complex integration, representation theorems, the calculus of residues, analytic continuation and analytic function, elliptic functions, Holomorphic functions of several complex variables.

356. *Theory of Functions of Complex Variables*. I, II. 3 Hr. PR: MATH 355. Number systems, the complex plane and its geometry. Holomorphic functions, power series, elementary functions, complex integration, representation theorems, the calculus of residues, analytic continuation and analytic function, elliptic functions, Holomorphic functions of several complex variables.

357. *Calculus of Variations*. II. 3 Hr. PR: (MATH 18 and MATH 252) or MATH 318. Necessary conditions and sufficient conditions for weak and strong relative minimums of an integral, Euler-Lagrange equation. Legendre condition, field construction, Weierstrass excess function, and the Jacobi equation.


362. *Geometric Modeling-Solids*. 3 Hr. PR: MATH 18 and linear algebra. Mathematical techniques used in CAD/CAM environments, including basic primitives, manifold and non-manifold solids, Euler characteristic, half-space models, constructive solid geometry (CSG), boundary representation (B-rep), Euler operators, Boolean operations, and data exchange.

363. *Mathematical Modeling*. 3 Hr. PR: MATH 18 and MATH 213. This course is concerned with construction, analysis, and interpretation of mathematical models that shed light on important problems in the sciences. Emphasis is on the simplification, dimensional analysis, and scaling of mathematical models.


382. *Topology*. II. 3 Hr. per sem. PR: MATH 381. A detailed treatment of topological spaces covering the topics of continuity, convergence, compactness, and connectivity; product and identification space, function spaces, and the topology in Euclidean spaces.

383. *Set Theory and Applications*. 3 Hr. PR: MATH 341 or MATH 351 or MATH 381. The course concentrates on the typical methods of set theory, transfinite induction, and Zorn’s Lemma with emphasis on their applications outside set theory. The fundamentals of logic and basic set theory are included.

385. *Rings Continuous Functions*. 3 Hr.

386. *Rings Continuous Functions*. 3 Hr.

391. *Advanced Topics*. 1-6 Hr.
397. Research. 1-15 Hr.

400. Seminar in Number Theory. I, II. 1-12 Hr.

402. Special Functions. I, II, 3 Hr. PR: MATH 18 and MATH 252. Operational techniques, generalized hyper-geometric functions, classical polynomials of Bell, Hermite, Legendre Noerlund, etc. Introduction to recent polynomial systems. Current research topics.

403. Advanced Topics in Graph Theory. 3 Hr. PR: MATH 303. Topics may include: Algebraic graph theory, random graph theory, external graph theory, topological graph theory, and structural graph theory. (May be repeated for credit with consent.)

405, 406. Analytic Number Theory. I, II. 3 Hr., per sem. PR: MATH 306 and MATH 356. Selected topics in analytic number theory such as the prime number theorem, primes in an arithmetical progression, the Zeta function, and the Goldbach conjecture.

407. Advanced Topics in Combinatorics. 3 Hr. PR: MATH 301 and MATH 307. Topics may include: Combinatorics on fine sets, probabilistic methods in combinatorics, enumerations, Polya Theory, combinatorial matrix theory, coding theory, combinatorial identities, infinite combinatorics, transversal theory, and matroid theory. (May be repeated for credit with consent.)

414. Asymptotic Methods. 3 Hr. PR: MATH 313. Study of asymptotic methods for differential equations. Basic concepts asymptotic expansions, asymptotic approximation; asymptotic evaluations of integrals Laplace’s methods, Kelvin’s methods, the steepest descent; asymptotic solutions of equations; perturbation of eigenvectors: the difference between singular and regular perturbations; multiple scale analysis; the method of matched asymptotic expansions; perturbations of periodic systems.

441. Group Theory. 3 Hr.

442. Group Theory. 3 Hr.

443. Algebraic Theory Semigroup. 3 Hr.

444. Algebraic Theory Semigroup. 3 Hr.

450. Seminar in Analysis. 1-12 Hr.

451. Functional Analysis. I, II. 3 Hr. per sem. PR: MATH 181 and MATH 241 and MATH 252. A study of Banach and Hilbert spaces; the Hahn-Banach theorem, uniform boundedness principle, and the open mapping theorem; dual spaces and the Riesz representation theorem; Banach algebras; and spectral theory.

452. Functional Analysis. I. 3 Hr. PR: MATH 451. A study of Banach and Hilbert spaces; the Hahn-Banach theorem, uniform boundedness principle, and the open mapping theorem; dual spaces and the Riesz representation theorem; Banach algebras; and special theory. Algebras; and spectral theory.


460. Thesis. I, II. 1-6 Hr.

480. Seminar in Topology. 1-12 Hr.

481. Continuum Theory. I, II. 3 Hr. per sem. PR: MATH 381. The fundamental properties of continua (compact, connected, metric spaces), including boundary bumping, space filling curves, structure of special continua, and inverse limits.
483. *Set Theory and Applications*. 3 Hr. PR: MATH 383. The course elaborates on the applications of the transfinite induction, and combines recursion methods with other elements of modern set theory, including the use of additional axioms of set theory, introduction to the forcing method.


491. *Advanced Study*. I, II, S. 1-6 Hr. PR: Consent. Investigation in advanced subjects which are not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

492. *Directed Study*. 1-6 Hr.

493. *Special Topics*. 1-6 Hr.

494. *Special Seminars*. 1-6 Hr.

495. *Independent Study*. 1-6 Hr.

496. *Graduate Seminar*. I, II. 1 Hr. PR: Consent. Each graduate student will present at least one seminar to the assembled faculty and graduate student body of the student’s program.


499. *Graduate Colloquium*. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs.

**Philosophy (PHIL)**

Although philosophy has no graduate program, the following graduate courses are available.

302. *Philosophy of Science*. I, II. 3 Hr. Philosophical problems associated with the concepts and methodology of science. (Not offered every year.)


304. *Health Care Ethics*. I, II. 3 Hr. Topics: Clinician-patient relationship, life-sustaining treatment, physician-assisted death, physician/nurse conflicts, confidentiality, research, reproductive technology, abortion, maternal/fetal conflicts, genetics, rationing, and access.

305. *History of Philosophy*. I, II. 3 Hr. Selected topics in the history of Western philosophy, usually with concentration on one of the following periods: ancient, medieval, modern, or recent.

306. *Metaphysics*. I, II. 3 Hr. Traditional problems associated with universals and particulars, reality and experiences, causality, space and time, matter and mind, the nature of the self, etc.

308. *Ethics of the Marketplace*. I, II. 3 Hr. An examination of moral questions regarding the evaluation of economic systems, labor/management relationships, product liability, advertising, codes of conduct, and conflicts of interest. (Not offered every year.)

310. *Ethics*. I, II. 3 Hr. An examination of selected theoretical and applied problems in the field of professional ethics. (Not offered every year.)

313. *Philosophy of Social Science*. I, II. 3 Hr. PR: Consent. Philosophical problems associated with the concepts and methodology of the social sciences. (Not offered every year.)


490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of philosophy. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain college teaching experience. (Grading may be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Special Seminars. I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

495. Independent Study. I, II, S. 1-3 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1-3 Hr. PR: Consent.


499. Graduate Colloquium. 1-6 Hr.

Physics
Larry E. Halliburton, Chairperson of the Department
209 Hodges Hall
www.as.wvu.edu/pyhs/index2.html
Degrees Offered: Master of Science, Doctor of Philosophy

The graduate program is designed to provide a solid background in classical and modern physics, a broad understanding of major research fields, and concentrated research experience in one area. Applicants normally enter with a bachelor of science degree in physics. A student whose background is weak in a particular area is encouraged to register for the appropriate undergraduate course. The normal first-year courses include Introduction to Mathematical Physics (387), Quantum Mechanics (351), Advanced Classical Mechanics (331), Advanced Electricity and Magnetism (333), plus possible electives. In courses no distinction is made between those students who intend a terminal M.S. degree and those who will pursue a Ph.D. degree. The minimum grade for credit in graduate courses is C, and a grade-point average of 3.0 must be maintained.
Qualifying Examinations
After the first year of classes students begin taking the written qualifying exams, which determine their admission to the M.S. or Ph.D. programs. The purpose of these exams is to ensure that each student has the necessary fundamental background to begin research. There are three parts to the exam but the three parts are spread over the calendar year to allow students to prepare for one section at a time. The June exam, which covers quantum mechanics, is normally taken after one year of classes. It is followed in August by the classical mechanics exam, and in January by the electricity and magnetism exam. Students do not have to take the exams in the above order. There is no restriction on retaking any of the exams. A different standard of performance is required for candidacy to the M.S. and Ph.D. degrees, as explained below.

Master of Science
Students who pass two sections of the qualifying examination at the 40 percent level are admitted to candidacy for the M.S. degree. A faculty advisor directs the student’s research. The research results must be summarized in a written thesis that is defended before a faculty committee. The M.S. degree requires 24 hours of courses at the 300 level or above, including physics 331, 333, 351, 383, and 387.

A student may instead earn an M.S. degree without doing thesis research by passing all three sections of the qualifying examination at the 60 percent level and by taking 30 hours of courses at the 300 level or above, including physics 331, 333, 351, 383, and 387.

Doctor of Philosophy
Students who pass all three sections of the qualifying examination at the 60 percent level are admitted to candidacy for the Ph.D. degree. Research is the central focus of the degree and is directed by a faculty advisor. Early in the research program the student must make an oral presentation to the dissertation committee reviewing some of the published research in his/her subfield of specialization. When the student’s research is completed, it is described in a written dissertation and defended before the dissertation committee. The average completion time for the Ph.D. is five years beyond the B.S. The Ph.D. requires 36 hours of course work at the 300 level or above. These twelve courses must include the seven basic courses 331, 333, 334, 351, 352, 383, and 387 plus any two of the following: 401, 410, 425, 463, 471, 481, or 482.

Research Groups
Research groups consist of a professor and several graduate students and/or post-doctoral fellows, with financial support from a federal agency or private industry. Departmental research specialties include condensed matter physics (theory and experiment), nonlinear dynamics (theory and experiment), applied physics (theory and experiment), plasma physics (experiment), astrophysics (theory), and elementary particle physics (theory).

GRE/TOEFL
Applicants are expected to have a bachelor’s degree in physics, with upper-division courses in electricity and magnetism, mechanics, quantum mechanics, thermodynamics, and mathematical methods. Students lacking some of these courses may be admitted provisionally and will be allowed to remedy the deficiencies by taking the appropriate courses. The GRE general test is required and the GRE physics subject test is strongly recommended. If English is not the student’s native language, TOEFL scores are also required. Application deadline is February 15; contact the department for additional information.
Financial Aid
With rare exceptions, all students who are admitted receive financial support. Beginning students usually receive teaching assistantships; more advanced students receive research assistantships. Several fellowships are available for outstanding students, allowing full-time concentration on course work and research and more rapid progress toward the degree.

Physics (PHYS)
201. *Special Topics.* I, II. 1-3 Hr. per sem. (May be repeated to max. of 24 hours.) Study of topics of current interest in physics.

213. *Introductory Electronics.* 3 Hr. PR: PHYS 11 and PHYS 12. Principles and applications of integrated circuits and digital electronics. (2 hr. lec., 1 hr. lab.)

221. *Optics.* 3 Hr. PR: PHYS 11 and PHYS 12 and MATH 18. A basic course in physical optics covering wave mathematics, propagation, polarization, interference, and diffraction; applications in geometrical optics and selected topics in scattering and quantum optics. (3 hr. lec.)

225. *Atomic Physics.* 3 Hr. PR: PHYS 124 or equiv. Relativistic mechanics, atomic structure, and spectra.


241. *Advanced Physics Laboratory.* I, II. 1-3 Hr. per sem. PR: PHYS 11 and PHYS 12 and PHYS 124. Experiments in physics designed to implement theory courses, give experience in data taking and instrumentation, and learn methods of data evaluation and error analysis.

248. *Physics Seminar.* I, II. (No credit.) (Suggested for junior, senior, and graduate physics majors.) These lectures acquaint students with topics of current interest in physics.

251. *Introductory Quantum Mechanics.* I. 3 Hr. PR: PHYS 124 and MATH 18. Fundamental principles of quantum mechanics; state functions in position and momentum space, operators, Schrödinger’s equation, applications to one-dimensional problems, approximation methods, the hydrogen atom, angular momentum, and spin.

263. *Nuclear Physics.* I, II. 3 Hr. PR: PHYS 124 and MATH 17. Study of characteristic properties of nuclei and their structure as inferred from nuclear decays and reactions, leading to a knowledge of nuclear forces and models.

271. *Solid State Physics.* I, II. 3 Hr. PR: PHYS 124 or equiv. and MATH 17. Properties of crystalline solids; includes crystal structure, interatomic binding, lattice vibrations, electron theory of metals, and the band theory of solids with some applications.

283. Thermodynamics and Statistical Mechanics. II. 3 Hr. PR: PHYS 124 or equiv., and MATH 17. Introduction to the statistical foundations of thermodynamics; applications of the fundamental laws of thermodynamics to physical and chemical systems.

301. Special Topics. I, II. 1-6 Hr. per semester. (May be repeated to max. of 24 hours.) PR: Consent. (Primarily for graduate students.) Specialized topics of current interest in physics.

321. Optics. I, II. 3 Hr. PR: PHYS 11 and PHYS 12 or equivalent; MATH 17. A basic course in physical optics covering radiation theory, diffraction, interference, polychromatic waves, scattering, polarization, double refraction, and selected topics in quantum optics.


351. Quantum Mechanics. I, II. 3 Hr. PR: PHYS 251. Breakdown of classical physics, the Schroedinger equation and its interpretation, one-dimensional problems, operator methods and abstract Hilbert space, identical particles, three-dimensional problems, the hydrogen atom, angularly momentum, spin, vector coupling, time independent perturbation theory, variational principle, atomic and molecular structure, semi-classical radiation theory, and scattering theory.

352. Quantum Mechanics. I, II. 3 Hr. PR: PHYS 351. Breakdown of classical physics, the Schroedinger equation and its interpretation, one-dimensional problems, operator methods and abstract Hilbert space, identical particles, three-dimensional problems, the hydrogen atom, angular momentum, spin, vector coupling, time independent perturbation theory, variational principle, atomic and molecular structure, semiclassical radiation theory, and scattering theory.

354. Outline of Modern Physics. S. 3 Hr. PR: One year introductory college physics. (Primarily for education majors; not open to physics majors.) Elementary study of atomic and molecular structures and spectra, solid state and nuclear physics, relativity and elementary particles.

355. Workshop for Physics Teachers. S. 3 Hr. per sem. PR: One year college physics; One year of college mathematics. (Primarily for education majors; not open to physics majors.) Techniques of apparatus construction and demonstration.

356. Workshop for Physics Teachers. S. 3 Hr. per sem. PR: One year college physics; One year of college mathematics. (Primarily for education majors; not open to physics majors.) Techniques of apparatus construction and demonstration.

358. Light. II, S. 3 Hr. PR: One year of college physics or equivalent. (Primarily for education majors; not open to physics majors.) A demonstration course designed to illustrate the basic concepts covering light and optics.

371. Intermediate Solid State Physics. 3 Hr. PR: PHYS 271 and PHYS 351 or equivalent. Crystal structure, reciprocal lattice, phonons, dielectric properties, optical properties, semiconductors, cooperative phenomena including superconductivity and magnetism.

372. Intermediate Solid State Physics. 3 Hr. PR: PHYS 271 and PHYS 351 or equivalent. Crystal structure, reciprocal lattice, phonons, dielectric properties, optical properties, semiconductors, cooperative phenomena including superconductivity and magnetism.

383. Statistical Mechanics. II. 3 Hr. PR: PHYS 283 and PHYS 351. Ensemble theory, applications to noninteracting systems, as well as perturbative and approximate treatment of interactions. Typical applications include equilibrium constants, polymers, white dwarfs, metals, superfluids, and magnetic transitions.

387. Intro Mathematical Physics. I. 3 Hr. PR: Calculus, differential equations, PHYS 11 and PHYS 12 or equivalent. Complex variables: series, contour integration and conformal mapping; ordinary differential equations; Fourier series, Laplace transforms; Fourier transforms, special functions; Bessel functions and Legendre, Hermite, and Laguerre polynomials; introduction to partial differential equations; Poisson’s equation, Wave equation, and diffusion equation.

388. Intro Mathematical Physics. II. 3 Hr. PR: Calculus, differential equations, PHYS 11 and PHYS 12 or equivalent. Vector spaces, tensor calculus, group theory, integral equations, calculus of variations, nonlinear systems, and other topics as time permits.

391. Advanced Topics. 1-6 Hr.

397. Research. 1-15 Hr.

401. Advanced Research Topics. I, II. 3 Hr. (May be repeated to max. of 24 hours.) PR: Consent. Specialized topics in field of physics related to the research interests of the department. Open only to students who have completed most of the basic graduate courses.


425. Advanced Atomic and Molecular Physics. 3 Hr. PR: PHYS 325. Quantum mechanics of atoms and molecules at an advanced level emphasizing the role of symmetry. Necessary material on group theory is included.


481. Kinetic Theory of Plasma. 3 Hr. PR: PHYS 281 and PHYS 331 and PHYS 334. An advanced course focusing on the Vlasov theory of plasma equilibrium and stability. The application to plasma waves will be emphasized.

482. Magnetohydrodynamic Theory of Plasma. 3 Hr. PR: PHYS 281 and PHYS 331 and PHYS 334. Theory of ideal magnetohydrodynamics for plasma equilibrium and stability; emphasis on analytic theory in developing the model, describing various equilibria and evaluating plasma stability.

490. Teaching Practicum. 1-3 Hr.

491. Advanced Study. 1-6 Hr.

492. Directed Study. 1-6 Hr.

493. Special Topics. 1-6 Hr.

494. Special Seminars. 1-6 Hr.
Political Science
Allan S. Hammock, Chairperson of the Department
316-A Woodburn Hall
www.polsci.wvu.edu

Degrees Offered: Master of Arts, Doctor of Philosophy

The master of arts and doctor of philosophy programs in political science are designed to give advanced training to students who desire careers as policy analysts in government or the private sector or who wish to enter selected teaching or research fields with a specialization in public policy (either U.S. domestic or international), American politics, state politics, comparative politics, and/or international politics.

Master of Arts

The master of arts with emphasis in public policy is offered by the Department of Political Science in cooperation with the Department of Economics. It is designed to provide students with a broad knowledge of the policy making process and the many factors influencing public policies at the international, national, state, and local levels of government. A problem-analytic approach, drawn from both economics and political science, is used to develop the ability to comprehend, assess, and evaluate issues, problems, and policies in the public sector. Prospective graduates are expected to be skilled at gathering and interpreting data, reporting, writing, and analyzing policy options and alternatives, and evaluating the intended and unintended consequences of public programs and policies. Most graduates will take jobs in government or with private firms needing specialists in policy analysis.

Prerequisites/Requirements

Ideally, applicants for the master of arts degree should have a B.A. in political science (with a minimum of six hours in economics) or a B.A. or B.S. in economics (with a minimum of six hours in political science). However, students from other fields and disciplines are also encouraged to apply. In addition, the applicant should have an overall grade-point average of 2.75, and should submit three letters of recommendation from faculty familiar with the student’s work. All students must also submit the verbal and quantitative results of the Graduate Record Examination.

In order to remain in good standing, students must maintain a 3.0 cumulative average and receive a 3.0 average in each semester for which they are enrolled. Students who do not maintain a 3.0 cumulative average will be placed on probation and will be suspended if they fail to regain a 3.0 cumulative average in their next nine hours of study.

Admission

Admission to candidacy for the M.A. degree requires that the student complete a minimum of 36 hours (exclusive of colloquium) in a specialized curriculum offered by the Department of Political Science and the Department of Economics. This curriculum includes courses in economics, policy evaluation, the policy process, and public policy analysis. In addition, students must complete work in political science methodology and statistical methods. All students must enroll in POLS 499 Colloquium each semester in residence.
Research The M.A. degree provides an optional research practicum or internship during the fourth semester of work. The practicum enables the student to conduct actual policy research in a public agency. The practicum will carry an additional six hours of graduate credit. Students may also choose a six-hour thesis option.

Examinations Students will be expected to pass final written/oral examinations in policy analysis. Students who fail examinations may be allowed to retake them at the next regularly scheduled examination period. It is contrary to departmental policy to give a third examination.

Doctor of Philosophy
The doctor of philosophy degree is designed for persons planning careers either as policy analysts in government or as researchers and teachers in institutions of higher education. Those students who choose to enter the Ph.D. program emphasizing policy analysis will receive training appropriate for persons who wish to undertake research and analysis on public issues in government, both foreign and domestic. This training includes a comprehensive knowledge of policy formulation, implementation, and evaluation and a thorough understanding of the dynamics of political institutions. A central focus of the policy studies option will be competence in research methodology and statistical techniques of policy analysis.

Those students who choose to enter the Ph.D. program with the intention of entering the field of research and teaching may concentrate on policy studies or take a more traditional curriculum that features four fields: American national and state politics, international relations, comparative politics, and public policy and administration.

Admission Admission to the Ph.D. program is open to students with either a bachelor’s or a master’s degree. Students with degrees in political science, economics, public administration, sociology, psychology, engineering, social work, business, law, medicine, or journalism are encouraged to apply. An undergraduate applicant should have a grade-point average of 3.0; a graduate applicant 3.5. In addition, all applicants must submit the results of the Graduate Record Examination and at least three letters of recommendation from faculty familiar with the applicant’s work. Admission will be based on an overall assessment of the individual’s record.

Candidacy The work of all individuals admitted to the doctoral program will be formally evaluated at the end of the first two semesters (at least 18 credit hours of study) at which time one of the following recommendations is made: (1) admission to candidacy for the doctoral degree; (2) admission to the master’s degree program in public policy studies; or (3) termination.

The program of each person admitted to the doctoral program is designed in accordance with his or her career objectives and previous training. A complete description of the Ph.D. program and course requirements may be obtained by writing the Director of Graduate Studies, Department of Political Science, West Virginia University, Morgantown, WV 26506. This should be done before application to the program.
**Minimum Requirements**

The following constitute the formal minimum requirements of the Ph.D. program:

<table>
<thead>
<tr>
<th>Public Policy Option</th>
<th>General Option</th>
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<tbody>
<tr>
<td>Public policy core (18 hrs.)</td>
<td>Public policy (15 hrs.)</td>
</tr>
<tr>
<td>Policy research methods (15 hrs.)</td>
<td>Research methods (12 hrs.)</td>
</tr>
<tr>
<td>Economics (6 hrs.)</td>
<td>Elective specialty I (15 hrs.)</td>
</tr>
<tr>
<td>Policy field (18 hrs.)</td>
<td>Elective specialty II (15 hrs.)</td>
</tr>
<tr>
<td>Dissertation (24 hrs.)</td>
<td>Dissertation (24 hrs.)</td>
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<td><strong>Total: 81 hrs.</strong></td>
<td><strong>Total: 81 hrs.</strong></td>
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</table>

In addition to the formal course work, students must also pass written and oral comprehensive examinations in their specialty fields. All course work completed for the M.A. at West Virginia University also counts toward the Ph.D. Course work from other institutions will be evaluated on a case-by-case basis.

In order to remain in good standing, students must maintain a 3.0 cumulative average and receive a 3.0 average in each semester for which they are enrolled. Students are required to spend at least one year (two semesters) in residence enrolled in a full-time graduate program of no less than nine semester hours each semester. All graduate students must enroll in POLS 499 (Colloquium) each semester in residence.

**Faculty**

The Department of Political Science has 18 full-time faculty members. The major strengths of the graduate faculty are: policy studies (15 faculty with policy specialties); American national and state politics and administration (eight faculty with U.S. politics and institutional specialties); international and comparative politics (four faculty with international affairs specialties, including U.S. foreign policy, comparative foreign policy, and national security policy); comparative politics (three faculty with comparative politics specialties, including development politics, African, Western European, Canadian, and Far Eastern area studies, and cross-national political analysis); research methods (two faculty with advanced statistical analysis specialties); and policy fields (ten faculty with policy specialties in criminal law, development, political economy, energy, environment foreign policy, gender, national security, regulation, and social welfare). In addition, faculty in the Department of Public Administration and the Department of Economics teach courses included in the M.A. and Ph.D. curricula.

**Research**

Graduate students have opportunities to conduct research with the political science faculty, faculty associated with the Policy Analysis Group, the Institute for Public Affairs, and other research organizations at the University, and with externally funded grant projects. Opportunities exist for field experience in various government settings, including the West Virginia Legislature, which annually provides paid internships for graduate students in the M.A. or Ph.D. programs.

**Financial Aid**

The department has a number of assistantships and fellowships available for students in both the M.A. and Ph.D. programs. Students interested in financial assistance should apply directly to the Department of Political Science. Graduate assistants may enroll for no more than nine credit hours per semester (excluding colloquium).
Political Science (POLS)

300. Introduction to Political Research. I. 3 Hr. Introduction to the research methods and techniques used in political and policy analysis. Topics include logic of inquiry, research design, measurement, and survey and unobtrusive research.

310. Intergovernmental Relations. I. 3 Hr. Examination of the politics and policy consequences of intergovernmental relations among the national, state, and local governments in the United States. Topics include the development of intergovernmental relations, regulatory federalism, and intergovernmental fiscal relations. (3 hr. seminar.)

330. Policy Analysis. I. 3 Hr. Overview of the field of political science and the sub-field of public policy studies. Focuses on the issues and problems involved in studying policymaking, and an assessment of policy analysis as a mode of thinking and inquiry. (3 hr. seminar.)

331. Economic Analysis of Politics. I. 3 Hr. Application of economic analysis to questions of politics and public policy. Consideration of problems of public goods, voting behavior, and legislative behavior. (3 hr. seminar.)

336. Politics of Agenda Setting. I, II. 3 Hr. Examines the social, economic, institutional, and political influences on the development of public problems and their placement on the policy agenda. (3 hr. seminar.)

345. Public Administration and Policy. II. 3 Hr. Decision-making and policy development in the administrative process. (3 hr. seminar.)

351. Politics of Planned Development. I. 3 Hr. Political aspects of social, economic, and technological change, with special reference to the politics of development planning and administration. (3 hr. seminar.)

355. Comparative Public Policy. I, II. 3 Hr. Comparison of public policy stages in several advanced industrial democracies with emphasis on various explanations of public policy in these countries in different policy areas. (3 hr. seminar.)

360. International Theory and Policy. I. 3 Hr. Survey of theoretical approaches in the study of international relations, covering major works in the realist, neoliberal, and foreign policy literature. Emphasis on the place of foreign policy explanations within the wider, systemic international relations literature. (3 hr. seminar.)


400. Quantitative Political Analysis. II. 3 Hr. PR: POLS 300 and STAT 311, or equivalents. Application of a range of statistical techniques in political and public policy research. Includes use of selected computer software commonly used in political science and policy analysis.

401. Advanced Quantitative Methods. I. 3 Hr. PR: POLS 400 or equivalent advanced topics in quantitative methods for political science and policy research. Methods surveyed include multiple linear regression, time-series analysis, causal modeling, and linear programming.

403. Internship. I, II. 6-9 Hr. per semester; students may enroll more than once. PR: Consent.

410. Judicial Politics, Policy, and Law. I. 3 Hr. Judicial influence on American public policy with emphasis on the political theory of American law, the agenda of disputes, the formulation of public policy by courts, and the effects of judicial policy on politics. (3 hr. seminar.)

429. Seminar: State and Local Government. I, II. 3 Hr. Examination of selected topics in state government and politics. (3 hr. seminar.)
430. Seminar: American Politics and Policy. I. 3 Hr. A survey of classic and contemporary literature on U.S. politics and policy. Emphasis on how various institutions and linkage mechanisms affect the policy process. (3 hr. seminar.)

435. Seminar: Policy Evaluation. II. 3 Hr. Methods and techniques in evaluating public policies. Topics include the relation of policy analysis to policymaking; types of evaluation; planning, evaluations; alternative evaluation designs; measuring program consequences; problems of utilization, and the setting of evaluation research. (3 hr. seminar.)

438. Seminar: Policy Implementation. II. 3 Hr. Research seminar focusing on how the intentions of policy-makers are transformed into programs and policies which have both intended and unintended consequences. Topics include traditional implementation studies, neo-institutionalism, rational choice approaches, and principal-agent theory. (3 hr. seminar.)

439. Research in Policy Analysis. I, II. 3 Hr. Supervised, independent research on a policy problem utilizing the techniques and methods of quantitative policy research. Designed for advanced students, the research project follows the completion of the department’s research methods sequence.


441 A-Z. Advanced Study. I, II. 1-6 Hr. PR: Consent.

442. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

443. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

444. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

445. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular college offerings.

446. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


448. Thesis. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

449. Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural program’s. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
Psychology

Michael Perone, Chairperson of the Department
101-A Oglebay Hall

Degrees Offered: Master of Arts, Doctor of Philosophy

Programs Offered
The doctoral degree programs in behavior analysis, lifespan developmental psychology, adult clinical psychology, and child clinical psychology prepare students for careers in teaching, research, and/or practice. The professional master’s degree in adult clinical or child clinical psychology prepares students for work in community mental health centers, medical facilities, mental health and mental retardation institutions, and school systems.

Admission
Students are admitted only at the beginning of the fall semester. Application must be completed by the preceding January 15. Acceptance is based on:
• Adequate academic aptitude at the graduate level as measured by the Graduate Record Examination;
• Achievement in undergraduate course work with a minimum grade-point average of 3.0 is required;
• Personal qualities that predict success in graduate study and as a professional after graduation;
• Adequate preparation in psychology and related fields; and
• Fit between the applicant’s interests and the offerings of a department graduate program.

Grade-Point Average
Students in the master of arts and doctor of philosophy programs must have a final 3.0 average in all psychology courses attempted.

Master of Arts Requirements
Two years of full-time study with a minimum of 48 hours of credit are required for the master of arts degree. Students who are accepted into one of the Ph.D. programs are required to complete an M.A. thesis and will receive the M.A. degree upon completing the thesis and credit-hour requirements. Students accepted into the professional M.A. degree track in clinical psychology must complete a specified sequence of courses and complete a six-month, full-time internship.

Doctor of Philosophy Requirements
Students are accepted for study toward the doctor of philosophy degree upon entry into the department. Each program requires completion of a specific set of required courses and electives (described in detail in the Department Graduate Handbook). Students are formally admitted to doctoral candidacy after completion of the master’s degree or its equivalent, a comprehensive preliminary examination, and other requirements.

A dissertation and oral examination on the dissertation are required for all Ph.D. candidates. Students in the clinical psychology programs must also complete a 12-month internship. The internship must be approved by the program and by the director of clinical training.
Non-Degree Students

Graduate courses in psychology are designed for regularly admitted degree-seeking psychology students as part of an extensive program of preparing those students for professional careers. Thus, students not admitted into one of the psychology graduate programs are discouraged from taking graduate courses in psychology. Non-psychology graduate students must obtain the instructor's permission to enroll in any psychology graduate course.

Psychology (PSYC)

302. Ethical Issues in Psychology. II. 1-3 Hr. (May be repeated for credit with consent.) The ethical standards for psychologists is applied to research and clinical problems.

303. Legal Issues in Clinical Psychology. II. 1-3 Hr. (May be repeated for credit with consent.) Review of the major areas in which psychologists interact with the civil and criminal legal systems.

304. Professional Issues in Developmental Psychology. I, II. 1-3 Hr. Survey of professional issues in developmental psychology. Course will be graded on a satisfactory/unsatisfactory basis. (May be repeated for credit.)

305. Professional Issues in Clinical Psychology. I, II. 1-3 Hr. Survey of professional issues in clinical psychology. Course will be graded on a satisfactory/unsatisfactory basis. (May be repeated for credit.)

311. Research Design and Data Analysis 1. I. 3 Hr. Principles of experimental design in psychology including group and single subject methodologies. Topics include: (1) internal and external validity; (2) simple and complex analysis of variance; and (3) reversal and multiple baseline designs.

312. Research Design and Data Analysis 2. II. 3 Hr. PR: PSYC 311. Inferential statistics, simple correlation and regression, multiple correlation and regression, partial correlation, analysis of power, analysis of covariance, analysis of variance of designs with unequal cell sizes.

313 A-Z. Directed Study. I, II, S. 1-6 Hr. Directed study, reading and/or research.

315. Multivariate Analysis. I. (Alternate years.) 3 Hr. PR: PSYC 311. Data analysis techniques in psychology with application to typical research problems. Includes simple matrix algebra, discriminant analysis, multivariate analysis of variance, and an introduction to factor analysis. (Equiv. to STAT 341.)

316. Quasi-Experimental Design. I. (Alternate years.) 3 Hr. PR: PSYC 311 and PSYC 312. Consideration of the statistical procedures used with quasi-experimental group and single-subject designs.

320. Experimental Analysis of Behavior. I. 3 Hr. Research and theory in the psychology of learning. Assessment of traditional and behavior-analytic approaches to the study of positive reinforcement, aversive control, and stimulus control. Includes laboratory work with animals.

321. Human Behavior. I. (Alternate years.) 3 Hr. PR: PSYC 320. Review of the role of basic human operant research in testing the generality of animal-based behavior principles, analyzing phenomena that are specific to humans, and extending behavior analysis to traditional psychological problems.

323. Applied Behavior Analysis. II. (Alternate years.) 3 Hr. PR: PSYC 320. Methodological, empirical, and conceptual issues in the application of basic research in behavior analysis to problems of social significance.

341. Methodological Issues in Developmental Psychology. II. (Alternate years.) 3 Hr. Methodological issues in psychological research on the major age periods and the life span. Topics include: validity; reliability; age, cohort, and time of measurement; cross-sectional, longitudinal, and mixed designs; data analytic methods; ethical issues.

Psychology 185
342. Conceptual Issues in Developmental Psychology. II. (Alternate years.) 3 Hr. History, philosophies, and theories of psychological development in the major age periods and the life span; conceptual issues such as nature-nurture, sex differences, cultural differences, life events, rigidity-plasticity, continuity-discontinuity, and competence-performance.

344. Infant Development. I. (Alternate years.) 3 Hr. Examination of psychological literature on prenatal and infant development. Topics include physical, cognitive, perceptual, language, and socioemotional development.

347. Child and Adolescent Cognitive Development. (Alternate years.) 3 Hr. Examination of psychological literature on child adolescent cognitive development. Topics include perception, learning, language, problem solving, and social cognition.

348. Child and Adolescent Social Development. I. (Alternate years.) 3 Hr. Examination of psychological literature on child and adolescent social/emotional development. Topics include peer and family relationships, gender, moral development, friendship, aggression, and altruism.

349. Adult Development and Aging. I. (Alternate years.) 3 Hr. Examination of psychological literature on adulthood and aging. Topics include health, cognition, family relationships, personality, psychopathology, work, and retirement.

364. Child Behavior Modification. I. (Alternate years.) 3 Hr. Assessment, intervention, and evaluation strategies appropriate for childhood disorders and based on behavior principles.

375. Fundamentals of Gerontology. I. 3 Hr. PR: MDS 50. An advanced multidisciplinary examination of current research in biological, psychological, and sociological issues of human aging and the ways in which these impinge on the individual to create both problems and new opportunities. (Also listed as BIOL 375.)

379. Introduction to Clinical Psychology. I. 3 Hr. Basic interviewing skills and current problems in the practice of clinical psychology.

381. Behavior Pathology. II. 3 Hr. Advanced study of diagnostic classification, functional analysis, and experimental research in psychopathology of child, adult, and geriatric adjustment problems.

384. Biological Aspects of Behavior. II. (Alternate years.) 3 Hr. PR: Consent. Overviews of the areas of psychological investigation that pertain to the relation between biology and psychology, including neuroscience, psycho biological theories of personality and development, neurological and neuropsychological assessment, psychophysiology, and biologically-based treatment strategies, including basic psycho pharmacology.

390. Seminar on Teaching Psychology. I, II. 1-3 Hr. (May be repeated for credit with consent.) PR: Consent. Review and discussion of methods and issues in college teaching of psychology.

397. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

401. Advanced Professional Issues in Psychology. I, II. 1-3 Hr. Discussion of professional issues in psychology relevant to advanced doctoral students. Course will be graded on a satisfactory/unsatisfactory basis. (May be repeated for credit.)

411. Single-Subject Research Methods. II. (Alt. yrs.) 3 Hr. PR: PSYC 311 and PSYC 320. Critical evaluation of single-subject designs in basic and applied research. Major topics include single-subject methodology’s historical and conceptual bases, its relation to group-statistical methods, and its role in behavioral psychology.
415. Advanced Experimental Analysis of Behavior. I. 3 Hr. (May be repeated for credit with consent.) PR: PSYC 320. Selected topics and research issues in the experimental analysis of behavior.

416. Advanced Applied Behavior Analysis. I, II. 3 Hr. (May be repeated for credit with consent.) PR: PSYC 323. Application of research and theory of behavior analysis to social problems; other selected topics.

417. Research Issues in Behavioral Analysis. I, II. 3 Hr. (May be repeated for credit with consent.) PR: Consent. Examination of research issues in general psychology from a behavior analytic perspective. Topics vary from year to year.

419. Seminar in Methodology. I, II. 1-3 Hr. (May be repeated for credit with consent.) Current problems and techniques in research design, data analysis, and research methods.

420. Reinforcement and Punishment. II. (Alternate years.) 3 Hr. PR: PSYC 320. Examination of theories of response acquisition, maintenance, and suppression in the context of recent experimental work with animals and humans.

421. Behavior Theory and Philosophy. I. (Alternate years.) 3 Hr. PR: PSYC 320 or equivalent. Critical consideration of contemporary concepts, theories, and methods of psychology.

422. Social Psychology. II. 3 Hr. Survey of current concepts, research, and findings in social psychology. Includes such topics as self and identity, attribution theory, interpersonal perception, social cognition, attitude change, social influence, interpersonal processes, prosocial behavior, aggression, and prejudice.

423. Behavior Analysis Practicum. II. 3 Hr. PR: PSYC 323 and consent. Supervised applied behavior analysis experience integrated with a seminar emphasizing group solutions to problems that individuals encounter in students' applied projects. Progress and final project reports are presented and evaluated. (1 hr. seminar, 2 hr. practicum.)

424. Social Behavior. II. (Alternate years.) 3 Hr. Examines selected concepts, research, and findings in social psychology from a behavioral perspective. Focuses on understanding and explaining the social context of individual and group behavior.

425. History and Systems. II. (Alternate years.) 3 Hr. Study of the history of psychology from its roots in physics, biology, and philosophy. The development of American psychology is emphasized.

426. Stimulus Control and Memory. II. (Alternate years.) 3 Hr. PR: PSYC 320 or consent. Critical review of basic research and theory in discrimination learning, stimulus generalization, and memory.

427. Advanced Behavior Analysis Practicum. I, II, S. 1-6 Hr. PR: PSYC 423 or consent. Supervised applied behavior analysis experience in an approved setting.

436. Seminar in Cognitive Development. II. (Alternate years.) 3 Hr. (May be repeated for credit with consent.) Current issues in cognition and learning over the life-span or during selected periods of the life-span.

437. Practicum in Developmental Psychology. I, II, S. 1-6 Hr. PR: Consent. Provides experience in a wide range of applied settings. Sites are chosen to accommodate exposure to the entire life-span from infancy through old age. Supervising responsibilities are determined by the instructor in charge in the agency.

442. Seminar in Life-Span Development. II. 3 Hr. (May be repeated for credit with consent.) Current issues in life-span development or selected periods of the life span.

443. Seminar-Social Development. II. 3 Hr. (May be repeated for credit with consent.) Current issues in social and personality development over the life span or during selected periods of the life-span.
456. Program Evaluation and Intervention. I. (Alternate years.) 3 Hr. Examines the nature, method, and process of evaluative research, especially as it applies to social and behavioral treatment and service delivery programs.

464. Family and Martial Therapy. II. (Alternate years.) 3 Hr. Examines both theoretical and practical aspects of the assessment and treatment of family and marital difficulties.

467. Child Clinical Psychology Practicum. I, II, S. 1-15 Hr. (May be repeated for credit.) PR: Consent. Supervised field experience in various aspects of delivering psychological services directly or indirectly to children. Experience in assessment, treatment, program design, administration, and evaluation.

468. Seminar in Child Clinical Psychology. I,II. 1-3 Hr (May be repeated for credit with consent.) Current issues and research related to a particular area of clinical psychology involving children.

470. Behavioral and Psychological Assessment 1. I. 3 Hr. Conceptual and methodological bases for behavioral assessment; comparison of trait-oriented versus behavioral assessment; design and evaluation of measurement systems, particularly self-report, ratings by others, and direct observation, within the basic framework of generalizability theory.


477. Adult Clinical Psychology Practicum. I, II, S. 1-15 Hr. (May be repeated for credit.) PR: Consent. Supervised practice of psychological techniques in clinics or institutional settings; experience in psychological testing, interviewing, report writing, case presentation, interpretation of tests and supportive counseling.

479 A-Z. Seminar in Adult Clinical Psychology. I, II. 1-3 Hr. (May be repeated for credit with consent.) Research and problems in clinical psychology.

480. Clinical Neuropsychology. II. (Alternate years.) 3 Hr. Neuroanatomical foundations, neurobehavioral disorders, neuropsychological assessments, and psychopharmacological principles and practices relevant to clinical psychology.

481. Psychophysiology. II. (Alternate years.) 3 Hr. PR: 3 Hr. of physiological psychology or consent. The current state of theory, methods, and findings concerning the association of physiological response systems and psychological states and processes, including biofeedback intervention.

482. Adult Behavior Therapy. II. 3 Hr. Reviews the roots and development of behavioral interventions with adult populations. Applied clinical intervention is stressed in concert with evaluation and research application.

483. Integrative Behavioral Psychotherapy. II. (Alternate years.) 3 Hr. Conceptual and practical introduction to basic tenets, concepts, and techniques of major schools of psychotherapy. Reviews psychotherapy integration efforts by analyzing therapy process variables and therapist activities presumably common to many effective forms of therapy.

484. Clinical Psychopharmacology. I. (Alternate years.) 3 Hr. Survey of the ways in which psychotropic drugs are used to treat behavioral and psychological disorders.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

493 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.
497. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

Public Administration

David G. Williams, Chairperson of the Division
302-B Woodburn Hall P.O. Box 6322

Degree Offered: Master of Public Administration

The Division of Public Administration offers a public administration curriculum for graduate students seeking the degree of master of public administration (M.P.A.) or a specialization as part of another graduate degree program. This program provides a professional orientation to the primary facets of public management.

Curriculum

The master of public administration curriculum serves the needs of students from a variety of backgrounds who wish to pursue careers in public service. It directs particular attention to developing an understanding of the management function in the public context as well as preparation in utilizing advanced management techniques applicable to all levels of government—local, state, national, and international—as well as the not-for-profit sector, particularly health and hospital organizations.

The study program is designed to supply an academic foundation for comprehension of the range of processes and management approaches employed in public administration. These include public management theory and practice, personnel administration, budgetary and financial management, organizational dynamics, legal and ethical concerns, practically-oriented research, and leadership. Particular stress is placed on those functions and issues that require the greatest degree of adaptation, innovation, and responsiveness on the part of the professional administrator.

The curriculum reflects the diversity of skills required by all levels of government. The range of needs is broad in scope; students apply from diverse backgrounds, including political science, other social sciences, physical sciences, humanities, and from positions in public service, not-for-profit, and private sectors.

General Requirements

The M.P.A. degree requires the completion of 47 credit hours. The general requirements are listed below. These general requirements can be tailored to individual students' needs with revisions agreed upon by both student and advisor.

- Integrative seminar (two credit hours): Orientation to professional skills and program content (PA 300).
- Foundation courses (13 credit hours): Public management theory and practice (PA 310), public financial management (PA 320), methods for public administration research (PA 330), and legal and political foundations (PA 340).
- Advanced courses (nine credit hours): Public budgeting (PA 420), applied research in public administration (PA 430), and public personnel administration (PA 441).
- Elective courses (12 credit hours): Selections from a wide range of specialized public administration elective courses and elective courses offered in other fields.
- Internship (nine credit hours): Public administration internship (PA 403) and project paper (PA 404).
- Integrative seminar (two credit hours): Application of course concepts to planned change in public organizations (PA 452).
Degree Completion

It usually takes four semesters for full-time students to complete the M.P.A. degree. Course work can be completed in two semesters and a summer. In addition, the internship is generally one semester in length, although a variety of internship arrangements are possible. For those individuals who have had substantial public service experience, internship credit can be awarded.

Health Care Administration

Elective courses are offered in health care administration for students who desire to specialize in this area as part of the M.P.A. degree. A certificate program is also available. Check at the division for details.

Joint Degrees

The division has established both joint degree and dual degree programs with a number of other graduate programs. A joint J.D./M.P.A. degree program has been established with the College of Law to provide preparation in both law and public administration. A joint M.S.W./M.P.A. degree has been developed with the cooperation of the Division of Social Work to provide preparation for administrators in the social services. Dual degree programs may also be arranged with other academic programs and professional schools. Graduate studies regulations permit limited credit from one graduate degree to be applied to a second degree. Students may pursue two degrees and use approved course work for both degrees.

Recommended Courses

While many tool skills are included in the required courses, it is strongly recommended that students take courses in accounting, statistics, and computer science as part of their undergraduate program. Course work may also be taken at the graduate level in these subjects (200 and above) and counted as elective hours.

Minor

A graduate minor in public administration may be taken in conjunction with other graduate degrees in the College of Arts and Sciences. In addition, a graduate minor in public administration may be part of graduate degree programs outside the College as approved by the graduate committee for that student.

At the master’s level, a minor consists of 12 hours of course work (PA 310, 320, 340, and one advanced course). At the doctoral level, 15 hours of course work is required (PA 310, 320, 340, and two advanced courses). A grade-point average of 3.0 must be achieved for the courses taken in the graduate minor.

Changes in course requirements within the hour limits may be approved by the Division of Public Administration for students with specialized needs or background experience.

Admission

Candidates must meet the WVU general admission requirements for graduation from an accredited college and grade-point average. Admission into the M.P.A. program is competitive with decisions based on:

• Application for admission and transcripts (submitted to the Office of Admissions and Records).
• Three letters of evaluation (forms are available from chairperson of the Division of Public Administration), Graduate Record Examination scores for the aptitude test, and a vita. These materials should be submitted to the chairperson of the Division of Public Administration.
In the case of practicing administrators, a record of accomplishment in administrative performance will be weighed heavily in combination with the criteria outlined above.

**Application Deadline**

The deadline for fall or summer applications is April 1; applicants will be notified around April 15. Deadline for January admission is October 15; applicants will be notified around November 1. Decisions on applications will be made during these two periods, although late applications are considered if space is available.

Application forms and additional information may be obtained by contacting the chairperson of the Division of Public Administration.

**Public Administration (PUBA)**

300. *Professional Skills Seminar*. I, II. 2 Hr. PR: Consent. Orientation and overview of public administration; M.P.A. program content and expectations; research resources and computer applications; professional development activities and public service.

310. *Public Management Theory and Practice*. I, II, S. 3 Hr. Graduate level introduction to management theory and practice in the public sector, including contextual influences, administrative behavior and motivation, decision-making, leadership, organizational design, communication, and evaluation.


330. *Methods for Public Administration Research*. I, II. 4 Hr. PR: Consent. Introduction to the foundations and processes of applied research applicable to public administration, with emphasis upon data collection and analysis. Use of the personal computer for word processing and data analysis is also emphasized.

340. *Legal and Political Foundations*. I, II. 3 Hr. PR: Consent. Constitutional-legal basis of American public administration; the policy making process; administrative agency relationships with executive, legislative, and judicial branches; bureaucratic power and legitimacy; and administrative legal process.

345. *Public Administration and Policy Development*. II. 3 Hr. Policy development examined in terms of values, process, specific policy cases, alternative “futures” analyses and policy science.

403. *Internship*. I, II, S. 3-9 Hr. PR: Consent. A working internship in a government or public service related agency, designed to provide students with an opportunity to gain field experience, and to relate knowledge gained through course work situation. (Graded S or U.)

404. *Public Service Internship Analysis*. I, II, S. 3 Hr. PR: PUBA 403, consent. Designed for students enrolled in PUBA 403. Students undertake in-depth analysis of elements of their internship (policy matters, organizational questions, administrative dilemmas, etc.) and prepare a written report.

410. *Administrative Behavior in Public Organizations*. I. 3 Hr. Introduces and familiarizes the student with the nature of individual and group behavior in public organizations and bureaucratic settings.

411. *Public Planning*. II. 3 Hr. Principles and practices of government planning including development and management of policy, political and economic context of strategic planning, and social planning.

412. *Administrative Ethics and Justice*. I. 3 Hr. PR: PUBA 310 or consent. Analysis of ethical issues in public administration. Study of the concepts of distributive and procedural justice and their applications to administrative decision-making.
420. Public Budgeting. I, II. 3 Hr. PR: PUBA 320. Advanced study of public budgeting at the federal, state, and local levels of government. Emphasis is placed on principles of public finance, budgeting processes and approaches; revenue sources and tax structures; and budget preparation and analysis.

430. Applied Research in Public Administration. I, II. 3 Hr. PR: PUBA 330. Completion of an original, quantitative, applied research project dealing with issues and/or problems in the public sector.

431. Information Management in Public Administration. II. 3 Hr. Concepts and practice of information management in the public sector; computer applications and their impact on organizational performance as well as public accountability, political and administrative constraints, ethics, and privacy.

441. Public Personnel Administration. I, II, S. 3 Hr. PR: Consent. Concept of merit and ideological roots of merit system; personnel functions in government with emphasis upon acquiring and managing human resources, equity, employee and executive development and problems of patronage, and employee relations.

443. Public Employee Labor Relations. II. 3 Hr. PR: Consent. Provides overview of theory, structures, and issues of public-sector labor relations; specific knowledge and training in processes and behaviors of contract negotiation and contract maintenance; and introduction to conflict management in non-unionized settings.

452. Capstone Seminar: Strategies for Change. I, II. 2 Hr. PR: Consent. Develops knowledge base and techniques for using public administration concepts gained in the curriculum to effect planned change in organizations and cope with its ethical implications.


492. Directed Study. I, II, S. 1-6 Hr. PR: Consent. Directed study, reading and/or research.

493. Special Topics. 1-6 Hr.

494. Special Seminar: (topic). II. 1-6 Hr. Special seminars arranged for advanced graduate students.

495. Independent Study. 1-6 Hr.

Religious Studies (RELG)
Religious Studies courses may be taken for University LSP credit (except RELG 290 and 491) or for elective credit. Also, an interdepartmental major in religious studies may be undertaken.

290. Seminar: Selected Topics. 3 Hr. PR: A previous religious studies course or consent.

391. Advanced Topics. 1-6 Hr.

397. Research. 1-15 Hr.

490. Teaching Practicum. 1-3 Hr.

491. Advanced Study. 1-6 Hr.

492. Directed Study. 1-6 Hr.

493. Special Topics. 1-6 Hr.

494. Special Seminars. 1-6 Hr.
The graduate program in social work offers advanced study and training to prepare social workers for leadership roles in small towns and rural areas. The Division of Social Work is nationally recognized in the area of rural social work practice and nonprofit management, and all degree programs offered by the division are accredited by the Council on Social Work Education.

Students have the opportunity to focus their practice interests by selecting one of two Practice Tracks — Direct Practice or Community Organization and Social Administration — and one of three Fields of Practice — Children and Families, Health, and Aging, or Mental Health. Students have the opportunity to do their field internships with agencies throughout West Virginia and adjacent areas. In addition, a dual degree option is offered in conjunction with the Division of Public Administration, and graduate certificates are available in the areas of gerontology and women’s studies.

The Division of Social Work supports both full-time and part-time graduate study at the main campus in Morgantown and part-time graduate study at our off-campus site in Charleston, the state capitol. Regular standing students — those with degrees in areas other than social work or those with social work degrees who do not meet the criteria for advanced standing status — begin the program in the fall semester. It takes two years to complete the program on a full-time basis, including two summer sessions between the first and second years of the program, and three years to complete the program on a part-time basis, also including summer sessions. Advanced standing students begin the program in January, and complete the program in 16 months on a full-time basis, and in two and a half years on a part-time basis.

Applicants to the M.S.W. program come from a variety of academic disciplines and have varying degrees of experience in the field of social work. While preference is given to those applicants with volunteer or paid experience in social work, particularly promising students who have limited formal experience may also be admitted to the program. Students interested in applying to the division or seeking additional information should address inquiries to M.S.W. Admissions, Division of Social Work, West Virginia University, P.O. Box 6830, Morgantown, W.V. 26506-6830. Phone: (304) 293-3501.

Career Opportunities

Graduates of the M.S.W. program are employed throughout the United States and Canada. They work as individual, family, and group treatment specialists, planners, community organizers, and social researchers. They also work as social work educators and as administrators in a variety of programs such as mental health clinics, hospitals, correctional institutions, courts, delinquency programs, aging programs, family...
counseling agencies, child protective agencies, public welfare departments, child development programs, drug and alcohol abuse programs, public schools, community action agencies, settlement houses, city governments, state government planning agencies, federal administrative agencies, and private research and development organizations concerned with human problems.

There has been a constant growth in the need for professional social workers. It is anticipated by the Bureau of Labor Statistics and other research bodies that the demand for social workers will continue to increase in numbers and in varieties of programs in which social workers are employed. The WVU social work curriculum is designed to help students prepare for these careers. Students are required to work closely with their academic advisors in selecting appropriate components in class and field learning to meet their individual needs.

**Curriculum and Degree Requirements**

**Degree Requirements**

The degree of master of social work (M.S.W.) is conferred upon those students who satisfactorily complete the requirements as established for graduate education. These requirements are:

- Satisfactory completion of no less than 58 semester hours for those admitted to the regular M.S.W. program and 43 semester hours for those admitted to the advanced standing M.S.W. program. These hours may be earned through the Morgantown program on the main campus, as well as at the off-campus site at Charleston.
- Satisfactory completion of all components called for by the degree track to which students are admitted in the graduate program.

**Curriculum Components**

All M.S.W. students complete course work in social work practice, social welfare policy, human behavior and the social environment, social work research, and field instruction. In addition, students select a practice track and a field of practice.

**Practice Tracks**

- Direct practice: This track prepares students with the knowledge and skills to provide direct and clinical services to individuals, families, and small treatment groups.
- Community organization and social administration: This track prepares students with the knowledge and skills to provide leadership to communities in the development, administration, and support of service programs.

**Fields of Practice**

**Aging and Health Care** The aging and health care concentration prepares students for careers in aging and health services delivery. Emphasis is on social work practice in health care settings, including hospitals, nursing homes, and rural primary care clinics. Students acquire knowledge and skills in carrying out professional roles in discharge planning, creating support networks, and serving as members of medical ethics committees.

**Children and Family** The children and family concentration provides students with the knowledge, skills, and values that enable the student to perform competently in human service systems and programs that directly affect family well-being. Particular emphasis is placed on direct practice roles in delivering family services.
Mental Health  The mental health concentration provides students with a generic model of practice as adapted to the evolving field of mental health. Particular knowledge and skill emphasis is placed on brief treatment models, the use of community support systems, and case management systems for independent living.

Field Instruction  Field instruction provides the student with an opportunity to test classroom knowledge as well as to develop and refine advanced practice skills within the chosen field of practice area. Field instruction opportunities are available throughout West Virginia and adjacent areas, as well as in a select number of settings outside the region.

Field placement is typically completed on a concurrent plan requiring 24 hours of field instruction activity each week throughout the second year of study. Part-time field instruction options which require 16 hours per week may be negotiated as needed.

Full-time regular standing M.S.W. students are in the field between July 1 and May 15 of the second year of study. Full-time advanced standing M.S.W. students are in the field between August 15 and May 15 of the second year of study. Students are required to take at least three credits of classroom course work concurrently with field placement and to complete assignments designed to facilitate the integration of field and classroom study.

Decisions regarding the field placement assignment are jointly reached by the student, faculty advisor, and field instruction coordinator. Only sites on the Division of Social Work’s approved list of over 125 approved agencies may be used for field instruction.

Grade-Point Average (GPA) Requirements for Good Standing

All graduate courses must be completed with a grade of C or better; students may repeat any course for which the final grade is less than C one time only. Students are required to maintain an overall minimum GPA of 2.75 (on a four-point scale) to continue in the program, to be eligible for field instruction, and to be eligible for graduation.

Joint M.S.W/M.P.A.

A joint degree option resulting in the master of social work (M.S.W.) and master of public administration (M.P.A.) is available through the Division of Social Work and the Division of Public Administration. For a student admitted to the regular M.S.W. program, a total of 82 credit-hours are required to meet the joint degree requirements. For a student admitted to the advanced standing M.S.W. program, a total of 67 credit hours are required to meet joint degree requirements. Many students complete such requirements through one or more additional semesters of study beyond the semesters required for the M.S.W. degree.

Applicants must meet the admission requirements of each program, and acceptance by one program does not guarantee acceptance by the other.

Additional information and descriptive materials about the joint degree program are available from either M.S.W. Admissions, Division of Social Work, West Virginia University, P.O. Box 6830, Morgantown, WV 26506-6830, or the Division of Public Administration, West Virginia University, P.O. Box 6322, Morgantown, WV 26506-6322.
Admission to the M.S.W. Program

Students requesting admission must demonstrate the following:

- Proof of academic achievement. Graduate regulations require an undergraduate grade-point average of at least 2.75 for approval of candidates as a regular graduate student. An accepted applicant whose grade-point average is less than 2.75 is classified as provisional. See the graduate catalog section titled Classification of Graduate Students for a description of admission categories.

- Aptitude for graduate study as evidenced by performance on the Graduate Record Examination.

- Evidence of potential to practice social work, including a commitment to human service, and the ability to work effectively with people.

- Evidence of having successfully completed at least 30 hours of upper-level courses in the liberal arts.

- Paid or volunteer human service experience.

For full-time applicants, preference will be given in admissions to students who have a total of at least one year of paid and/or volunteer human service work experience. Applicants for the part-time program must have the equivalent of two years work experience in human services.

Admission Eligibility

Regular Program

Applicants meeting the following criteria are eligible to be considered for admission to the regular M.S.W. program (58 credit hours):

- Students with a baccalaureate degree in a field other than social work.

- Students with a baccalaureate degree in social work or social welfare whose cumulative grade-point average in their social work courses is below 3.0 (on a 4.0 scale).

- Students with a baccalaureate degree in social work or social welfare whose cumulative grade-point average in all courses is less than 2.75. Such students may be admitted as provisional students in the regular M.S.W. program.

All regular program students begin their study in August and are scheduled to complete their requirements within 21 months on a full-time basis and in three years on a part-time basis. Summer coursework is required of all students.

Advanced Standing

Applicants are eligible for consideration for admission to the advanced standing M.S.W. program (43 credit hours) if the following criteria are met:

- A baccalaureate degree in social work from a program accredited by the Council on Social Work Education, with a supporting recommendation from that program.

- A cumulative GPA of 2.75 or higher (on a four-point scale) in all courses.

- A cumulative GPA of 3.0 or higher in their social work courses.

Part-Time Study

Applicants may be admitted as part-time students to either the regular M.S.W. program or advanced standing M.S.W. program. Part-time students must follow a degree plan that provides for the appropriate sequencing of courses. Students are required to complete at least six credit hours each semester while enrolled as part-time students. The entire degree may be completed on a part-time basis; however, the plan of study must be completed within a four-year time span.
Transfer Credits

Students may request transfer credit for up to 18 hours earned in graduate study in approved courses. Requests for such transfer credit must be made at the time of application to the program and will be evaluated by the admissions committee.

Application Deadlines

Completed applications must be received by the Division of Social Work by March 1. Applicants whose admission files are completed after the deadline date will only be considered if space is available.

Full and part-time students admitted to the regular program are required to begin their program of study in August (fall semester).

Full and part-time students admitted to the advanced standing program are required to begin their program of study in January (spring semester).

The division does not admit students at any times other than those outlined above. Students interested in applying to the division or wishing additional information should address inquiries to: M.S.W. Admissions, Division of Social Work, West Virginia University, P.O. Box 6830, Morgantown, WV 26506-6830. Phone: (304) 293-3501.

Summary of Degree Requirements for Advanced Standing M.S.W. Program

<table>
<thead>
<tr>
<th>Curriculum Area</th>
<th>Credit Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation Courses</td>
<td>9</td>
</tr>
<tr>
<td>SW 321 Human Behavior and Social Environment</td>
<td>3</td>
</tr>
<tr>
<td>SW 333 Social Welfare Policy and Services</td>
<td>3</td>
</tr>
<tr>
<td>Social Research Methods (SW 316 or 318)</td>
<td>3</td>
</tr>
<tr>
<td>Required Practice Track (select one option)</td>
<td>6</td>
</tr>
<tr>
<td>Direct Practice (SW 343 and 349)</td>
<td>6</td>
</tr>
<tr>
<td>COSA (SW 351 and 354)</td>
<td>6</td>
</tr>
<tr>
<td>Practice Track Crossover</td>
<td>3</td>
</tr>
<tr>
<td>Direct Practice students take either SW 345, 351, or 354</td>
<td></td>
</tr>
<tr>
<td>COSA students take either SW 343 or 349</td>
<td></td>
</tr>
<tr>
<td>Required Field of Practice (select one option)</td>
<td>3</td>
</tr>
<tr>
<td>Aging and Health Care (SW 381)</td>
<td></td>
</tr>
<tr>
<td>Children and Families (SW 377)</td>
<td></td>
</tr>
<tr>
<td>Mental Health (SW 374)</td>
<td></td>
</tr>
<tr>
<td>Field of Practice Electives (determined by student interest)</td>
<td>6</td>
</tr>
<tr>
<td>Field Instruction</td>
<td>16</td>
</tr>
<tr>
<td>Total</td>
<td>43</td>
</tr>
</tbody>
</table>

Summary of Degree Requirements for Regular M.S.W. Program

<table>
<thead>
<tr>
<th>Curriculum Area</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation Courses</td>
<td>6</td>
</tr>
<tr>
<td>Human Behavior and Social Environment (SW 321 and SW 347)</td>
<td></td>
</tr>
<tr>
<td>Social Welfare Policy and Services (SW 331 and 333)</td>
<td>6</td>
</tr>
<tr>
<td>Social Research Methods (SW 313 and either 316 or 318)</td>
<td>6</td>
</tr>
<tr>
<td>Social Work Methods (SW 340)</td>
<td>3</td>
</tr>
<tr>
<td>Required Practice Track (select one option)</td>
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</tr>
<tr>
<td>Direct Practice (SW 343 and 349)</td>
<td>6</td>
</tr>
<tr>
<td>COSA (SW 351 and 354)</td>
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</tr>
<tr>
<td>Required Field of Practice (select one option)</td>
<td>3</td>
</tr>
</tbody>
</table>
Aging and Health Care (SW 381)
Children and Families (SW 377)
Mental Health (SW 374)
Field of Practice Electives (determined by student interest) .................... 6
Field Instruction .......................................................................................... 19
Total ......................................................................................................... 58

Social Work (SOWK)
313. Social Work Research Methods. I, II. 3 Hr. (Research course.) Basic concepts in social research methods. Emphasis on conceptualization of social work problems for research, role of social science theories in research, measurement options in research design, and analysis of data.

316. Evaluation Research in Social Work. 3 Hr. (Research course.) PR: SOWK 313. Methods of collecting, analyzing, and interpreting data on the need for implementation and effects of social interventions. Examination of the effects of political, ethical, and resource variables on the research process.


318. Personal Practice Assessment. I, II. 3 Hr. PR: SOWK 313 or equiv. The use of single-system evaluation methods to assess the effectiveness of social work interventions, with an emphasis on using these tools to guide practice decision-making.

320. Introduction to Growth and Behavior. I. 3 Hr. Study of behavior as basically learned responses acquired from social situations and experiences. Individual and group behavioral norms from varying and diverse sociocultural environments are examined.

321. Introduction to Growth and Behavior. II. 3 Hr. PR: SOWK 320 or equivalent. Further study of psychosocial and cultural determinants designed to increase knowledge and understanding of individual and group behavior through an analysis of social organizations with a special focus on the impact of deprivation.

323. Social Support Systems. I, II. 3 Hr. (Human behavior and social environment course.) Social science theories pertinent to social support system concepts. Formally organized systems and natural helping networks are considered. Program models related to particular target populations, such as mentally ill, the aged, etc. are examined.

324. Human Service Organizations. II. 3 Hr. (Human behavior and social environment course.) Forces that characterize the establishment, maintenance, and transformation of human service agencies.

331. Social Welfare Policy and Services. I. 3 Hr. (Policy course.) Introduction to the history, development, and implementation of social policy in the United States. Special emphasis is given to those policies which have the greatest impact on non-metropolitan areas and the Appalachian region.


340. Introduction to Social Work Practice. I. 3-5 Hr. (Practice course.) Focuses on developing the basic framework of social work practice theory and professional values to working with individuals, groups, families, and communities.
341. Social Treatment Groups. II. 3 Hr. (Practice course.) PR: SOWK 340. The use of social relationships in small groups in treating personal problems.

343. Psychopathology and Social Work Practice. I, II. 3 Hr. PR: SOWK 340. Nature, presenting characteristics, and intervention with the major forms of mental and emotional maladjustment that impact social functioning, adaptation, and life satisfaction from the perspective of the social work profession.


347. Multicultural Social Work Practice. I, II. 3 Hr. Understanding and appreciating human differences as encountered in professional practice. Practicing with sensitivity to influences such differences may present to the social worker.

349. Advanced Practice with Individuals/Families. I, II 3 Hr. PR: SOWK 340 or consent. Theories, concepts, and value issues associated with providing direct/clinical social work services to individuals. Students will also be involved with skill building exercises through classroom activities.

351. Social Management/Rural Communities. I, II. 3 Hr. (Practice course.) PR: SOWK 340. Practice issues in skill development and community organization and development with special emphasis on rural communities.

352. Social Planning. II. 3 Hr. (Practice course.) PR: SOWK 340. Practice issues in skill development related to social components of comprehensive planning and functional planning systems in health, aging, manpower, social service, and other areas.

354. Social Agency and Program Administration. I, II. 3 Hr. (Practice course.) PR: SOWK 340. Practice issues in skill development in programming, budgeting, organization, staffing, and control of social agencies and programs.

371. Social Work With the Aged. I. 3 Hr. (Concentration course.) Human aging as a problem in social theory, research, and practice.

372. Concepts and Theories in Social Gerontology. S. 3 Hr. (Concentration course.) PR: SOWK 371 or consent. Major conceptual and theoretical perspectives in social gerontology are applied to social work practice for the aged.

374. Community Mental Health. I. 3 Hr. (Concentration course.) An overview of the field of mental health which addresses major policy, program, practice, theory, and research issues as reflected in recent reports of the President’s Commission on Mental Health. Current federal and state plan documents are examined.

375. Individual Consultation. I, II, S. 1-3 Hr. Individual directed study to develop extensive knowledge in social work areas of student’s interest.

376. Primary Prevention in Social Work. S. 3 Hr. (Concentration course.) PR: SOWK 374 or consent. This course explores varying conceptual approaches to primary prevention, the social science theories and research on which they are based, and their adaption to major modes of social work practice. Specific substantive knowledge problems are addressed.

377. Introduction to Family Social Work. I. 3 Hr. (Concentration course.) Describes the demography of the population at risk, identifies family theory, major programs, and services and policies. Examines gaps in services and major styles of family intervention in social work roles.
378. *Family Victimology*. 3 Hr. PR: SOWK 377 or consent. The interface of social work practice in family victimology, with emphasis on victim welfare policy and service, victim compensation programs, and victim prevention. Social concern for physical and sexual abuse, battery, and related topics.

379. *Social Work with Couples/Families*. 3 Hr. (Concentration course.) PR: SOWK 377 or consent. This course explores social work practice focused on couples or families as a unit. Emphasis on intervention models oriented to couple and family relationship counseling and on clinical social work techniques.

380. *Special Topics*. I, II, S. 1-6 Hr. Topics include: (A) Statistics for social work practice; (B) Methods of data collection; (C) Computer applications; (D) Family sexuality; (E) Service strategies of aging; (F) Health planning and policy; (G) Program and practice models; (H) Social work in health care; (I) Social work with substance abuse.

381. *Social Work in Health Settings*. I. 3 Hr. Comprehensive strategies for serving clients with physical and/or emotional problems and their families with an emphasis on direct practice approaches. Practice in traditional and nontraditional settings is examined.

481. *Advanced Field Instruction 1*. I, II, S. 3-14 Hr. PR: Consent. Graduate field instruction in selected settings under the general direction of the faculty.

482. *Advanced Field Instruction 2*. I, II, S. 3-14 Hr. PR: Consent. Graduate field instruction in selected settings under the general direction of the faculty.


**Sociology and Anthropology**

*Ronald Althouse, Chairperson of the Department*

307 Knapp Hall  
[www.as.wvu.edu/soc_a/](http://www.as.wvu.edu/soc_a/)

**Degree Offered: Master of Arts**

The Department of Sociology and Anthropology offers an emphasis in applied social research leading to the degree of master of arts. Students are trained to be able to take positions in government, universities, community agencies, and private industry that require them to design and conduct research for purposes of evaluating policies and programs, documenting social needs, monitoring service delivery, and marketing products and services. The program also serves as a good foundation for students who may later choose to pursue doctoral studies.

**Admission**

Applicants for admission to graduate study must have a bachelor’s degree from an accredited institution. Applicants should have their college or university transcripts sent directly to the WVU Office of Admissions and Records. Candidates should also submit three completed recommendation forms from former professors, supervisors, or employers. Applicants should submit a written statement of why they are interested in the program and in a career in applied social research. An on-campus interview in the department is encouraged. Scores for the Graduate Record Examination are not essential for admission but must be provided before the beginning of classes. Foreign students for whom English is not the native language are required by the University to submit *Test of English As a Foreign Language* (TOEFL) scores (a minimum score of 550 is required) and may be required to participate in the University’s language orientation sessions.
Application Deadline
Application should be completed by March 1 for admission to the fall semester. **Students seeking financial assistance must request and submit a separate application form furnished by the department.**

Remediation
Students with deficient background in sociological theory or methods may be required to do remedial work. Full-time students who are admitted as special provisional students are required to complete 12 hours of approved course work with a B average or better within a year; students who fail to do so are suspended. The department graduate committee assesses all students and determines who will be permitted to continue in the program, with or without assistance. Normally, assistance is for no more than two years.

Degree Requirements
The 36-hour program requires 30 hours of course work and either the completion of an applied research report (six hours) based on an analysis of a social program or policy, or a master’s thesis (six hours) for students interested in investigating a theoretical problem or methodological issue. During the first three semesters, students are required to enroll in a series of core research courses. These include survey research methods, qualitative research methods, elementary and advanced data analysis, principles of research design, and a seminar in applied social research policy.

Options
The thesis may consist of an empirical assessment of community needs, problems, policies, and/or programs or an analysis of a problem in the social scientific literature. The student, in consultation with his/her program committee, chooses electives either in the department or elsewhere in the University as a basis for gaining expertise in some specific area of concentration.

Faculty
In addition to instruction in technical skills, faculty furnish an overview of the relationship between policy and research and provide expertise in a broad range of substantive areas, including economic development in Appalachia; gender, racial, and ethnic studies; the sociology of education and work; criminal justice system; health care delivery; injury prevention; community and organizational development; and conflict analysis and resolution.

Sociology and Anthropology (SOCA)
201. **Sociological Theory.** II. 3 Hr. PR: 6 Hr. SOCA and senior standing or consent. Systematic analysis of major sociological theories viewed from the historical perspective and in terms of current research.

204. **Complex Organizations.** I. 3 Hr. PR: 6 Hr. SOCA or consent. The structure and functioning of large-scale, bureaucratic organizations, including studies of industrial organizations, prisons, hospitals, government bureaus, and the military in contemporary society.

205. **Class, Status, and Power.** I or II. 3 Hr. PR: 6 Hr. SOCA or consent. Analysis of various systems of social inequality. Emphasis on empirical studies describing social class system, distribution of status and power, and patterns of social mobility in America.

211. **Social Research Methods.** I, II. 3 Hr. PR: SOCA 1 or 5 or consent. Logic of social research, elements of research design, and problems of measurement, with emphasis on survey research methodology and data analysis.
222. **Community Development.** II. 3 Hr. PR: SOCA 122, or 6 Hrs. SOCA, or consent. Application of sociological knowledge of structure of communities for planning programs and services. Emphasis on techniques of organizing efforts for community change in developing nations.

223. **Sociology of Rural Life.** I or II. 3 Hr. PR: SOCA 1 or consent. Social aspects of rural living. Characteristics of rural population, social structure, and institutional arrangements: family, community, education, religion, recreation, health, welfare, and local government.

230. **The Criminal Justice System.** II. 3 Hr. PR: SOCA 132 or consent. A sociological introduction to the criminal justice system. Analysis of police work, court activities, and corrections within the context of American social organization and societal definitions of crime and justice.

231. **Sociology of Law.** I or II. 3 Hr. PR: Senior standing and permission of instructor. Development and practice of law as part of social systems; theoretical treatments of the relationship between law and social order; emphasis on issues of class, race, and gender.(3 hr. lec.)

232. **Sociology of Education.** I. 3 Hr. PR: SOCA 1 or consent. Education as a social institution, cultural and class influences on education, social roles and career patterns in the school system, the school and problems of the community. (Also listed as EDF 300.)

233. **Sociology of Work and Work Places.** I or II. 3 Hr. PR: SOCA 1 or consent. Explores the significance of work and work relations in contemporary society. Emphasis is given to the analysis of employment settings including industrial organizations.

253. **Religion, Magic, and Healing.** I or II. 3 Hr. PR: 6 Hr. SOCA or consent. Symbolism, magic, ritual, shamanism, sorcery, and concepts of sin and salvation related to peasant and tribal cosmologies will be examined as causes of and remedies for suffering in traditional and modern contexts.

258. **Anthropology of Health and Illness.** 3 Hr. PR: 6 Hr. SOCA or Consent. Health and disease, diagnosis, and healing in cross-cultural perspectives; analyses of social, cultural, political, and economic factors in modern and traditional medical systems.

261. **Issues in Crime and Justice.** I or II. 3 Hr. PR: Consent. Senior seminar on crime and the social organization of justice. Special focus on problems of professionals in prevention, enforcement, corrections, and institutional reform. Emphasis on recent research, emerging trends, and key policy choices.

290. **Special Topics.** I, II, S. 1-3 Hr. PR: 6 Hr. SOCA or consent. Topics change so students may enroll more than once.

291. **Honors Seminar.** I or II. 1-3 Hr.

293. **Independent Study.** I, II, S. 1-6 Hr. per sem. PR: 3.0 grade-point average and written departmental permission. Directed reading or research for students desiring work not available in regular course offerings.

311. **Survey Research Methods.** I. 3 Hr. PR: SOCA 211 and STAT 101 or consent. Provides students with an overview of survey research including problem definition, research design, sampling, measurement, instrument construction, project management, ethical considerations, and report writing.

313. **Qualitative Methods.** I or II. 3 Hr. Provides students with supervised field experiences in interviewing, participant observation, and other methods of qualitative data gathering, analysis, and presentation.

317. **Data Analysis.** II. 3 Hr. PR: STAT 101 or equiv. Using social science survey data, this course integrates statistics, computer usage, and social science theory to examine alternative methods of analyzing social science data. Makes extensive use of SPSS software package.

318. **Data Analysis.** I. 3 Hr. PR: SOCA 317. Continuation of SOCA 317.

319. **Microcomputer Applications.** I. 1 Hr. A directed tutorial in selected social science applications of microcomputer use with emphasis on production of research reports. (SOCA majors only.)

390. Special Topics. I, II. 1-3 Hr. A graduate course offered as the need arises. Topics change so students may enroll more than once.

391. Seminar. I, II. 3-9 Hr.

393. Independent Study. I, II, S. 1-9 Hr. PR: Written departmental consent. Directed reading and/or research in a specialized area of interest.


490. Teaching Practicum. I, II. 1-3 Hr.


Statistics
E. James Harner, Chairperson of Department
424 Hodges Hall
www.stat.wvu.edu
Degree Offered: Master of Science

The Department of Statistics offers a master of science with a major in statistics. The department also offers a minor in statistics as an option for both master of science and doctor of philosophy Eberly College of Arts and Sciences degree programs. The master of science degree is intended to qualify the student to assume a professional role in an educational, industrial, or governmental research project; to teach in a college; or to undertake advanced training toward a doctorate in statistics or one of the quantitative fields of science.

Because many students receive baccalaureate degrees from colleges which do not offer undergraduate programs in statistics and because historically statistics has been primarily a field of graduate education, a student does not need a degree in statistics to enter the M.S. degree program in statistics. A good background in mathematics, science, or engineering is reasonable preparation for graduate work in statistics.

Master of Science
Options The following two options are available for students seeking a master of science in statistics:

• Problem Report Option—at least 36 hours of course work including three hours of credit for a problem report;
• Thesis Option—at least 36 hours of course work including six hours of credit for a thesis.

Prerequisites Students are expected to know the material contained in the following courses or areas upon admission to the program. Otherwise, these deficiencies must be removed as early as possible in the student’s degree program under the terms specified by the admissions and standards committee.

• Single and multivariable calculus (MATH 15, 16, 17 or equiv.);
• Linear or matrix algebra (MATH 241 or equiv.);
• Probability and statistics (STAT 201 or equiv.);
• Knowledge of a high-level programming language.
Required Courses Minimum requirements for either option are:

- STAT 312, 313, 351, 361, 362;
- Nine hours from STAT 331, 341, 381, 385, 451;
- STAT 390, 392, 396, 397.

Credit towards the degree requirements is not given for STAT 311. Students must complete at least one hour of credit for STAT 390, 392, and 396 and at least three hours of credit for STAT 397. Students are expected to attend the graduate seminar every semester even if they are not registered for STAT 396. A grade of C or better and a minimum 2.75 GPA is required for courses fulfilling a major in statistics.

Examinations Students must pass two written comprehensive examinations on foundation material and a final oral examination on the thesis or problem report. One comprehensive examination covers the theory taught in STAT 361 and 362; the other covers the applications taught in STAT 312, 313, and 351. These written examinations are normally given in the first four weeks of the semester in which the student expects to graduate. The final oral examination is a defense of the graduate research project required of all students, and it is usually given within four weeks after the student has presented an acceptable copy of the thesis or report to the advisor and graduate committee.

More information concerning graduate studies may be found in Graduate Programs in Statistics available from the Department of Statistics.

Minor in Statistics

Master’s Level Any student pursuing a master’s degree in the Eberly College of Arts and Sciences may complete a minor in statistics by completing one of the following options.

Minor in Applied Statistics

- Knowledge of a high-level programming language.
- Nine hours from STAT 312, 313, 331, 341, 351, 361, 362, 381, 385, 451.

A grade of C or better and a minimum 2.75 GPA is required for courses fulfilling a minor in statistics. A statistics faculty member must be on the student’s graduate committee. The student must make a significant application of statistics in his/her problem report/thesis or demonstrate the ability to apply statistical techniques to a research problem.

Minor in Mathematical Statistics

- MATH 15, 16, 17, (or equiv.) and knowledge of a high-level programming language.
- STAT 361, 362.
- Six hours from STAT 312, 313, 331, 341, 351, 381, 385, 451.

A grade of C or better and a minimum 2.75 GPA is required for courses fulfilling a minor in statistics.

Doctoral Level A student pursuing a doctor of philosophy in the Eberly College of Arts and Sciences may complete a minor in statistics by completing one of the following options.

Minor in Applied Statistics

- MATH 15, 16, (or equiv.) and knowledge of a high-level programming language.
- Fifteen hours from STAT 312, 313, 331, 341, 351, 361, 362, 381, 385, 451.

A grade of C or better and a minimum 3.0 GPA is required for courses fulfilling a minor in statistics. A statistics faculty member must be on the student’s graduate committee. Statistics must be one of the areas covered in the student’s comprehensive examination.
Minor in Mathematical Statistics

- MATH 15, 16, 17, (or equiv.) and knowledge of a high-level programming language.
- STAT 361, 362.
- Nine hours from STAT 312, 313, 331, 341, 351, 381, 385, 451.

A grade of C or better and a minimum 3.0 GPA is required for courses fulfilling a minor in statistics. A statistics faculty member must be on the student's graduate committee. Statistics must be one of the areas covered in the student’s comprehensive examination.

Statistics (STAT)


205. Introductory Probability and Statistical Inference. I. 3 Hr. PR: MATH 128 or equiv. Probability, random variables, expectation, random sampling, descriptive statistics, sampling distributions, estimation, hypothesis testing, linear regression, nonparametric statistics.

212. Intermediate Statistical Methods. I, II. 3 Hr. PR: STAT 101 or STAT 201 or equiv. Extension of basic concepts of statistical inference: estimation and hypothesis testing for more than two populations, multiple regression and correlation, curvilinear regression, analysis of variance and covariance.

213. Introductory Design and Analysis. II. 3 Hr. PR: STAT 212. Introduction to the linear model, the complete and fractional factorial experiment, and the completely random, randomized complete block, Latin square, and split-plot experimental designs.


217. Industrial Statistics. II. 3 Hr. PR: STAT 201 or Equiv. Statistical methods for solving industrial problems including statistical quality and process control, reliability modeling, sequential analysis, and time series analysis. Methodology for these problems will utilize a statistical software program.

221. Statistical Analysis System (SAS). I. 3 Hr. PR: (STAT 101 or STAT 201 or equiv.) and (CS 15 or equiv.) Introduction to the use of the Statistical Analysis System (SAS), a statistical computer program. Students will perform statistical data analysis, data file modifications, and statistical report writing.

231. Sampling Methods. I. 3 Hr. PR: STAT 101 or 201 or equiv. Methods of sampling from finite populations, choice of sampling unit, and sample survey design. Estimation of confidence limits and optimum sample size. Single and multistage sampling procedures.


311. *Statistical Methods 1.* I, II. 3 Hr. PR: MATH 3. Statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regression, correlation, transformations, F and Chi-square distributions, analysis of variance and multiple comparisons. (Equivalent to EDP 311 and PSYC 311.)

312. *Statistical Methods 2.* I, II. 3 Hr. PR: STAT 311 or equivalent. Completely random, randomized complete block, Latin square and split-plot experimental designs. Unplanned and planned multiple and orthogonal comparisons for qualitative and quantitative treatments and factorial arrangements. Multiple linear regression and covariance analysis. (Equivalent to EDP 312 and PSYC 312.)

313. *Design of Experiments.* II. 3 Hr. PR: STAT 312 or equivalent. Expected mean squares, power of tests and relative efficiency for various experimental designs. Fixed, random, and mixed models. Use of sub-sampling, covariance, and confounding to increase power and efficiency.

320. *Special Topics.* I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

331. *Sampling Theory and Methods.* I. 3 Hr. PR: STAT 311 or equiv. Survey components, methods of sampling for finite and infinite populations, single and multi-stage procedures, confidence limits for estimating population parameters; sample size determination, area sampling, sources of survey error, a "hands on" project in survey sampling is included.

341. *Applied Multivariate Analysis.* I. 3 Hr. PR: STAT 311 or equivalent. Introduction to Euclidean geometry and matrix algebra; multiple and multivariate regression including multiple and canonical correlation; the k-sample problem including discriminant and canonical analysis; and structuring data by factor analysis, cluster analysis, and multidimensional scaling.


362. *Theory of Statistics 2.* II. 3 Hr. PR: STAT 361. Techniques of point and interval estimation, properties of estimates including bias, consistency, efficiency, and sufficiency; hypothesis testing including likelihood ratio tests and Neyman-Pearson Lemma; Bayesian procedures, analysis of variance and nonparametrics.

371. *Introduction to Exploratory Data Analysis.* I. (Alternate years.) 3 Hr. PR: An introductory statistics course. Basic ways in which observations given in counted and measured form are approached. Pictorial and arithmetic techniques of display and discovery. Methods employed are robust, graphical, and informal. Applications to social and natural sciences.

381. *Nonparametric Statistics.* II. 3 Hr. PR: STAT 311 or equivalent. Distribution-free procedures of statistical inference. Location and scale tests for homogeneity with two or more samples (related or independent); tests against general alternatives.

385. *Categorical Data Analysis.* II. (Alternate years.) 3 Hr. PR: STAT 201 or equiv. Bivariate association for ordinal and nominal variables, models for categorical or continuous responses as a special case of generalized linear models, methods for repeated measurement data, exact small-sample procedures.

390. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of statistics. Note: This courses is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)

392. Analysis of Experiments. II. 1 Hr. PR: Consent. Statistical consulting and data analysis.

396. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and student body of his/her program.

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

441. Multivariate Statistical Theory. II. (Alternate years.) 3 Hr. PR: STAT 341, 361 or consent. Euclidean vector space theory and matrix algebra, multivariate normal sampling theory, the theory of the multivariate general linear hypothesis including multivariate regression, MANOVA, and MANCOVA, and the theory of factor analysis.


490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of statistics. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)

491. Professional Field Experience. I, II, S. 1-18 Hr. PR: Consent (may be repeated up to a maximum of 18 hours). Prearranged experimental learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.

492. Directed Study. I, II, S. 1-3 Hr. Directed study, reading, and or research.


494. Seminar. I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.
The Center for Women’s Studies has a University-wide mission to coordinate interdisciplinary teaching and research on women and gender. The Center sponsors lectures, films, colloquia, symposia, conferences, faculty development programs, and scholarships.

Although there is currently no independent graduate degree in women’s studies available at West Virginia University, students interested in doing graduate work in women’s studies can apply for admission to the master of arts in liberal studies program (M.A.L.S.), offered through the Eberly College of Arts and Sciences. This interdisciplinary program provides an opportunity for students to develop their course work and project in the framework of women’s studies scholarship. Interested students should become familiar with the requirements of M.A.L.S. as described on page 159 and contact the M.A.L.S. director before contacting the Center.

Undergraduate Certificate in Women’s Studies

Students can also choose to complete an undergraduate certificate in women’s studies in conjunction with the M.A.L.S. degree or any other graduate degree. The certificate, a 18-hour program with two required and four elective courses, allows the student to design an individualized certificate or choose to focus on an area of concentration such as Women’s Literature or Women’s Health and Sexuality. The certificate constitutes a valuable credential in a variety of careers necessitating an understanding of women’s issues. To enroll in the certificate program, students must register with the program specialist in the Center for Women’s Studies.

Financial Assistance

Some financial assistance is available to students doing graduate work in women’s studies. Two scholarships are available to students doing graduate course work or research in women’s studies, the Winifred South Knutti Graduate Scholarship in Women’s Studies and the Velma M. Miller Women’s Studies Graduate Scholar Award. Teaching assistantships may also be available.

For more information, visit the Center’s web site at http://www.as.wvu.edu/wmst/ or contact the Center for Women’s Studies, 218 Eiesland Hall, PO Box 6450, Morgantown, WV 26506-6450. E-mail wvwmst@wvu.edu. Telephone (304) 293-2339.

In addition to the women’s studies courses listed below, other courses focusing on women and gender as well as independent study opportunities are available in several University departments.

Women’s Studies (WMST)

290. Independent Study. I, II, S. 1-3 hr. Faculty supervised study of topics not available through regular course offerings.

350. Sexuality in American Culture. II. 3 Hr. Explores changes in sexuality in the United States from the seventeenth century to the present, examining social and cultural struggles and debates over the meaning of sexuality and sexual orientation in American society. Analyzes research methodologies appropriate to this field. (Credit cannot be received for both 150 and 350.)
360. *Women’s Movements Since 1960.* 3 Hr. Contemporary women’s movements; comparison of U.S. Second and Third Wave feminisms; critique of differing feminist theories; impact of race, class, sexual orientation, and controversies around pornography, rape, and reproductive rights. (Four additional contact hours/term.)

391 A-Z. *Special Topics.* I, II, S. 1-6 Hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.


490. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Womens Studies. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

492. *Directed Study.* I, II, S. 1-6 Hr. Directed study, reading and or research.

493. *Special Topics.* I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. *Seminar.* I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.


498. *Thesis or Dissertation.* I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis or dissertations. (Grading may be S/U.)

499. *Graduate Colloquium.* I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s *Graduate Colloquium,* to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
The College of Business and Economics was founded in November of 1951 and graduated its first class in the spring of 1953. Since that time, the College of Business and Economics has become one of the largest colleges at West Virginia University. In 1954, the College became fully accredited by the American Assembly of Collegiate Schools of Business, the highest level of business accreditation.

In 1990, the new College of Business and Economics building was completed on the site of Old Mountaineer Stadium on the Downtown Campus adjacent to historic Woodburn Hall. The four-story facility houses modern classrooms, two auditoriums, state-of-the-art computer laboratories, and space for the College’s research and service centers.

Our mission centers around educating students to prepare them for professional careers in business, industry, government, and education. The College administration and faculty work with the WVU Career Services Center and private employers to place our graduates in rewarding professional positions.

The master of arts and doctor of philosophy degrees in economics prepare students for careers in business, government, and higher education. Students receive in-depth education in the concepts and methods of economic analysis and also study business analysis, public policy, mathematical economics, labor economics, resource economics, public finance economics, regional and urban economics, monetary economics, international economics, and econometrics. These programs are well-suited to students with undergraduate degrees in economics, finance, mathematics, statistics, public policy, history, and other humanities majors.

The master of business administration program is especially attractive for the student with a non-business undergraduate major since no business courses are prerequisite for admission. Course work includes an even exposure to all of the functional areas of management and provides a broad, general management orientation. The M.B.A. program is also available part time on evenings or weekends at various locations throughout West Virginia.

The master of science program in industrial relations provides a flexible, interdisciplinary education for the student desiring a career in human resources management (industrial relations). All undergraduate majors are acceptable. Areas of study may include the functional areas of business, counseling, law, safety, and others.

The master of professional accountancy program is available to students with undergraduate degrees in accounting. The program follows the AICPA’s recommendations for a five-year accounting education and meets the requirements of all states with 150-hour requirements for CPA certification. The master’s programs can be completed by a full-time student in one to one and a half years. Specific information about graduate programs in the College of Business and Economics may be obtained from Office of Graduate Programs, 340 Business and Economics Building, P.O. Box 6025, West Virginia University, Morgantown, WV 26506-6025. Telephone (304) 293-5408.
Overview of Programs

The M.A. and Ph.D. degrees in economics prepare students for careers in business, government, and higher education. Students receive in-depth education in the concepts and methods of economic analysis and also study business analysis, public policy, mathematical economics, labor economics, resource economics, public finance economics, regional and urban economics, monetary economics, international economics, and econometrics. These programs are well-suited to students with undergraduate degrees in economics, finance, mathematics, statistics, public policy, history, and other humanities majors.

The M.B.A. program is especially attractive for the student with a non-business undergraduate major since no business courses are prerequisite for admission. Course work includes an even exposure to all of the functional areas of management and provides a broad, general management orientation. The M.B.A. program is also available part time on evenings or weekends at various locations throughout West Virginia.

The master of science program in industrial relations (M.S.I.R.) provides a flexible, interdisciplinary education for the student desiring a career in human resources management (industrial relations). All undergraduate majors are acceptable. Areas of study may include the functional areas of business, counseling, law, safety, sociology, and others.

The master of professional accountancy (M.P.A.) program is available to students with undergraduate degrees in accounting. The program follows the AICPA's recommendations for a five-year accounting education and meets the requirements of all states with 150-hour requirements for C.P.A. certification. The master's programs can be completed by a full-time student in one year.

Special Requirements

The M.B.A., M.P.A., and M.S. in industrial relations and the M.A. and Ph.D. in economics programs require a bachelor's degree from an accredited institution. Overall grade-point average is considered, with additional attention given to the grade-point average achieved in the last sixty hours of course work. The Graduate Management Admissions Test (GMAT) is required for all of the business graduate programs. For the M.S.I.R. program, the Graduate Record Examination (GRE) may be substituted for the GMAT. The economics programs require the GRE. A resume is a requirement of the admission process for all programs.

Graduate Faculty

† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.

Accounting

Professors

*Jay H. Coats, Ph.D. (U. Pitt.). Cost/managerial accounting, Microcomputers in accounting,
Accounting education.
accounting.
*Adolph A. Neidermeyer, Ph.D. (U. Iowa). Federal and state income taxation, Estate planning,
Financial accounting.
†David B. Pariser, Ph.D. (So. Ill.). CPA, CMA, CCA, CGFM. Financial accounting, Governmental
†Ann B. Pushkin, Ph.D. (VPI&SU). CPA. Auditing, EDP auditing, Accounting information systems,
Microcomputer applications.
†G. Stevenson Smith, Ph.D. (U. Ark.). CPA, CMA, CCA. Not-for-profit and governmental
accounting, Cost accounting, Managerial accounting.
Associate Professor
Bonnie W. Morris, Ph.D. (U. Pitt.). CPA. Accounting information systems, Expert systems and artificial intelligence, Internal auditing.

Assistant Professors

Economics

Professors
Ronald J. Balvers, Ph.D. (U. Pitt.). Financial economics, Macroeconomic theory.
Ming-jeng Hwang, Ph.D. (Texas A&M U.). General theory, Urban and regional economics, Mathematical economics.

Adjunct Professors

Associate Professors

Adjunct Associate Professor

Assistant Professors
Sudeshna Bandyopadhyay, Ph.D. (U. Md.). Labor economics.

Finance

Professors
Frederick C. Scherr, Ph.D. (U. Pitt.). Corporate finance, Capital markets.

Associate Professors
Ashok Abbott, Ph.D. (VPI&SU). Financial institutions, Corporate finance, Mergers and acquisitions.
Victor Chow, Ph.D. (U. Ala.). Corporate finance, Portfolio management.
Terry L. Rose, Ph.D. (U. of Ill.). Insurance, Risk management.

Assistant Professors

Management and Industrial Relations

Professors
Jack A. Fuller, Ph.D. (U. Ark.). Heuristic decision making, Production planning and control, Systems analysis and design.
Given the changing environment in both the public and private sectors of the economy, many accountants will need an educational background that goes beyond that obtained in an undergraduate degree program. Accountants must be proficient in applying professional concepts and principles to a wide variety of existing situations and also have the ability to adapt to new standards and methods of doing business. Competing in such an environment requires a solid technical foundation, an adeptness in analyzing multifarious business situations, and the aptitude to effectively communicate recommended solutions and conclusions. Thus, the objectives of the master of professional accountancy degree are as follows:
• Enhancement of the knowledge base acquired in an undergraduate accounting program with respect to professional concepts, standards, and principles and the ability to apply them.
• Development of higher level critical thinking, problem solving, and other creative skills beyond those attributable to undergraduate education.
• Enhancement of an understanding of ethical, legal, and regulatory issues with respect to business decisions.
• Continued development of an awareness of the impact of the global environment on business decisions.
• Enhancement of skills applicable to analyzing diverse and complex business situations.
• Comprehension and evaluation of the economic, political, and societal effects of accounting techniques and authoritative pronouncements.
• Creation of an attitude conducive to lifelong learning.
• Continued development of listening, writing, and oral communication skills.

The accounting programs at WVU have separate accounting accreditation by the AACSB—The International Association for Management Education. WVU has the only separately accredited accounting programs in West Virginia. At the date of this printing, there are 76 universities in the nation that have achieved this status at both the undergraduate and graduate levels.

Requirements to Sit for CPA Examination
The specific requirements to sit for the CPA examination vary with each State Board of Accountancy. The requirements in all states are subject to change for each examination. Students should carefully review their undergraduate and M.P.A. course work to ensure all CPA examination requirements will be met for their state. The web sites of the various Boards of Accountancy appear below.

February 2000 is the last application date for students to sit for the West Virginia CPA examination without meeting the 150-hour requirement of the WV Board of Accountancy. Students must have completed their bachelor’s degree by the date of application.

For more information on specific requirements to become a CPA in various states, visit these web sites:
• www.state.wv.us/wvboa
  West Virginia Board of Accountancy requirements to sit for examination and become a CPA in West Virginia.
• www.nasba.org
  National Association of State Boards of Accountancy for addresses of all state Boards of Accountancy requirements to sit for examination and become a CPA by state.
• www.aicpa.org
  Content specification of CPA examination and related information.

Financial Assistance
Financial Aid
WVU has a strong comprehensive financial aid program to help you finance your education. Although the cost to attend WVU is relatively low, more than half of our students qualify for financial aid awarded on the basis of need, merit, or a combination of the two. The free application for Federal Student Aid (FASA) must be filled out before March 1. Contact the Student Financial Aid Office at (304) 293-5242 for more information.
Part-Time Employment

The Department of Accounting employs several full-time M.P.A. students on an hourly basis as accounting course assistants. The department also has an active program to assist students in obtaining part-time accounting positions within the University and with local businesses. If you are interested in part-time employment, please complete a Graduate Student Worker Form. As at most universities, tuition waivers and assistantships are not available at the master’s degree level.

Program

The M.P.A. program is a 30-hour program which can be completed in approximately 10 months of full-time study or 22 months half-time in Charleston and Morgantown. The program requires that the student have an undergraduate degree with a minimum of 24 hours in accounting. Work experience is not a requirement for admission. Students may enter the program on either a full-time or half-time basis. Fall is the preferred starting date. Careful selection of degree candidates limits the size of classes, leads to high quality efforts in the program, and permits frequent and direct contact between students and faculty. The full-time program consists of two 12-hour semesters and one six-week summer term. The courses are taught on Monday through Thursday during the regular semester to encourage outside employment experience.

No thesis is required in the program, but communication skills are emphasized in all courses. Extensive use is made of microcomputers in accounting applications.

Admission to Program

Admission to the M.P.A. program is determined by a committee of accounting faculty members. The committee acts upon individual applications within a short period of time after receipt of the completed application. Students currently in an undergraduate program should apply at the beginning of their seventh semester; admission is based upon grades earned during the first six semesters of undergraduate study.

The admission committee seeks applicants who possess a 3.0 cumulative grade-point average (calculated on all college courses completed or the last 60 hours); an accounting grade-point average of 3.0 (calculated exclusive of principles, proctoring, internship, and independent study courses); and GMAT scores in the top 50 percent of each part of the exam. Candidates who meet most of the above requirements will still be considered.

The above requirements apply to both full and half-time student applicants. As an AACSB-accredited program in accounting, these requirements must also be met by non-degree students who desire to take any of the graduate courses required by the M.P.A. program. Students are not permitted to take M.P.A. courses under a trial or provisional admittance. The GPA and GMAT requirements must be met before enrolling in any M.P.A. courses.

Students who possess appropriate GMAT scores and grade-point averages but do not possess a bachelor’s degree with a major in accounting (or equivalent) may apply for non-degree or provisional status while they are taking undergraduate prerequisite courses in accounting and business. The MPA degree is designed to follow an undergraduate degree in business. Students without a bachelor’s degree with a major in accounting (or equivalent) may be required to take additional business and accounting courses.

Prerequisites

To assure that all students in the program have the same foundation in business, the following prerequisite courses, or their equivalent, must be completed before enrolling in M.P.A. graduate courses: principles of accounting (six hours), intermediate accounting (six hours), advanced accounting, cost accounting, income tax accounting, auditing, principles of economics (six hours), principles of marketing, principles of management,
principles of finance, statistics, business law, and computer science. A student without the necessary prerequisite courses may be approved to enter the M.P.A. program as a provisional graduate student.

Master of Professional Accountancy

Courses will be offered in Morgantown in the College of Business and Economics Building and at the WVU Building in the Charleston Area Medical Center in Charleston. Classes for the semester begin August 25.

MPA Course Offerings

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 330 Financial Accounting Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 333 Income Taxes and Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 391A Electronic Commerce and Internet Security</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 391B Mergers and Acquisitions</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 391C Governmental and Not for Profit Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 391D Information Technology Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 391E Assurance Services and Professional Standards</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 391F Accounting/Business Consulting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT/BUS Accounting/Business course to be determined</td>
<td>3</td>
</tr>
<tr>
<td>ECON 591 Economics for Decision Makers</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Note: Students who have not completed Accounting Systems (ACCT 211, 3 hours) and Business Law and the CPA (BLAW 213, 3 hours) as part of their undergraduate program must also take these two courses in addition to the above 30 hours.

Academic Standards

The M.P.A. program requires that the student maintain a grade-point average of at least 3.0 on all work taken as a graduate student while enrolled in the College of Business and Economics, including prescribed work taken to remove undergraduate deficiencies. A student whose cumulative grade-point average falls below 2.75 will be placed on probation. If the average is not brought up to 2.75 by the end of the following semester, the student will be suspended from the program. A grade below C in more than one course taken while enrolled as a graduate student will result in suspension from the graduate program. Complete information about the M.P.A. program may be obtained from www.be.wvu.edu.

Accounting (ACCT)

200 A-Z. Special Topics. 1-6 Hr. PR: ACCT 111 or consent. Special topics relevant to accounting. (Maximum of nine semester hours in any or all courses numbered 200 offered by the College of Business and Economics may be applied toward bachelor’s and master’s degrees.)

210. Advanced Accounting. 3 Hr. PR: ACCT 112. Accounting for business combinations, consolidations, foreign currency translation, governmental and not-for-profit entities, and equity method investment accounting.

211. Accounting Systems. 3 Hr. PR: ACCT 110 and BCOR 160. Analysis of data processing fundamentals and information systems analysis, design, and implementation, including necessary computer hardware and software components with particular reference to accounting information systems and the controls necessary therein.

213. Income Tax Accounting. 3 Hr. PR: ACCT 111 or ACCT 116. Overview and survey of Federal income tax principles for individuals and simple corporations with emphasis on gross income, exemptions and deductions, capital gains and losses, and tax credits.
214. Income Tax Accounting. 3 Hr. PR: ACCT 213. The study of federal income tax treatment of partnerships, corporations and estates, and the treatment of those property transfers subject to the federal gift tax, together with an introduction to tax research and tax procedure.


330. Financial Accounting Theory and Practice. 3 Hr. PR: ACCT 112. Comprehensive examination of financial accounting theory as established by the opinions, statements, and interpretation of professional organizations with special emphasis on their application and problem solving.


332. Governmental and Not for Profit Accounting. 3 Hr. PR: Consent. Theory and practice of accounting for governmental and not-for-profit entities with an emphasis on the conceptual foundation of fund accounting, budgetary control, and accountability.

333. Income Taxes and Business Decisions. 3 Hr. PR: ACCT 213. Advanced federal income-tax problems with emphasis on tax planning for business decisions and tax research methodology.


338. Controllership. 3 Hr. PR: Consent. Examination of the role of the controller in large entities in planning, measuring, evaluating, and controlling performance and in reporting to stockholders and governmental agencies.

339. Accounting/Business Consulting. 3 Hr. PR: Consent. Translating complex information into critical knowledge for engagements beyond basic financial/managerial accounting, assurance, and tax services. Consulting experience examined through exposure to consulting professionals, cases and/or a business simulation.

340. Reporting Practices and Problems. 3 Hr. PR: Consent. Evaluation of financial reporting practices and trends, including an examination of the reporting requirements of the SEC and other regulatory agencies. Practitioners will be used extensively for class discussion and presentations.

341. Information Technology Auditing. 3 Hr. PR: Consent Information technology auditing techniques, issues, and current topics, including risk assessment, general and application control testing, computer assisted audit tools, and techniques and testing of databases and local area networks.

345. Assurance Services and Professional Standards. 3 Hr. PR: Consent. Professional objectives, principles, and standards for assurance services, including risk assessment, attestation reports, and related communications. Case studies covering sampling, professional ethics, legal liability and reporting.


397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

490. Teaching Practicum. 1-3 Hr.

492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Business Administration
Donald R. Adams, Jr., Director of Graduate Programs
340 Business and Economics Building
www.be.wvu.edu/grad/mba/index.htm

Degree Offered: Master of Business Administration

The master of business administration program is accredited by the American Assembly of Collegiate Schools of Business (AACSB). It is offered as a full-time, day-class program in Morgantown and as a part-time program in Beckley, Bluefield, Charleston, Lewisburg, Morgantown, Parkersburg, Shepherdstown, and Wheeling. The standards of excellence that support accreditation by the AACSB are maintained at all instructional sites.

The M.B.A. degree program recognizes the need for a manager of the future to be able to anticipate and recognize change and then to manage resources advantageously in that environment. Thus, the curriculum emphasizes a general, broad-based approach to graduate education in management which provides the student with the qualitative and quantitative skills necessary for a manager to succeed in such an environment. The program develops a managerial perspective that is primarily line as opposed to staff oriented and is relevant to those in both private and public organizations.

Credit Hours
The plan of study requires a total of 48 semester hours of graduate credit. The program is designed for individuals with varying educational and professional backgrounds. No prior course work in business administration is required as a condition of admission to the program. No master’s thesis is required for completion of the degree.
The full-time M.B.A. degree program is completed in 13 1/2 months of full-time study on the Morgantown campus. A full-time student can enter the program only on July 1 of each year and graduate in mid-August of the following year. Students may enter the part-time M.B.A. program in designated semesters. A minimum of two and a half years is required for the part-time student to complete the program.

Admission

Full-time To gain admission to the full-time M.B.A. program, an applicant must have a bachelor’s degree from an accredited institution. The full-time M.B.A. program is designed for students with non-business undergraduate majors. Admissions decisions are based on an assessment of expected success in the program shown by the application materials and on space available. The admissions committee considers grade-point average in all previous college-level work and also the grade-point average in the last 60 hours of course work. The Graduate Management Admissions Test (GMAT) is required. Each applicant must submit a resume with the application. The admissions committee takes no action on an application for admission to the full-time program until the applicant submits a GMAT score.

Part-time To gain admission to the part-time M.B.A. program, an applicant must have a bachelor’s degree in any discipline from an accredited institution. The Graduate Management Admissions Test (GMAT) is required. Each applicant must submit a resume showing prior work experience. Admissions decisions are based on assessments of expected success in the program as shown by the application materials and on space available. For applicants with less than five years of work experience, the GMAT and the undergraduate record provide the strongest indicators of success. For applicants with five or more years of experience, the admissions committee will place greater emphasis on the work history. For applicants with masters or doctoral degrees, the admissions committee may waive the GMAT requirement.

Transcripts and Deadlines

Applications for admission to the M.B.A. program and official transcripts of all prior academic work should be submitted to the WVU Office of Admissions and Records as early as possible. Applicants who have attended institutions other than WVU must request the registrar or records office of those institutions to forward a complete official transcript directly to the WVU Office of Admissions and Records. For the full-time program, the deadline for receipt of applications and transcripts in the College’s Office of Graduate Programs is March 1. For the part-time program, the deadline is one month prior to the starting date requested. Admission to the program is competitive and subject to space being available.

Financial Aid

University scholarships are available on a competitive basis to minority students. Additional information and application forms can be obtained from the director of graduate programs.

M.B.A. Program

The M.B.A. degree program requires 48 hours of graduate credit, including the following courses:

- Accounting 311 Financial Accounting for Decision Making
- Accounting 321 Managerial Control
- Business Law 311 Legal and Regulatory Environment
- Economics 317 Economic Decision Making
Economics 318 Economic Policy
Economics 319 Applied Business and Economics Statistics
Finance 311 Managerial Finance
Finance 321 Corporate Financial Administration
Management 301 Organizational Behavior and Ethics
Management 303 Introduction to Management Science
Management 311 Management Information Systems
Management 321 Operations Management/Applied Quantitative Analysis
Management 325 Seminar in Organizational Processes
Management 351 Policy and Strategy
Marketing 311 Marketing Management
Marketing 321 Marketing Strategy
Seminar
Seminar

Academic Standards
The M.B.A. requires that the candidate achieve a cumulative grade-point average of at least 3.0 on all work counting toward the graduate degree. A regular graduate student whose cumulative grade-point average falls below 2.75 will be placed on probation. If the average is not brought up to 2.75 by the end of the following semester, the student will be suspended from the program. A grade below C in more than one course taken while enrolled as a graduate student will result in suspension from the program. In addition, the student must maintain a 3.0 average in all work counting toward the graduate degree.

Part-Time Program
Students in the part-time program are subject to the same requirements and restrictions as students enrolled in the full-time program. Classes in the part-time program are taught by graduate faculty members in the College. The M.B.A. part-time program is offered in its entirety in Beckley, Bluefield, Charleston, Lewisburg, Morgantown, Parkersburg, Shepherdstown, and Wheeling. Weekend classes normally meet on Friday evenings (7:00 to 10:00) and Saturdays (9:00 A.M. to 3:30 P.M.). A three credit-hour course normally meets for five weekends and a two credit-hour course for three weekends. Weekend classes may have examinations scheduled on weekday evenings. Weekday classes normally meet one or two evenings per week and on occasional Saturdays.

Accounting (ACCT)
200 A-Z. Special Topics. 1-6 Hr. PR: ACCT 111 or consent. Special topics relevant to accounting. (Maximum of nine semester hours in any or all courses numbered 200 offered by the College of Business and Economics may be applied toward bachelor’s and master’s degrees.)

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333. Income Taxes and Business Decisions. 3 Hr. PR: ACCT 213. Advanced federal income-tax problems with emphasis on tax planning for business decisions and tax research methodology.

336. Electronic Commerce and Internet Security. 3 Hr. PR: Consent. Electronic commerce business models. Real options evaluations, accounting distinctions, and case analysis of Web-based business models, with emphasis on the Internet security risks to the integrity of financial information.

338. Controllership. 3 Hr. PR: Consent. Examination of the role of the controller in large entities in planning, measuring, evaluating, and controlling performance and in reporting to stockholders and governmental agencies.

339. Accounting/Business Consulting. 3 Hr. PR: Consent. Translating complex information into critical knowledge for engagements beyond basic financial/managerial accounting, assurance, and tax services. Consulting experience examined through exposure to consulting professionals, cases and/or a business simulation.

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498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Economics (ECON)

200 A-Z. Special Topics. I, II, S. 1-6 Hr. PR: Consent Investigation of topics not covered in regularly scheduled courses.

211. Intermediate Micro Theory. I, II. 3 Hr. PR: ECON 54. Consumer choice and demand; price and output determination of the firm, and resource allocation, under different market structures; welfare economics, externalities, public goods, and market failure; general equilibrium; other topics.

212. Intermediate Macro Theory. I, II. 3 Hr. PR: ECON 54 and ECON 55. Forces which determine the level of income, employment, output, the inflation rate, and the balance of trade. Particular attention to consumer behavior, investment determination, and government fiscal and monetary policy.

213. Economic Development. I or II. 3 Hr. PR: ECON 54 and ECON 55. The problems, changes, and principal policy issues faced by non-industrialized countries.

216. History of Economic Thought. I or II. 3 Hr. PR: ECON 54 and ECON 55. Economic ideas in perspective of historic development.

220. Introduction to Mathematical Economics. I or II. 3 Hr. PR: ECON 54 and ECON 55 and (MATH 128 or MATH 15 or MATH 16.) Principal mathematical techniques including set operation, matrix algebra, differential and integral calculus employed in economic analysis. Particular attention given to static (or equilibrium) analysis, comparative-static analysis, and optimization problems in economics.
225. Applied Business and Economic Statistics. I, II. 3 Hr. PR: ECON 125 or STAT 101. Continuation of ECON 125. Principal statistical methods used in applied business and economic research including multiple regression, index numbers, time series analysis, forecasting models and methods, and sampling design.


241. Public Economics. I or II. 3 Hr. PR: ECON 54 and ECON 55. Economic roles of the public sector. Particular attention to market failure, redistributing income, the financing of public sector activities, relationships between federal, state, and local governments, and public choice.

245. Government and Business. I or II. 3 Hr. PR: ECON 54 and ECON 55. Examination of market structure, conduct, and performance. Analysis of market regulation including antitrust laws and regulation of monopolies.

246. Transportation Economics. 3 Hr. PR: ECON 54 and ECON 55. Economic and institutional analysis of the domestic transportation system of the United States. Topics include role of transportation, carrier characteristics and services, transportation rates and costs, regulation of transportation.


255. Regional Economics. I. 3 Hr. PR: ECON 54 and ECON 55. Analysis of the regional economy's spatial dimension, emphasizing interregional capital and labor mobility, the role of cities, objectives and issues of regional policy, lagging regions and Appalachia, growth poles, and regional growth and income distribution.

257. Urban Economics. I or II. 3 Hr. PR: ECON 54 and ECON 55. Analyzes growth, decline, and socioeconomic problems of cities. Topics include the development of cities, urban spatial structure and land-use patterns, poverty and discrimination, housing, urban transportation and congestion, local government structure, and urban fiscal problems.

260. Labor Economics. I or II. 3 Hr. PR: ECON 54 and ECON 55. Labor market analysis. Topics include wage and employment determination, human capital theory, discrimination, unemployment, migration, effects of unions and government regulation, and life-cycle patterns of work.

270. American Economic History. I or II. 3 Hr. PR: ECON 54 and ECON 55. Central issues in the development of the American economy.

299. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.


311. Advanced Micro Theory 2. 4 Hr. PR: ECON 310. General equilibrium analysis, distribution theory, welfare economics.

312. Advanced Macro Theory 1. 3 Hr. PR: Department approval. Classical, Keynesian, and modern macroeconomic theories.

313. Advanced Macro Theory 2. 3 Hr. PR: ECON 312. Models of economic growth and fluctuations, and other advanced topics in macroeconomic theory.
316. **History of Economic Doctrines and Analysis.** 3 Hr. PR: ECON 310 and graduate standing or consent. Writings of the major figures in the development of economic doctrines and analysis.

320. **Mathematical Economics.** 3 Hr. PR: Departmental approval. Mathematics used in economics.

325. **Econometrics 1.** 3 Hr. PR: ECON 320. Mathematical statistics, including probability, mathematical expectation, distributions. Linear regression, ordinary least squares, and simple extensions. Students will use a computer to analyze data.

326. **Econometrics 2.** 3 Hr. PR: ECON 325. Econometric methods used by practicing economist. Includes simultaneous equations, asymptotic properties of estimators, and generalizations of and alternatives to least squares estimation. Also may include qualitative response, panel data, nonlinear, spatial, and time series models.


329. **Econometrics 3.** 3 Hr. PR: ECON 326. Completes the graduate econometrics sequence. Topics may include computational methods and time series, spatial, nonlinear, qualitative response, and panel data models.

330. **Monetary Economics 1.** 3 Hr. PR: ECON 312. Sources and determinants of supply of money; demand for money for transactions and speculative purposes; general equilibrium of money, interest, prices, and output; role of money in policy.

334. **Monetary Economics 2.** 3 Hr. PR: ECON 330. Further topics in monetary economics.

335. **Portfolio Theory.** 3 Hr. PR: ECON 310 and ECON 312. Basics of decision making under risk. Portfolio choice under various utility and returns specifications. Asset allocation over time.

336. **Asset Pricing.** 3 Hr. PR: ECON 335. Theories of the determination of prices and returns in financial markets. Properties of general static and intertemporal asset pricing models and determinants of equilibrium returns in specific general equilibrium models.

339. **Seminar in Financial Economics.** 3 Hr. PR: ECON 335 and ECON 336 or consent. Covers advanced topics in financial economics such as pricing of derivatives and issues in corporate finance.

340. **Public Economics 1.** 3 Hr. PR: ECON 310. Economic role of government in a mixed economy with regard to topics such as resource allocation and distribution of income, social choice mechanisms, fiscal federalism, and revenue.

343. **Economic Analysis of Public Policies.** 3 Hr. Application of economic analysis to questions of public policy. Consideration of problems of public goods and other market failures and usefulness of cost-benefit analysis to policymaking. (Equivalent to POLS 331.)

344. **Public Economics 2.** 3 Hr. PR: ECON 340. Continuation of public economics.

345. **Industrial Organization.** 3 Hr. PR: ECON 310 and graduate standing or consent. Economic analysis of market structure, conduct, and performance; in-depth evaluation of markets and industries in the United States and the effect of government intervention on firm behavior.

349. **Public Regulation of Business.** I or II. 3 Hr. Economic analysis of regulation of specific industries such as public utilities.

350. **International Trade.** 3 Hr. PR: ECON 310. Contemporary theories of international trade; analysis of current problems in world trade.
354. *International Macroeconomics.* 3 Hr. PR: ECON 312 Current theories and policies concerning balance of payments, international capital movements, and foreign exchange, and their relation to the macro economy.

355. *Advanced Regional Economics.* 3 Hr. PR: ECON 310 and graduate standing or consent. Regional income and flow of funds estimation, regional cyclical behavior and multiplier analysis, industrial location and analysis, techniques of regional input-output measurement, impact of local government reorganization on regional public service and economic development.

357. *Advanced Urban Economics.* 3 Hr. PR: ECON 310. Theory, policy, and empirical research regarding growth and decline of cities, urban spatial structure and land-use patterns, intrametropolitan employment location, urban transportation, housing, housing market discrimination, local government structure, fiscal problems, and urban redevelopment.

358. *Spatial Economics.* 3 Hr. PR: ECON 310 or consent. Spatial dimension incorporated into the study of economic activity; spatial competition, market area analysis, locational equilibrium analysis, general spatial equilibrium.

359. *Seminar in Regional Economics.* 3 Hr.

360. *Advanced Labor Economics 1.* 3 Hr. PR: ECON 310. Topics in advanced labor market analysis including structure of wages, investment in human capital, discrimination, effects of unions, and government regulation and life-cycle issues.


370. *Economic History.* 3 Hr. Examination of the methods of research and issues in economic history of the United States.

374. *Seminar in Economic History.* 3 Hr.


384. *Environmental Economics.* 3 Hr. PR: ECON 380. Examination of the theoretical and empirical literature dealing with externalities (pollution), the relationships between pollution and social costs, the relationships between energy production and environmental quality, and the optimal strategies for pollution abatement.

390. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

391 A-Z. *Advanced Topics.* 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. *Research.* 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

409. *Research Design and Methodology.* I, II. 1-3 Hr. PR: Departmental approval is required. Basic research approaches based on examples from the student's own work, papers presented at the departmental research seminar series, and economics literature in general.

490. *Teaching Practicum.* 1-3 Hr. PR: Consent. Supervised practice in college teaching of economics. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)
491. A-Z. **Advanced Topics.** 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

493. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

495. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. **Thesis.** 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's **Graduate Colloquium,** to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

**Finance (FIN)**


212. **Working Capital Management.** 3 Hr. PR: BCOR 170 and ECON 125 and PR or Conc: FIN 112 or FIN 311. Management of current assets and liabilities. Topics include the management of cash, marketable securities, accounts receivable, inventories, trade accounts payable, and short-term bank borrowings. Decision models are used extensively.

216. **Risk Management.** 3 Hr. PR: FIN 115, Coreq: FIN 112. Transferable risks with which the entrepreneur must deal. Emphasis on the process by which decisions are made for handling these risks, including an examination of contributions and limitations of insurance system.

217. **Employee Benefit Plans.** 3 Hr. PR: FIN 115. Use, design, and regulation of group life insurance, health care and pensions, including their federal tax consequences. Study of the available contracts in each area and financing alternatives and practices.

218. **Life Insurance and Estate Planning.** 3 Hr. PR: FIN 115. Principles of life and health insurance protection; application of life insurance to individual, family, business, and societal needs; study of trusts, wills and estates, integrating of income programming into estate management.

219. **Property and Liability Insurance.** 3 Hr. PR: FIN 115. Study of the use and production of property and liability insurance, including evaluation of insurance contracts and current insurance practices; legal and regulatory environment affecting use and production of insurance.

220. **Social Insurance.** 3 Hr. PR: FIN 115. Our social and political efforts to provide economic security for the general public. An examination of the parallel developments of private insurance.

251. *Bank Management*. 3 Hr. PR: BCOR 170 and PR or Conc: FIN 112. (May not be taken for both undergraduate and graduate credit.) Management of bank funds. Principles of organization lending and investment. Policy relationships to bank productivity, organization, and profitability; preparation of financial reports; management of a simulated bank in a changing environment.


262. *Real Estate Finance*. 3 Hr.

263. *Real Estate Investment and Land Development*. 3 Hr.

290. *Advanced Finance*. 3 Hr. PR: FIN 112, Conc: MANG 225. Integrative course in finance to be taken during the final semester before graduation.

299. *Independent Study*. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.


321. *Corporate Financial Administration*. 3 Hr. PR: FIN 111 or FIN 311, or consent. A study of theoretical concepts of corporate financial administration and the application of these concepts to real world case studies.

331. *Bank Management*. 3 Hr. PR: BCOR 170 and PR or Conc: FIN 112. (May not be taken for both undergraduate and graduate credit.) Management of bank funds. Principles of organization lending and investment. Policy relationships to bank productivity, organization, and profitability; preparation of financial reports; management of a simulated bank in a changing environment. (Same as FIN 251 with the addition of a research paper.)


337. *Capital Budgeting*. 3 Hr.


490. *Teaching Practicum*. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Finance. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

492. *Directed Study.* I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. *Special Topics.* I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. *Seminar.* I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. *Graduate Seminar.* I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


498. *Thesis or Dissertation.* I, II, S. 2-4 Hr. PR: Consent. This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. *Graduate Colloquium.* I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 *Graduate Colloquium,* to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**Industrial and Labor Relations (ILR)**


262. *Collective Bargaining and Labor Relations.* 3 Hr. PR: Consent. Examination of the theory and practice of collective bargaining. Topics include economic and historical environment, labor law, unionization, contract negotiation, patterns in contract content, conflict resolution, grievance handling, and an introduction to arbitration.

301. *Accounting/Economics/Finance.* 3 Hr. Overview of accounting, economics, and finance as they apply toward making the human resources/industrial relations profession a strategic business partner.

302. *Industrial Labor Relations Management and Marketing.* II, S. 3 Hr. Overview of management and marketing functions as they apply to human resources. Industrial relations area. Designed for students without a business educational background. Focus on concepts, practices, and ideas.


308. *Organizational Change and Renewal*. S, II. 3 Hr. Corequisite: ILR 262. Organizational evolution as a result of multiple change process, including employee involvement, empowerment, high performance organizations, process consulting, and goal setting. Emphasis on organizational and union relationships.


310. *Human Resources Economics*. 3 Hr. PR: Admission to the ILR graduate program. Consideration of the conditions of employment and unemployment at both macro and micro levels under varying degrees of completion, including the process of labor force preparation, labor market data, and policy.

320. *HR Information Systems*. II. 3 Hr. Corequisite: ILR 262. Use of computers for human resource management; HRIS planning, development, and implementation; evaluating existing software; development of a database unique to human resource management.


322. *International Industrial Relations*. I. 3 Hr. Corequisite: ILR 262. Analyzes the human resource and labor relations practices of firms and economies as they relate to the global market; basics of international business, legal/governmental environmental, labor movements, and industrial relations practices.

330. *Compensation Issues*. 3 Hr. PR: Consent. Seminar in compensation designed to develop further understanding of compensation theory and practice. Topic areas will include labor supply, wage theory, legal constraints, motivation, equity theory, organizational development as well as compensation structure and administration.

332. *American Trade Unionism*. 3 Hr. PR: ILR 262 or 316 or consent. Examines the rise of American unionism and traces historical factors shaping its philosophy. Topics include economic conditions and union history, comparisons of AFL and CIO structures, and the AFL-CIO as a government.

333. *Seminar: Quality of Work Life*. 3 Hr. PR: Consent. Analysis of current trends and approaches in "quality of work life improvement" with special attention to developments in participative management, job enrichment and gain sharing. Results of current research are featured.

334. *Work Group Dynamics and Leadership*. 3 Hr. PR: Consent. Small group or individual research on topics related to leadership and group dynamics in the work environment including training and other human relations programs.
337. Practicum in Industrial Interviewing. 3 Hr. PR: ILR 312 and consent. Experiential learning of industrial interviewing techniques covering legal and technical aspects of employment interviewing and other types of interviewing.

340. Arbitration Theory and Practice. 3 Hr. PR: ILR 262 and consent. Study of the purpose of arbitration, trends, principles of contract construction, hearing procedure evidence, remedies, training and education of arbitrators, training of advocates, and decision writing. Students will arbitrate mock cases.


344. Benefits. 3 Hr. Considers employee benefits from the perspective of the industrial relations specialist who is responsible for articulating and administering a corporate program. Includes study of all benefits covered by major federal legislation.

345. Equal Employment Opportunity. 3 Hr. PR: Consent. A series of lectures by specialists in equal employment opportunity affairs. Lectures will include attorneys, directors of state and national EEO agencies, and representatives of business and industry and the labor movement.

348. Strategic Management for Human Resources. 3 Hr. Stages and types of strategies; formulation and implementation of strategies; human resource aspects of planning and strategic assessment; extensive case analysis and team projects.

362. Collective Bargaining and Labor Relations. 3 Hr. PR: Consent. Examination of the theory and practice of collective bargaining. Topics include economic and historical environment, labor law, unionization, contract negotiation, patterns in contract content, conflict resolution, grievance handling, and an introduction to arbitration.


397. Research. 1-15 Hr.

489. MSIR Internship. I, II, S. 3 Hr. PR: MSIR admission and program approval. Supervised professional experience in human resources and/or industrial relations. Internships are organized, administered, and evaluated jointly by faculty, student, and sponsoring organization. Minimum twelve contact hours per week.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of industrial labor relations. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on Assistantships to gain teaching experience. (Grading will be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. **Thesis or Dissertation.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 **Graduate Colloquium,** to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

**Management (MANG)**

200 A-Z. **Special Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

201. **Business Information Systems.** 3 Hr. PR: BCOR 160 and BCOR 185. Use of EDP for decision making with emphasis on application in the functions of finance, marketing, personnel, accounting, and operations management.

205. **The Individual and the Organization.** 3 Hr. PR: BCOR 185. Examination of how the individual, the group, and the organization interact to influence the behavior of the business organization and that of its human resources.

206. **Organizational Theory and Analysis.** 3 Hr. PR: BCOR 185. Influences of structure on the behavior and dynamics of the business organization, including emphasis on becoming an effective manager.

212. **Management Science.** I. 3 Hr. PR: BCOR 185. Study and application of quantitative methods to business problems in which deterministic conditions prevail.

216. **Personnel Management.** 3 Hr. PR: BCOR 185. Fundamental principles and practices related to the procurement, development, maintenance, and utilization of human resources. Focus on areas such as human resource planning, selection training, performance appraising, compensation, safety and health, and labor relations.

217. **Personnel and Compensation.** 3 Hr. PR: MANG 216. Designing and implementing total compensation systems in both private and public sectors. The emerging elements of total compensation systems are included providing insights into problems and opportunities for personnel.

220. **Human Resource Management Research Methods.** II. 3 Hr. PR: MANG 205. Research methods and measurement in human resource management; philosophy of science, ethics in research, research design, and analytical methods.

222. **Management Science.** II. 3 Hr. PR: MANG 212. Study and application of quantitative methods to business problems in which probabilistic conditions prevail.

230. **Entrepreneurship.** 3 Hr. PR: MANG 105. The role of the entrepreneur in business and society; includes an analysis of the individual entrepreneur, and investigates the nature and problems of establishing a new business enterprise.
260. Practicum in Small Business. 3 Hr. PR: BCOR 185. A practical training ground in the identification and solution of small business problems. Through interaction with the business community, students are exposed to the opportunities and difficulties of small business entrepreneurship.

299. Independent Study. 1-3 Hr. PR: Department approval. Student will develop and complete a program of specialized studies under the supervision of a cooperating instructor.


397. Research. 1-15 Hr.

400. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Management. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against requirements for master’s programs.

Marketing (MKTG)

201. Focal Points in Marketing. 1-3 Hr. PR: BCOR 180. In-depth study of specialized marketing subjects, e.g., franchising, tourism, packaging, or product development. (Each subject is self-contained, spans one-third of a semester, and is valued at one credit hour.)
203. *Sales Management.* 3 Hr. PR: BCOR 180. Concentrates on the managerial responsibilities of sales managers for directing, motivating, and controlling a sales force plus the techniques of selling including objections and closing.

205. *Consumer Behavior.* 3 Hr. PR: MKTG 113. The consumer decision process in a marketing framework. Emphasis on psychological and sociological concepts which influence the decision process.

207. *Business Logistics Management.* 3 Hr. PR: MKTG 115. Examination of transportation, warehousing, materials handling, containerization, inventory control, purchasing, and warehouse location. Significant use made of problem solving with analytical tools.

208. *Global Marketing.* I. 3 Hr. PR: BCOR 180 plus six additional hours in marketing. Evaluation and analysis of marketing strategies in a global environment; examination of the relationships between international buyer behavior and the elements of the marketing mix.

210. *Business to Business Marketing.* 3 Hr. PR: BCOR 180. A study of marketing to three classes of customers; the commercial market, the institutional market, and government agencies.

211. *Marketing Management.* 3 Hr. PR: BCOR 180 and 12 hours of marketing or consent. Simulation, through live and written case study, should sharpen skills as the student makes analytical evaluations of marketing evaluations of marketing problems.

299. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.


349. *Seminar in Marketing.* 3 Hr.


400. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of business and economics. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on Assistantships to gain teaching experience. (Grading will be S/U.)


491 A-Z. *Directed Study.* I, II, S. 1-6 Hr. Directed study, reading, and or research.

493. *Special Topics.* I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. *Graduate Seminar.* 1 Hr.

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Economics
William Trumbull, Chairperson, Department of Economics
420 Business and Economics Building
www.be.wvu.edu/div/econ.con.grad.htm

Degrees Offered: Master of Arts, Doctor of Philosophy

The master of arts and doctor of philosophy degrees in economics enable students to broaden and refine their knowledge of the concepts and methods of economic analysis. These programs are designed to prepare students for careers in business, government, and higher education. Student programs are planned with the assistance of a faculty advisor and approval of the director of graduate programs. Additional information about the graduate programs in economics, and the regulations and requirements pertaining to them, may be obtained by securing a copy of Graduate Programs in Economics from the graduate director. Students are bound by these regulations and requirements, as well as those of the College of Business and Economics.

Prerequisites
To be admitted as a regular student, applicants must have a grade-point average of 3.0 or better for all undergraduate work completed and a minimum combined score of 1500 for the three parts of the general aptitude portion of the Graduate Record Examination. All students must submit their scores on the general aptitude portion of the Graduate Record Examination (GRE) and international students must also submit their scores on the TOEFL. In addition, it is required that all applicants will have completed at least one semester of each of the following courses: intermediate microeconomic theory, intermediate macroeconomic theory, calculus, and statistics. Applicants not meeting these entrance requirements may be admitted on a provisional and/or deficiency basis, subject to certain performance conditions during their first semester in residence.

Assistantships
A limited number of graduate assistantships and tuition scholarships are available on a competitive basis to full-time students. Major selection criteria include prior academic performance and GRE scores. Graduate assistants receive a cash stipend that is comparable in amount to that offered at other universities. Graduate assistants engage in research and/or teaching activities. The faculty of the Department of Economics also nominates outstanding applicants for University fellowships. Special scholarships are also available on a competitive basis to minority students. Further information and applications can be obtained from the director of graduate programs.
Academic Standards

To qualify for a graduate degree in economics, students must earn a cumulative grade-point average (GPA) of 3.0 or better for all courses completed as a graduate student at WVU. A regular graduate student in economics whose cumulative GPA falls below 3.0 (B) upon completion of the first nine hours of graduate study is not in good standing and will be placed on probation. A student in the program whose cumulative GPA falls below 3.0 will be placed on probation as of the close of the semester in which the GPA fell below 3.0. Such a student, placed on probation, who fails to raise his/her cumulative GPA to 3.0 by the end of the semester succeeding that in which his/her GPA fell below 3.0 is subject to suspension from the program at the end of that probationary semester.

Other academic reasons for suspension from the program include failing grades on more than 50 percent of the course work taken in any semester, a third failure on either a microeconomics or macroeconomics comprehensive examination, a fourth failure on comprehensive field examinations, or failure to complete all degree requirements within the specified time limits.

Master of Arts Program

The master of arts program requires a total of 37 hours of graduate credit, including 22 hours of economics. At least 25 hours of course work completed must be at the 300 level. To qualify for the M.A. degree, graduate students in economics must earn a grade of B- or better in economics 310 and 312, and a grade-point average of 3.0 in all courses attempted as a graduate student at WVU. The M.A. program has a thesis and a non-thesis option. Specific course requirements include:

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<td>Economics 320 Mathematical Economics ............................................................. 3</td>
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<td>Economics 310 Advanced Microeconomic Theory 1 ............................................. 4</td>
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<td>Economics 312 Advanced Macroeconomic Theory 1 ............................................ 3</td>
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Statistics Requirement

Statistics 231 Sampling Methods ........................................................................... 3
Economics 226 Applied Econometrics ................................................................. 3

or for students who consider going into the Ph.D. program, these two courses may be replaced by:

Economics 325 Econometrics 1 ............................................................................ 3

The student must also select either thesis or non-thesis alternative:

• Thesis Alternative: An acceptable thesis for six hours is required and the student must pass a final oral examination.

• Nonthesis Alternative: In lieu of a thesis, the requirements for the M.A. are met by completion of two 300-level courses in one field of concentration in economics and submission of a research paper that gives evidence of substantial ability to conduct scholarly research.

Special M.A. Emphases

The M.A. program in economics includes optional special emphases administered by the College of Business and Economics jointly with other units on campus. These emphases are business analysis, mathematical economics, public policy, and statistics and economics. To earn the M.A. in economics with a special emphasis, students must complete the M.A. requirements (above) and fulfill other requirements pertaining to the particular emphasis. The emphases are best viewed as coherent sample programs developed in conjunction with other units and are designed to prepare students for employment in a particular area or specialty of economics.
Business Analysis Conducted in cooperation with other departments of the College of Business and Economics, the business analysis emphasis is designed to prepare students for employment in the business analysis area. As part of their M.A. program in economics, students complete 13 hours of business courses: *Financial Accounting*, *Managerial Finance*, *Corporate Financial Administration*, *Organizational Behavior and Ethics*, and *Marketing Management*.

Mathematical Economics The mathematical economics emphasis is conducted in cooperation with the Department of Mathematics. Students entering this emphasis must previously have taken 12 hours in mathematics, including a course in calculus equivalent to MATH 15. Additional requirements are *Advanced Micro Theory 2*, *Advanced Macro Theory 2*, *Econometrics*, *Mathematical Economics*, *Advanced Mathematical Economics*, *Applied Linear Algebra*, and *Introduction to Real Analysis*.

Public Policy The public policy emphasis is conducted in cooperation with the Department of Political Science and provides students with broad training in policy analysis skills and methods. Prior completion of at least six hours of political science course work is required. Additional requirements are *Introduction to Policy Research*, *Public Policy Analysis*, and *Economic Analysis of Public Policies*.

Statistics and Economics Conducted in cooperation with the Department of Statistics and Computer Science, the statistics and economics emphasis is designed to prepare students for employment in the public or private sector that demands the use of quantitative skills. Additional requirements are statistics, probability, applied regression analysis, and econometrics.

Doctor of Philosophy

At least four years of full-time graduate work beyond the baccalaureate degree are usually required to complete the doctorate. A minimum of two consecutive semesters in actual residence as a full-time graduate student is required. To qualify for the doctor of philosophy degree in economics, a student must earn a cumulative grade-point average of 3.0 in courses completed as a graduate student at WVU.

The Ph.D. degree is not awarded for the mere accumulation of course credits nor for the completion of the specified residence requirements. All students are required to complete the graduate core curriculum, prepare themselves in two fields of concentration, and pass at least two additional 300-level economics courses with grades of B or better. Each student must also submit an acceptable dissertation. A minimum of 45 hours of graduate work in economics at the 300 level is required for all candidates for the Ph.D. degree in economics.

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<td>Economics 311 <em>Advanced Microeconomic Theory 2</em> ............................................... 4</td>
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<td>Economics 312 <em>Advanced Macroeconomic Theory 1</em> ............................................... 3</td>
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<td>Economics 313 <em>Advanced Macroeconomic Theory 2</em> ............................................... 3</td>
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<td>Economics 320 <em>Mathematical Economics</em> ................................................................ 3</td>
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Six semester hours (or the equivalent) must be taken in each of the student’s two fields of concentration. Areas of concentration include financial economics, monetary economics, public finance, regional and urban economics, labor economics, international economics, and resource economics. Other fields may also be approved. One of the fields of concentration may be in an outside area; selection must be approved by the graduate economics faculty.
Comprehensive Examinations  Students must pass written comprehensive examinations in microeconomic theory, in macroeconomic theory, and in two fields. For detailed rules, see departmental Graduate Programs in Economics filed in the Office of Graduate Director.

Candidacy and Dissertation  When an applicant has successfully completed all course work and passed the written comprehensive examinations, the applicant will be formally promoted to candidacy for the Ph.D. degree. The candidate must submit a dissertation pursued under the supervision of a member of the graduate faculty in economics on some problem in the area of the candidate’s major interest. The dissertation must present the results of the candidate’s individual investigation and must embody a definite contribution to knowledge. It must be approved by a committee of the graduate faculty in economics. After approval of the candidate’s dissertation and satisfactory completion of other graduate requirements, a final oral examination on the dissertation is required.

Each Ph.D. candidate is required to present a dissertation proposal to the graduate director after approval by at least three members of his or her dissertation committee including the chairperson. This proposal will include a statement of the problem (topic summary), a preliminary survey of the literature, a description of the research methodology, and other pertinent material. With the approval of the graduate director, the student is then required to present the proposal in a faculty-student seminar. Credit for dissertation research and writing is available under economics 497, but only if the student has a dissertation chairperson and an approved topic.

Ph.D. Emphases
The Ph.D. program includes optional special emphases conducted in cooperation with other units on campus. These are industrial relations and mathematical economics. The emphases specify certain concentrations of course work and comprehensive examinations. Acceptable dissertations are required of all students.

Industrial Relations  Graduate work in industrial relations typically is interdisciplinary in nature. The Ph.D. emphasis retains the interdisciplinary orientation while providing students with a Ph.D.-level of understanding of economic theory and economic analysis. Students in the industrial relations emphasis take the core courses in the Ph.D. program and take comprehensive examinations in microeconomic and macroeconomic theory.

Students are required to complete two fields of concentration. One field must be industrial relations, which consists of the following courses:
- ILR 304 IR Theory and Strategy
- ILR 308 Organizational Change and Renewal
- ILR 330 Compensation Issues
- ILR 362 Collective Bargaining and Labor Relations

The remaining field must be from within the Department of Economics. Most commonly, this field is labor economics. Students must pass written comprehensive examinations in their two fields of concentration.

Mathematical Economics  The mathematical economics emphasis is conducted in cooperation with the Department of Mathematics. To be admitted into this emphasis, students must have completed a minimum of 12 hours in mathematics, including a course in calculus equivalent to mathematics 15. In addition to the economics Ph.D. core, students are required to take the following courses:
- Economics 328 Advanced Mathematical Economics
- Mathematics 241 Applied Linear Algebra
- Mathematics 251, 252 Introduction to Real Analysis
  (MATH 251 and 252 may be replaced by MATH 317, 318.)
- Mathematics 357 Calculus of Variations
- Mathematics Elective—3 Hr.
Students are required to successfully complete comprehensive examinations in microeconomic and macroeconomic theory, mathematical economics/econometrics, and one other field in economics.

**Economics (ECON)**

**Specialized Courses**

200 A-Z. Special Topics. I, II, S. 1-6 Hr. PR: Consent Investigation of topics not covered in regularly scheduled courses.

343. Economic Analysis of Public Policies. 3 Hr. Application of economic analysis to questions of public policy. Consideration of problems of public goods and other market failures and usefulness of cost-benefit analysis to policymaking. (Equivalent to POLS 331.)

**Economic History**

270. American Economic History. I or II. 3 Hr. PR: ECON 54 and ECON 55. Central issues in the development of the American economy.

370. Economic History. 3 Hr. Examination of the methods of research and issues in economic history of the United States.

374. Seminar in Economic History. 3 Hr.

**Economic Development**

213. Economic Development. I or II. 3 Hr. PR: ECON 54 and ECON 55. The problems, changes, and principal policy issues faced by non-industrialized countries.

**Energy and Environmental Economics**

380. Energy Economics. 3 Hr. PR: ECON 310. Welfare analysis of supply interruptions and the foreign dependence question. Study of various energy resources in reference to policy alternatives under variant growth conditions and input-output models. Examination of coal industry and coal externalities.

384. Environmental Economics. 3 Hr. PR: ECON 380. Examination of the theoretical and empirical literature dealing with externalities (pollution), the relationships between pollution and social costs, the relationships between energy production and environmental quality, and the optimal strategies for pollution abatement.

**International Economics**


350. International Trade. 3 Hr. PR: ECON 310. Contemporary theories of international trade; analysis of current problems in world trade.

354. International Macroeconomics. 3 Hr. PR: ECON 312 Current theories and policies concerning balance of payments, international capital movements, and foreign exchange, and their relation to the macro economy.

**Labor Economics**

260. Labor Economics. I or II. 3 Hr. PR: ECON 54 and ECON 55. Labor market analysis. Topics include wage and employment determination, human capital theory, discrimination, unemployment, migration, effects of unions and government regulation, and life-cycle patterns of work.

360. Advanced Labor Economics 1. 3 Hr. PR: ECON 310. Topics in advanced labor market analysis including structure of wages, investment in human capital, discrimination, effects of unions and government regulation and life-cycle issues.

**Monetary Economics**

330. Monetary Economics 1. 3 Hr. PR: ECON 312. Sources and determinants of supply of money; demand for money for transactions and speculative purposes; general equilibrium of money, interest, prices, and output; role of money in policy.

334. Monetary Economics 2. 3 Hr. PR: ECON 330. Further topics in monetary economics.

**Public Economics**

241. Public Economics. I or II. 3 Hr. PR: ECON 54 and ECON 55. Economic roles of the public sector. Particular attention to market failure, redistributing income, the financing of public sector activities, relationships between federal, state, and local governments, and public choice.

340. Public Economics 1. 3 Hr. PR: ECON 310. Economic role of government in a mixed economy with regard to topics such as resource allocation and distribution of income; social choice mechanisms; fiscal federalism; and revenue.

344. Public Economics 2. 3 Hr. PR: ECON 340. Continuation of public economics.

**Public Regulation and Control**

241. Public Economics. I or II. 3 Hr. PR: ECON 54 and ECON 55. Economic roles of the public sector. Particular attention to market failure, redistributing income, the financing of public sector activities, relationships between federal, state, and local governments, and public choice.

245. Government and Business. I or II. 3 Hr. PR: ECON 54 and ECON 55. Examination of market structure, conduct, and performance. Analysis of market regulation including antitrust laws and regulation of monopolies.

246. Transportation Economics. 3 hr. PR: ECON 54 and ECON 55. Economic and institutional analysis of the domestic transportation system of the United States. Topics include role of transportation, carrier characteristics and services, transportation rates and costs, regulation of transportation.

345. Industrial Organization. 3 Hr. PR: ECON 310 and graduate standing or consent. Economic analysis of market structure, conduct, and performance; in-depth evaluation of markets and industries in the United States and the effect of government intervention on firm behavior.

349. Public Regulation of Business. I or II. 3 Hr. Economic analysis of regulation of specific industries such as public utilities.

**Quantitative Economics**

220. Introduction to Mathematical Economics. I or II. 3 Hr. PR: ECON 54 and ECON 55 and (MATH 128 or MATH 15 or MATH 16.) Principal mathematical techniques including set operation, matrix algebra, differential and integral calculus employed in economic analysis. Particular attention given to static (or equilibrium) analysis, comparative-static analysis and optimization problems in economics.

225. Applied Business and Economic Statistics. I, II. 3 Hr. PR: ECON 125 or STAT 101. Continuation of ECON 125. Principal statistical methods used in applied business and economic research including multiple regression, index numbers, time series analysis, forecasting models and methods, and sampling design.

320. **Mathematical Economics.** 3 Hr. PR: Departmental approval. Mathematics used in economics.

325. **Econometrics 1.** 3 Hr. PR: ECON 320. Mathematical statistics, including probability, mathematical expectation, distributions. Linear regression, ordinary least squares, and simple extensions. Students will use a computer to analyze data.

326. **Econometrics 2.** 3 Hr. PR: ECON 325. Econometric methods used by practicing economist. Includes simultaneous equations, asymptotic properties of estimators, and generalizations of and alternatives to least squares estimation. Also may include qualitative response, panel data, nonlinear, spatial, and time series models.


329. **Econometrics 3.** 3 Hr. PR: ECON 326. Completes the graduate econometrics sequence. Topics may include computational methods and time series, spatial, nonlinear, qualitative response, and panel data models.

### Regional Economics

255. **Regional Economics. I.** 3 Hr. PR: ECON 54 and ECON 55. Analysis of the regional economy’s spatial dimension, emphasizing interregional capital and labor mobility, the role of cities, objectives and issues of regional policy, lagging regions and Appalachia, growth poles, and regional growth and income distribution.

257. **Urban Economics. I or II.** 3 Hr. PR: ECON 54 and ECON 55. Analyzes growth, decline, and socioeconomic problems of cities. Topics include the development of cities, urban spatial structure and land-use patterns, poverty and discrimination, housing, urban transportation and congestion, local government structure, and urban fiscal problems.

355. **Advanced Regional Economics.** 3 Hr. PR: ECON 310 and graduate standing or consent. Regional income and flow of funds estimation, regional cyclical behavior and multiplier analysis, industrial location and analysis, techniques of regional input-output measurement, impact of local government reorganization on regional public service and economic development.

357. **Advanced Urban Economics.** 3 Hr. PR: ECON 310. Theory, policy, and empirical research regarding growth and decline of cities, urban spatial structure and land-use patterns, intrametropolitan employment location, urban transportation, housing, housing market discrimination, local government structure, fiscal problems, and urban redevelopment.

358. **Spatial Economics.** 3 Hr. PR: ECON 310 or consent. Spatial dimension incorporated into the study of economic activity; spatial competition, market area analysis, locational equilibrium analysis, general spatial equilibrium.

359. **Seminar in Regional Economics.** 3 Hr.

### Other Economics Courses

299. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

390. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

409. **Research Design and Methodology.** I,II. 1-3 Hr. PR: Departmental approval is required. Basic research approaches based on examples from the student’s own work, papers presented at the departmental research seminar series, and economics literature in general.
Industrial Relations
Randyl Elkin, Coordinator, Industrial Relations
119 Business and Economics Building
www.be.wvu.edu/grad/msir/index.htm

Degrees Offered: Master of Science in Industrial Relations
Industrial Relations Area of Emphasis available for Doctor of Philosophy

The Department of Management and Industrial Relations offers a master of science in industrial relations. The AACSB accredited program of study prepares students for professional positions in human resources (employee relations) and labor relations. Course work can be structured to prepare students for doctoral studies in industrial relations, economics, management, or law.

Doctor of Philosophy Studies
The department operates, in conjunction with the Department of Economics, an industrial relations doctor of philosophy option. Master’s students who plan to pursue the industrial relations option in the Ph.D. program in economics should align their master’s work with the degree requirements.

Entry-level professional opportunities for IR graduates include such positions as employee relations associate, assistant personnel manager, human resources administrator, labor relations representative, professional research analyst, compensation analyst and benefits administrator. Other positions include staff representative with organized labor, apprentice arbitrator, labor-management consultant, National Labor Relations Board field examiner, government employee relations representative, and employment analyst. Many graduates are employed by Fortune 500 companies. Some find positions with organized labor, all levels of government, and advocacy organizations. The department, in conjunction with the WVU Career Services Center, makes a concerted effort to place graduates in positions that fulfill student job objectives.

IRSA
Students are encouraged to participate in academic-related extracurricular activities. Many are cosponsored by the Industrial Relations Student Association: the ILR Newsletter, resume mailings, social events, and honors banquets. Outstanding academic achievement is recognized by membership in the Industrial Relations Honor Society. The faculty makes Outstanding IR Student awards yearly to persons selected on the basis of scholarship, informal leadership, and extracurricular activities.

Financial Aid
Scholarships are available on a competitive basis to minority students. Additional information and application forms can be obtained from the director of graduate programs.

GOALS
Graduate Opportunities for Advanced Level Study (GOALS) is the minority recruiting program of a national consortium of IR schools. Minority students admitted to WVU's IR program are eligible to compete for full fellowships offered by GOALS.
Academic Common Market

The master of science program in industrial relations is an Academic Common Market program. Residents of Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, South Carolina, Tennessee, Texas, or Virginia who are admitted to the M.S.I.R. program can pay tuition at West Virginia University's instate (resident) rates.

Admission

The master of science in industrial relations is interdisciplinary in nature and no specific undergraduate major is required. Course work in computer science, labor economics, statistics, and business disciplines is helpful. To gain admission into the master of science in industrial relations program, an applicant must have a bachelor’s degree from an accredited institution. Overall grade-point average is considered with additional attention given to the grade-point average achieved in the last sixty hours of course work. Either the Graduate Management Admissions Test (GMAT) or the Graduate Record Examination (GRE) is required. A resume is a requirement of the application process. No action is taken on an application for admission until a GMAT or GRE score is submitted. International students must also submit a satisfactory TOEFL score.

Applicants must also send additional supportive material, including a personal statement in support of their application, reference letters, a resume of school and work experience, and an example of written work.

Application Deadlines

Students with non business undergraduate major must apply for July 1 admission. Students with a business undergraduate major must apply for August admission. Application deadlines are two months before the start of classes in the term for which admission is sought. Later applications, while acceptable, may diminish the chances for admission due to the graduate class being filled. Since no admission decision can be made without the applicant's GMAT/GRE score being submitted, applicants should keep in mind the GMAT/GRE test schedule.

Institute of Industrial and Labor Relations

The mission of the Institute of Industrial and Labor Relations (ILIR) is to coordinate instruction, research, and public service activities, which embrace a study of the elements of human resources development uniquely identified with the economy of West Virginia. Membership is open to faculty who have an interest in the mission of the ILR. The ILR serves as a means of rational response to economic trends based on an amalgamation of the three University functions: faculty/student research on a continuing basis in search of human resource development possibilities; use of research results in credit instruction to produce a growing cadre of graduates aware of and trained to be able to contribute to the state’s economic goals; and, using both of the former extension and public service efforts designed to place the state’s human resource development and use activities on their most economically rational courses.

IR Degree Program

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ILR 260</td>
<td>Survey of the Employment Relations</td>
<td>3</td>
</tr>
<tr>
<td>ILR 262</td>
<td>Collective Bargaining and Labor Relations</td>
<td>3</td>
</tr>
<tr>
<td>PR: ECON160</td>
<td>or Consent</td>
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</tr>
<tr>
<td>ILR 303</td>
<td>Critical Thinking and HR Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>ILR 304</td>
<td>Industrial Relations Theory and Strategy</td>
<td>3</td>
</tr>
<tr>
<td>IRL 305</td>
<td>Employment Law</td>
<td>3</td>
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</tbody>
</table>
Tentative Recommended Course Scheduling

Select one elective each semester or term

<table>
<thead>
<tr>
<th>Summer I</th>
<th>Summer II</th>
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</thead>
<tbody>
<tr>
<td>307 Conflict Management</td>
<td></td>
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<tr>
<td>Accounting/Finance/CBK*</td>
<td></td>
</tr>
<tr>
<td>Management/Marketing/CBK*</td>
<td></td>
</tr>
<tr>
<td>337* Interviewing**</td>
<td>308b Organizational Change and Renewal</td>
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<td></td>
<td>343* Negotiation</td>
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<td></td>
<td>321* Managing Cultural Diversity**</td>
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</tbody>
</table>

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<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>303 Critical Thinking and Research Methods</td>
<td></td>
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<tr>
<td>344 Benefits</td>
<td></td>
</tr>
<tr>
<td>330 Compensation Issues</td>
<td></td>
</tr>
<tr>
<td>262/362a Collective Bargaining</td>
<td></td>
</tr>
<tr>
<td>322a International Industrial Relations</td>
<td></td>
</tr>
<tr>
<td>345a Equal Employment Opportunity Problems</td>
<td></td>
</tr>
<tr>
<td>334b Group Dynamics and Leadership</td>
<td>304 Industrial Relations Theory and Strategy</td>
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<td>305 Employment Law</td>
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<td>306 Performance Management and Training</td>
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<td></td>
<td>309 Staffing and Selection</td>
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<tr>
<td></td>
<td>340a Arbitration</td>
</tr>
<tr>
<td></td>
<td>320a Human Resource Information Systems</td>
</tr>
</tbody>
</table>

*Courses designed for entering students that do not have undergraduate background in business and economics. Total program credit requirements for nonbusiness related undergraduates majors are 48 credit hours; for business-related undergraduates the required credit hours are 42.

**Tentative

*Elective — Choose one.

a— For internship scheduling purposes only, ILR 362 may be substituted for ILR 307.

b— For internship scheduling purposes only, ILR 334 may be substituted for ILR 308.

GPA

The industrial relations program requires that the student maintain a grade-point average of at least 3.0 on all work taken as a graduate student while enrolled in the College of Business and Economics. In addition, the student must maintain a 3.0 average in all work counting toward the graduate degree. A student whose cumulative grade-point average falls below 2.75 will be placed on probation. If the student’s average is not brought up to 2.75 by the end of the following semester, the student will be suspended from the program. A grade below C in more than one course taken while enrolled as a graduate student will result in suspension from the program.
Industrial Relations Emphasis in the Economics Ph.D. Program

Graduate work in industrial relations typically is interdisciplinary in nature. The Ph.D. emphasis retains this orientation while providing students with a Ph.D. level of understanding of economic theory and economic analysis. Students in the industrial relations option take the nine core courses in the Ph.D. in economics program, take comprehensive examinations in microeconomic theory and macroeconomic theory, and follow the rules and requirements for obtaining the economics Ph.D.

Industrial and Labor Relations (ILR)


262. *Collective Bargaining and Labor Relations*. 3 Hr. PR: Consent. Examination of the theory and practice of collective bargaining. Topics include economic and historical environment, labor law, unionization, contract negotiation, patterns in contract content, conflict resolution, grievance handling, and an introduction to arbitration.

301. *Accounting/Economics/Finance*. 3 Hr. Overview of accounting, economics, and finance as they apply toward making the human resources/industrial relations profession a strategic business partner.

302. *Industrial Labor Relations Management and Marketing*. II. S. 3 Hr. Overview of management and marketing functions as they apply to human resources. Industrial relations area. Designed for students without a business educational background. Focus on concepts, practices, and ideas.


308. *Organizational Change and Renewal*. S. II. 3 Hr. Corequisite: ILR 262. Organizational evolution as a result of multiple change process, including employee involvement, empowerment, high performance organizations, process consulting, and goal setting. Emphasis on organizational and union relationships.

310. Human Resources Economics. 3 Hr. PR: Admission to the ILR graduate program. Consideration of the conditions of employment and unemployment at both macro and micro levels under varying degrees of completion, including the process of labor force preparation, labor market data and policy.

320. HR Information Systems. II. 3 Hr. Corequisite: ILR 262. Use of computers for human resource management; HRIS planning, development and implementation; evaluating existing software; development of a database unique to human resource management.


322. International Industrial Relations. I. 3 Hr. Corequisite: ILR 262. Analyzes the human resource and labor relations practices of firms and economies as they relate to the global market; basics of international business, legal/governmental environmental, labor movements, and industrial relations practices.

330. Compensation Issues. 3 Hr. PR: Consent. Seminar in compensation designed to develop further understanding of compensation theory and practice. Topic areas will include labor supply, wage theory, legal constraints, motivation, equity theory, organizational development as well as compensation structure and administration.

332. American Trade Unionism. 3 Hr. PR: ILR 262 or 316 or consent. Examines the rise of American unionism and traces historical factors shaping its philosophy. Topics include economic conditions and union history, comparisons of AFL and CIO structures and the AFL-CIO as a government.

333. Seminar: Quality of Work Life. 3 Hr. PR: Consent. Analysis of current trends and approaches in “quality of work life improvement” with special attention to developments in participative management, job enrichment, and gain sharing. Results of current research are featured.

334. Work Group Dynamics and Leadership. 3 Hr. PR: Consent. Small group or individual research on topics related to leadership and group dynamics in the work environment including training and other human relations programs.

337. Practicum in Industrial Interviewing. 3 Hr. PR: ILR 312 and consent. Experiential learning of industrial interviewing techniques covering legal and technical aspects of employment interviewing and other types of interviewing.

340. Arbitration Theory and Practice. 3 Hr. PR: ILR 262 and consent. Study of the purpose of arbitration, trends, principles of contract construction, hearing procedure evidence, remedies, training and education of arbitrators, training of advocates, and decision writing. Students will arbitrate mock cases.


344. Benefits. 3 Hr. Considers employee benefits from the perspective of the industrial relations specialist who is responsible for articulating and administering a corporate program. Includes study of all benefits covered by major federal legislation.

345. Equal Employment Opportunity. 3 Hr. PR: Consent. A series of lectures by specialists in equal employment opportunity affairs. Lectures will include attorneys, directors of state and national EEO agencies, and representatives of business and industry and the labor movement.
348. Strategic Management for Human Resources. 3 Hr. Stages and types of strategies; Formulation and implementation of strategies; human resource aspects of planning and strategic assessment; extensive case analysis and team projects.

362. Collective Bargaining and Labor Relations. 3 Hr. PR: Consent. Examination of the theory and practice of collective bargaining. Topics include economic and historical environment, labor law, unionization, contract negotiation, patterns in contract content, conflict resolution, grievance handling, and an introduction to arbitration.


397. Research. 1-15 Hr.

489. MSIR Internship. I, II, S. 3 Hr. PR: MSIR admission and program approval. Supervised professional experience in human resources and/or industrial relations. Internships are organized, administered, and evaluated jointly by faculty, student, and the sponsoring organization. (Minimum twelve contact hours per week.)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Industrial Labor Relations. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.
The College of Creative Arts, composed of the Divisions of Art, Music, and Theatre, serves an academic and cultural function and provides an educational and interdisciplinary environment for the exploration, advancement, and understanding of the visual and performing arts. The College boasts a distinguished faculty of actors, artists, composers, conductors, directors, instrumentalists, vocalists, and writers who bring to the College a commitment to a creative process of artistic growth which is shared with each student. Through teaching, research, and service, the faculty of the college provides students the professional preparation to achieve the highest level of performance, scholarly research, and creative activity.

Graduate programs in art, music, and theatre are characterized by quality and diversity of faculty, students, and curricular opportunity. Each division is an accredited member of the nationally recognized accrediting agency for professional instruction in the discipline: art programs by the National Association of Schools of Art and Design; music programs by the National Association of Schools of Music; and theatre programs by the National Association of Schools of Theatre.

The College of Creative Arts is committed to providing the highest levels of creative, intellectual, and cultural experiences in art, music, and theatre to the University, the state, and the region. In an environment rich with art exhibitions, concerts, and plays, students gain the knowledge, skills, experience, and inspiration necessary for professional success. Students, faculty, and visiting artists present a full calendar of performances and exhibitions which are open to the public.

The Creative Arts Center, which houses the college, is a modern, multimillion-dollar instructional and performance facility with three theatres, two recital halls/recording studios; scenery, painting, drawing, design, costume, printmaking, sculpture, ceramic, and instrumental studios; additional art studios; and two art galleries.

The doctor of musical arts (D.M.A.) curricula in performance (piano, organ, voice, percussion, flute, oboe, clarinet, bassoon, horn, trumpet, trombone, tuba, violin, viola, cello, or double bass) or composition, and the Ph.D. curriculum in music prepare students for careers as teachers in higher education. The master of fine arts (M.F.A.) is a terminal degree in art and theatre that prepares students for careers in ceramics, graphic design, painting, printmaking, sculpture, acting, or theatre design/technology.

The master of music degree enhances undergraduate programs in performance, music education, theory, music history, and composition. The master of arts has concentrations in art education, art history, and studio art.

For further information, please contact:
• Graduate advisor, Division of Art at (304) 293-2140 x 3141.
• Director of graduate studies in music, Division of Music at (304) 293-5511 x 3196.
• Chair, Division of Theatre at (304) 293-2020 x 3120.

Our mailing address is College of Creative Arts, Creative Arts Center, West Virginia University, P.O. Box 6111 Morgantown, WV 26506-6111.

Special Admission Information

The College of Creative Arts offers graduate programs leading to terminal degrees in art, music, and theatre. Prospective students apply for admission through the University’s Office of Admissions and Records. All candidates for graduate degrees must conform to University regulations for graduate study. Requirements for admission to specific programs are included in the program descriptions. Most programs require an audition or a portfolio review as a part of the admission process.
Full graduate assistants receive a stipend and remission of tuition. Approximately 11 graduate assistantships in art, 28 in music, and 14 in theatre are available each year. Application for these assistantships should be made to each division; the application deadline for art is March 1 and October 15, for music March 1, and for theatre April 1.

Graduate Programs

<table>
<thead>
<tr>
<th>Field</th>
<th>Degree</th>
</tr>
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<tbody>
<tr>
<td>Art</td>
<td>M.A.</td>
</tr>
<tr>
<td>Music</td>
<td>M.M., D.M.A., Ph.D.</td>
</tr>
<tr>
<td>Theatre</td>
<td>M.F.A.</td>
</tr>
<tr>
<td>Visual Art</td>
<td>M.F.A.</td>
</tr>
</tbody>
</table>

Graduate Faculty

† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.

Art

Professors
†Clifford A. Harvey, B.F.A. (Mpls. C. Art and Design). Graphic design.
†Alison Helm, M.F.A. (Syracuse U.). Sculpture.
†Margaret T. Rajam, Ph.D. (U. Mich.). Emerita.
†Bernard Schultz, Ph.D. (U. Pitt.). Associate dean, Academic affairs, Art history, Italian renaissance, Modern art, Art theory.

Associate Professors
*Victoria Fergus, Ph.D. (Purdue U.). Art education, Undergraduate advisor.
†Christopher Hocking, M.F.A. (L.S.U.). Drawing, Painting, Printmaking, Graduate advisor.

Assistant Professors
*Janet Snyder, Ph.D. (Columbia U.). Art history, Medieval art, Native American art, Women in art.

Adjunct Assistant Professor

Music

Professors
†John Beall, Ph.D. (U. of Rochester, Eastman School of Mus.). Composition, Theory.
†James E. Miltenberger, D.M.A. (Eastman School of Mus.). Piano, Piano repertoire, Jazz.
†William Skidmore, M.M. (U. Ill.). Coordinator of strings, Cello, Chamber music.
†Connie Sturm, Ph.D. (U. Ok.). Piano, Group piano, Piano pedagogy.
†Robert H. Thieme, Jr., M.M. (WVU) Director, WVU opera theatre; Opera, Vocal repertoire, Accompanying-coaching.

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†Don. G. Wilcox, M.A. (Cal. St. at Long Beach). Director of bands; Coordinator, Conducting.

Associate Professor
†David Bess, Ph.D. (WVU). Assistant chair, Undergraduate studies. Instrumental education.
*John E. Crotty, Ph.D. (Eastman School of Mus.). Coordinator, Theory-composition, Theory, Analysis.
†Terry B. Ewell, Ph.D. (U. Wash.). Chairperson, Bassoon, Theory.
†Janet Robbins, Ph.D. (Ohio St. U.). General music education.
†Virginia Thompson, D.M.A. (U. Iowa). Horn, Chamber music.
†Molly Weaver, Ph.D. (U. Mich.). Coordinator, Music education.

Assistant Professors
*Peter Lightfoot, Professional. (Juilliard). Voice.
†Paschal Younge, Ph.D. (WVU). World music, Theory.

Adjunct Assistant Faculty

Theatre
Professors
†M. Kathryn Wiebebusch, M.A. (WVU). Dance.

Associate Professors

Assistant Professors
Jay Malarcher, Ph.D. (U. La.). Theatre history/criticism.
Art

Christopher Hocking, Graduate Advisor, Division of Art
419-A Creative Arts Center
www.wvu.edu/~ccarts/art.htm

Degrees Offered: Master of Arts, Master of Fine Arts

The graduate programs in art lead to a master of arts with emphasis in art, art education, or art history (one to two years or 30 credit hours) and to a master of fine arts with emphasis in visual art (three years or 60 hours). Both of these programs are highly selective and closely integrated parts of the professional education in art offered by the Division of Art. All applicants are expected to have artistic maturity and the motivation to achieve excellence in their areas of concentration.

Accreditation

The Division of Art is an accredited institutional member of the National Association of Schools of Art and Design, the only nationally recognized accrediting agency for professional art instruction. Applicants to programs in art must comply with the standards for admission set by West Virginia University, the College of Creative Arts, and the Division of Art.

Master of Fine Arts

The master of fine arts is the terminal degree in studio art; it prepares students for professional practice in art. Our selective and limited enrollment insure regular individual contact with a dedicated, diverse faculty, who are committed to a sustained professional exchange with each student. A collaboratively designed curriculum is augmented by regular critiques engaging all studio majors and faculty. Media experimentation is encouraged. Students must be able to apply and communicate a diverse body of knowledge relating historical, cultural, contemporary, and aesthetic issues to their professional practice. Students are expected to articulate and defend their position within the context of contemporary art discourse.

Master of Arts

Master of Arts students in studio art, art education, or art history critically study, explore, and evaluate their chosen content area, ensuring a solid foundation for further professional practice or research.

Reviews

All students enter the graduate programs in art as preliminary candidates. Students in the M.F.A. program are reviewed for advancement at the end of their first year of study or upon the completion of 24-30 credit hours. Students in the M.A. program are reviewed at the end of their first semester of study or upon the completion of 12-15 credit hours. A satisfactory review allows students to have degree candidate status. Candidacy status must be approved by the student’s graduate committee. All students in degree programs, either M.F.A. or M.A., must prepare a written thesis. A graduate exhibition is required of all M.F.A. students.

Deficiencies

Before students are admitted, they must meet any deficiencies in their undergraduate preparation. Credits taken to erase deficiencies do not count toward a graduate degree.
The Division of Art has high expectations for its graduate students. Because of this, certain standards of achievement exceed the minimum standards set by the University for all graduate students. The Division of Art reserves the right to impose stricter limitations on all art graduate students. Credit hours in courses with an earned grade of "C" do not automatically count toward graduate degree requirements. The graduate committee and the divisional chairperson have the right to declare such credit hours unacceptable.

Supplies
All graduate art majors are required to purchase most of their personal equipment and expendable supplies. Some studio areas purchase bulk supplies for student use in their courses from an art fee.

Thesis
All candidates for a graduate degree in art must prepare a written thesis (or graduate project) related to their work and activity as a graduate student. The chairperson of the student's graduate committee supervises the preparation of the thesis, which must be completed at least one month before the anticipated graduation date. The thesis must be prepared according to the form prescribed in the WVU regulations governing the preparation of dissertations and theses as well as divisional guidelines, unless an exception is authorized in advance by the student's graduate committee and the division chairperson.

Program Transfer
A preliminary candidate in a graduate art program is not guaranteed acceptance into another graduate art program. A change from the M.F.A. program to the M.A. program (or the reverse) must be approved by the graduate faculty of the Division of Art. Under normal conditions, such a change is not considered until the student has established credibility by successfully completing 12-15 approved credit hours of study at WVU. A change to a program outside the Division of Art must be approved by the receiving unit. To make an application for a double degree program or special interdepartmental programs at the graduate level, students must have written prior approval of the division chairperson.

Admission
Requests for application forms for admission to graduate degree programs in art must be addressed to the Office of Admissions and Records, West Virginia University, P.O. Box 6009, Morgantown, WV 26506-6009. Applicants must specify the degree and subject area of their choice and return the application and transcripts from each college or university previously attended to the above address with a $45 nonrefundable processing fee.

Portfolio
All applicants for both the M.F.A. and the M.A. (studio and art education) must present a portfolio for admission to the Division of Art. Applicants for art history must submit a copy of a written research project. Applicants should take care to select slides of recent and representative work for inclusion in the portfolio. The portfolio must contain a statement of purpose, and three letters of recommendation from college faculty or persons knowledgeable of the applicant's interests and abilities, and twenty 35mm slides, or/and appropriate visual materials. Each slide should be labeled with name, date of completion, size of work, and type of medium and arranged in a plastic slide holder for mailing. The complete portfolio, with the purpose statement, three letters, and 20 slides, should be submitted to: Graduate Advisor, Division of Art, College of Creative Arts, West Virginia University, P.O. Box 6111, Morgantown, WV 26506-6111. Provide a stamped, self-addressed envelope to assure prompt, safe return of the slides.
Master of Fine Arts in Visual Arts

The master of fine arts, a professionally-oriented terminal degree in the studio arts, requires a baccalaureate degree in art or its equivalent for admission. Preparation should include 12 hours of art history, 70 hours of studio art related to professional needs, and 36 hours of general education. The suggested distribution of studies for the 60 credit hour program is:

Art studio major area ......................................................................................... 36 Hr.
Art studio elective ............................................................................................... 6 Hr.
Teaching practicum/Professional practice .......................................................... 6 Hr.
Graduate seminar (or approved elective) ........................................................... 3 Hr.
Art history ........................................................................................................... 6 Hr.
Graduate exhibition and thesis ........................................................................... 6 Hr.

To earn the M.F.A., a student must complete a combined (undergraduate and graduate) total of 118 hours in studio, 18 hours in art history, and the appropriate number of credit hours in general education courses.

All students in the M.F.A. program are required to submit a statement of intention after completion of 12 credit hours, to indicate the direction and implementation of their studio involvement.

Transfers In addition to the application materials listed, transfer students must ask to transfer graduate work completed elsewhere. Transcripts must accompany the written request. Transfer credit is not automatic. The art faculty review committee, the graduate advisor, and the division chairperson will determine how much, if any, previous graduate-level work may be transferred. At least 60 percent of the work for the M.F.A. must be completed at WVU in the studio arts.

Residence Requirements The M.F.A. student must complete the stated requirements in order to graduate, usually in a three-year period. Most students take 9-15 hours per semester. All students accepted into the M.F.A. program are required to spend four full-time semesters (excluding summer sessions) in residence. Concentrations for the M.F.A. include ceramics, graphic design, painting, printmaking, and sculpture.

Course Distribution

The following is the recommended distribution of required M.F.A. courses:

First Year—Preliminary Candidate

Art studio major area ......................................................................................... 18 Hr.
Art studio elective ............................................................................................... 3 Hr.
Graduate seminar ............................................................................................... 6 Hr.
Art history* ........................................................................................................... 3 Hr.

Total .................................................................................................................. 30 Hr.

*Graduate credits in art history must be at the 300-level (graduate) and are in addition to courses taken or required at the undergraduate level.

Second Year—M.F.A. Candidate

Art studio major area ......................................................................................... 18 Hr.
Art studio elective ............................................................................................... 3 Hr.
Art history* ........................................................................................................... 3 Hr.
Graduate exhibition and thesis** ........................................................................ 6 Hr.

Total .................................................................................................................. 30 Hr.

*Graduate credits in art history must be at the 300-level (graduate) and are in addition to courses taken or required at the undergraduate level.

**Graduate exhibition and thesis (Art 400) will include organized graduate seminars, committee meetings, and exhibition preparation discussions.
Master of Arts in Art Education

Art education is a popular option for graduate study in art. Specialization in art education requires the completion of 30 credit hours program. The exact course of study is determined through consultation with the student’s advisor. The art education concentration may be completed in one year of full time study. The general distribution of graduate credits is as follows:

- Art studio major area ........................................................................................................... 9 Hr.
- Art studio elective .................................................................................................................. 6 Hr.
- Art education or approved studies ...................................................................................... 12 Hr.
- Art 402 Master’s in Art Education Project ........................................................................ 3 Hr.

**Total** .................................................................................................................................. 30 Hr.

Every graduate student is required to complete a graduate project. The graduate art faculty recommend those students who may be required to hold a graduate exhibition.

Master of Arts in Art History

The art history concentration is accredited by the National Association of Schools of Art and Design. For information about this option, please contact the coordinator of art history or the graduate advisor in the Division of Art. The general distribution of graduate credits for a concentration in art history is as follows:

- Art history .................................................................................................................................. 21 Hr.
- Cognate courses ......................................................................................................................... 6 Hr.
- Art 401 (thesis) ......................................................................................................................... 3 Hr.

**Total** .................................................................................................................................. 30 Hr.

Master of Arts in Studio Art

The studio art concentration allows students to specialize in ceramics, graphic design, painting, printmaking, or sculpture.

Applicants desiring to begin a course of study leading to the master of arts in art and concentration in the studio arts must have a baccalaureate degree in art or the equivalent. Undergraduate study should include 12 hours of art history, 45 hours of studio art related to professional needs, and 36 hours of general education courses.

The concentration in studio art requires:

- Art studio major area .................................................................................................................. 18 Hr.
- Art studio elective or graduate seminar* .................................................................................... 3 Hr.
- Art history** ............................................................................................................................... 6 Hr.
- Art 401 (thesis) ......................................................................................................................... 3 Hr.

**Total** .................................................................................................................................. 30 Hr.

*In lieu of art studio elective instruction, students may take the graduate seminar course. Exact courses of study are determined in consultation with the graduate advisor.

**Graduate credits in art history must be at the 300-level (graduate) and are in addition to courses taken or required at the undergraduate level.

Requirements

The student must complete the stated degree requirements in order to graduate. These credits can be earned in one year. After consultation with the graduate advisor, students specializing in studio arts are required to prepare a study list of courses to be taken to satisfy Division of Art requirements. Changes in this list must be requested in writing and approved by the chairperson of the division.
Financial Aid

Financial aid information is available through the Student Financial Aid Office, West Virginia University, P.O. Box 6004, Morgantown WV 26506-6004. Graduate assistantships in art are awarded to students of exceptional promise by the faculty of the Division of Art. Application forms must be requested from the graduate advisor, Division of Art, College of Creative Arts, West Virginia University, P.O. Box 6111, Morgantown, WV 26506-6111, and submitted with the portfolio.

Art (ART)

300. Independent Study Graduate Studio. I, II, S. 1-15 Hr. (May be repeated for credit.) PR: Consent. Intensive self directed research involving special projects in studio production. Areas of study include but are not limited to, painting, drawing, printmaking, sculpture, ceramics, and design.

301. Independent Study Art History. I, II, S. 1-15 Hr. (May be repeated for credit.) PR: Consent. Independent research, closely supervised, on topic of student’s selection. Proposal must be well-defined and contain historical, critical, and theoretical issues. Contractual course.

313. Graduate Painting. I, II, S. 1-15 Hr. (May be repeated for credit). PR: Consent. Encompasses the significant issues and developments of contemporary painting, including visual resources, critical and pictorial structures, and technical proficiency to establish a coherent aesthetic vision in the medium.

323. Graduate Graphic Design. I, II, S. 1-15 Hr. (May be repeated for credit). PR: Consent. Integration of current and historic design resources leading to the development of a thesis project while working within the independent and existing design courses. Areas of special interest include the book arts and electronic multi-media.

324. Graduate Graphic Design/Professional Practice. I, II, S. 1-6 Hr. (May be repeated for credit). PR: Consent. Students assist and work on projects in a model studio setting, helping to coordinate and manage communication with clients, printers, and undergraduate students in Graphic Design Studio 222.

326. Graduate Sculpture. I, II, S. 1-15 Hr. (May be repeated for credit). PR: Consent. Encompasses the significant issues and developments of contemporary three-dimensional form, including visual resources, critical and historic foundations, and technical proficiency designed to establish a coherent comprehension of the medium.

330. Graduate Printmaking. I, II, S. 1-15 Hr. (May be repeated for credit). PR: Consent. Encompasses the germane aspects of contemporary printmaking including visual resources, theoretical and historic structures, and technical processes, designed to establish a rigorous comprehension of the medium. Areas of specialization include lithography, intaglio, relief, serigraphy, and electronic media.

332. Graduate Photography. I, II, S. 1-15 Hr. (May be repeated for credit). PR: Consent. Involves the essential problems and developments of current photography, from traditional to digital photo processes, theoretical and pictorial foundations, and technical proficiency designed to afford a coherent aesthetic vision in the medium.

334. Alternative Media. I, II, S. 1-15 Hr. (May be repeated for credit). PR: Consent. Involves the primary issues and developments of alternative and interdisciplinary media such as installation, video, performance art, or hand-made books along with the critical foundation and technical proficiency to establish a comprehensive utilization of chosen forms.

340. Graduate Ceramics. I, II, S. 1-15 Hr. (May be repeated for credit). PR: Consent. Involves the essential concerns and developments of contemporary ceramics, including traditional and current practices. Emphasis is on technical processes designed to provide a rigorous comprehension and expression in clay. Area of specialization includes both functional and sculptural ceramics.
345. Greek and Roman. I, II. 3 Hr. PR: Consent. The architecture, sculpture, and paintings of the Aegean world, c. 2000 BCE, Greece and Rome to 400 CE. Critical and historical consideration of this time period will be considered.

346. Medieval Art. I, II. 3 Hr. PR: Consent. The arts of Europe from c. 312 to c. 1350. The theoretical, historical, and literary contexts for the images will be established. Architecture, sculpture, painting, and portable arts will be included.

347. Northern Renaissance. I, II. 3 Hr. PR: Consent. The arts of Northern Europe from 1350 to 1560 will be studied in an historical and theoretical context. Painting and sculpture will be the focus of study.

348. Italian Renaissance. I, II. 3 Hr. PR: Consent. Early Renaissance through Mannerism. The course will emphasize both the historical context and theoretical foundation of 15th and 16th-century Italian art and architecture.

349. Baroque. I, II. 3 Hr. PR: Consent. Art of the late 16th through the early 18th centuries, both Northern and Southern European examples. Issues of historical context and theoretical interpretation will be emphasized.

350. Nineteenth Century. I, II. 3 Hr. PR: Consent. European and American art from the late 18th century through 1900. Issues of theory, historical context, and literary foundation will be considered.

351. Modern. I, II. 3 Hr. PR: Consent. The revolutionary experience of modern art, from its foundation in 19th century European movements through the 1950’s. Critical theory and historical context will be stressed.

353. Contemporary. I, II. 3 Hr. PR: Consent. Exploration of the various artistic movements from World War II to the present. Emphasis will be given to the change from modern to postmodern. Familiarity with images and critical texts will be expected.

355. Women in Art. I, II. 3 Hr. PR: Consent. Examination of the art of female artists and of women as subjects in art. An historical view with concentration on 20th century work. Critical theories will be emphasized.

357. Twentieth Century Architecture. S. 3 Hr. PR: Consent. History of 20th Century architecture. Focuses on development of the international style and recent challenges to this modernist aesthetic.

365. Graduate Art Education Studies. I, II, S. 1-12 Hr. (May be repeated for credit.) PR: Consent. Studies in art education and related areas. The development of a master’s degree project in conjunction with a faculty committee.

391 A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.
402. *Master's in Art Education Project*. I, II, S. 3-9 Hr. PR: Consent. This course is for the final three hours of the master’s project. The in-depth project is to be completed and then approved and signed by the advising committee.

490. *Teaching Practicum/Professional Practice*. I, II. 3 Hr. PR: Consent. Supervised practices in college teaching. This course is designed to develop aspects of college teaching experience such as writing a syllabus, organizing a classroom, or improvising with materials or topical issues.

493 A-Z. *Special Topics*. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. *Independent Study*. 1-6 Hr.

496. *Graduate Seminar*. I, II. 1 Hr. PR: Consent. Issues in contemporary art. The focus of this seminar is on analysis of theoretical issues and trends in contemporary art criticism. Emphasis is on comparative media, interdisciplinary forms of expression, and significant cultural concerns that affect visual arts practice.


499. *Graduate Colloquium*. 1-6 Hr.

**Music**

*William Haller, Director of Graduate Studies, Division of Music*

416-A Creative Arts Center

[www.wvu.edu/~music](http://www.wvu.edu/~music)

**Degrees Offered: Master of Music, Doctor of Musical Arts, Doctor of Philosophy**

- The Division of Music is an accredited institutional member of the National Association of Schools of Music, the only nationally recognized accrediting agency for professional music instruction. All programs comply with the objectives and guidelines required by this organization.

- Prospective graduate students in music are required to have completed the appropriate curriculum of undergraduate study in music at WVU or its equivalent at another institution of recognized standing. For acceptance into a degree program the applicant should make inquiry to the Director of Graduate Studies, Division of Music, P.O. Box 6111, Morgantown, WV 26506-6111.

- Applicants accepted for degree study must take diagnostic tests in music theory and music history, and must audition on piano. In addition, performance majors take diagnostic tests in pedagogy and literature. The results of these tests may indicate the need for remedial study, which must be completed before admission to candidacy.

**Master of Music**

- The degree of master of music may be taken in performance, music education, composition, music theory, or music history. Performance majors may specialize in piano, piano pedagogy, organ, voice, percussion, flute, oboe, clarinet, bassoon, saxophone, horn, trumpet, trombone, tuba, violin, viola, cello, double bass, guitar, or conducting.

- **Admission** Applicants to the program leading to the degree of master of music must present necessary credentials for evaluation of previous training and experience to the Division of Music. These include scores on the Graduate Record Examination General Aptitude Test (required only for music theory or music history applicants) and undergraduate transcripts showing an average of at least 3.0 grade-point average in all undergraduate study, submitted through the WVU Office of Admissions and Records. Three
letters of recommendation from individuals qualified to judge the applicant’s potential success as a graduate student in music must be submitted directly to the director of graduate studies in music.

Applicants are also required to demonstrate, by audition or tape recording, the level of attainment in a principal performance area, which is a prerequisite to the curriculum sought. The evaluation of performance proficiency is based on technical ability, repertoire, and musicianship. A listing of representative material for each performance area, graded by proficiency level, is available upon request. The audition for acceptance as a degree student, when required, is assessed for general admission purposes. For performance majors, the estimated proficiency level must be confirmed by a jury examination at the end of the first semester of performance study. Credit in performance may be counted toward degree requirements only after the proficiency level prerequisite has been reached.

Applicants seeking admission as composition majors must submit representative compositions for evaluation and approval.

Applicants seeking admission as music education, theory, or history majors must submit a sample of writing, such as a term paper (a musical subject is recommended, but not required).

Applicants to music education curricula (with the exception of the certification option) must also submit a videotape of teaching, preferably of a K–12 music class.

**Provisional Admission**

Applicants whose averages and test scores do not meet the qualifications outlined above may be considered for acceptance as provisional or non-degree students. If, upon completion of up to 12 semester hours of graduate study, they have achieved a minimum of a B (3.0) grade-point average, and after any previous undergraduate deficiencies or other conditions have been satisfied, such students may be accepted as degree students.

**Music Education Options**

Students majoring in music education will be allowed one of four options, to be determined in consultation with the program consultant.

- **Thesis option.**
- **Recital option** (If the candidate demonstrates proficiency level 8 in the major performance area within the first 12 hours of enrollment).
- **Thirty-six hour course work option.**
- **Certification option** (intended for persons possessing a bachelor’s degree with a major in music other than music education), leading to eligibility for certification for teaching grades K-12 in the West Virginia public schools.

For the first three options, the following requirements apply:

- Thirty graduate hours for thesis and recital options, 36 graduate hours otherwise, with a minimum grade-point average of 3.0.
- For the thesis or 36-hour options, four hours of performance, either MUSC 400 (principal performance area) or MUSC 310 (secondary performance area).
- Demonstration of the ability to integrate music history, music theory, and music education by passing a comprehensive oral examination.
- Successful completion of a four-credit thesis or two-credit recital for the thesis and recital options, respectively.

For the certification option, a combination of graduate and undergraduate courses will be selected to satisfy certification requirements. The 36 graduate hours include 12 hours of graduate music education courses and electives chosen to provide a good background for teaching. Undergraduate courses may be necessary to make up deficiencies.
Requirements

History of Music
PR: Level 7 in the major performance area; Level 4 in piano; four semesters of a foreign language; seven hours upper-division theory; 15 undergraduate hours in music history.

MUSC 430 Introduction to Music Bibliography .................................................... 3 Hr.
Music history, chosen from MUSC 221-227 ................................................................ 6 Hr.
MUSC 491 Special Topics ................................................................................... 6 Hr.
Theory elective .................................................................................................... 3 Hr.
MUSC 497 Research (thesis) .............................................................................. 4 Hr.
Electives (at least four credits in music) .............................................................. 8 Hr.
Total ................................................................................................................... 30 Hr.

Music Education
PR: Level 2 in piano.

Music education courses at the 300 or 400 level* ................................................ 12 Hr.
One theory course and one music history course ............................................. 5-6 Hr.
For Thesis Option:
MUSC 400 and/or 310 Performance ................................................................... 4 Hr.
MUSC 497 Research (thesis) .............................................................................. 4 Hr.
Electives ........................................................................................................... 4-5 Hr.
For Recital Option:
MUSC 398 Master’s Recital ................................................................................ 2 Hr.
MUSC 400 Performance (major performance area) ........................................... 6 Hr.
Electives ........................................................................................................... 4-5 Hr.
For 36-hour Option:
MUSC 400 and/or 310 Performance ................................................................... 4 Hr.
Electives ....................................................................................................... 14-15 Hr.
Totals ........................................................................................................ 30 or 36 Hr.

*Students in the thesis option must include MUSC 446.

Performance
PR: Level 10 in the major performance area, and Level 3 in piano; for organists, Level 5 in piano; for pianists in the piano pedagogy option, Level 9 in piano and one year of piano pedagogy/group or equivalent teaching experience; for voice majors, the same language requirements as for the B.M. degree.

MUSC 400 Performance (major performance area) ........................................... 8 Hr.
MUSC 398 Master’s Recital ................................................................................ 4 Hr.
MUSC 430 Introduction to Music Bibliography .................................................... 3 Hr.

For Traditional Performance Option:
MUSC 398 Master’s Recital ................................................................................ 4 Hr.
One of the following ............................................................................................. 2 Hr.
MUSC 398 Master’s Recital
MUSC 431 Research Problems for Performers
One theory course and one upper-level or graduate
music history course ..................................................................................... 5-6 Hr.
Music electives
do not more than four hours in the major performance area) ..................... 7-8 Hr.
Total ................................................................................................................... 30 Hr.
For Piano Pedagogy Option:
MUSC 398 Master’s Recital ................................................................. 2 Hr.
MUSC 392 Guided Studies (Teaching internship) ................................. 4 Hr.
One theory course or one music history course .................................. 2-3 Hr.
Music electives ................................................................................. 4-5 Hr.
Total (minimum) ................................................................................ 30 Hr.

For Conducting Option:
MUSC 398 Master’s Recital .................................................................. 6 Hr.
MUSC 410, 411 conducting seminars .................................................... 6 Hr.
MUSC 333, 334, or 335 studies in vocal/instrumental music .................... 3 Hr.
MUSC 440 or 442 Studies in choral/instrumental techniques ................... 2 Hr.
MUSC 467 Analytical Techniques ......................................................... 3 Hr.
MUSC History/theory electives ............................................................. 2 Hr.
Total ..................................................................................................... 33 Hr.

Composition
PR: Level 8 in the major performance area; Level 4 in piano; evaluation of previously
completed compositions at a graduate major level.
MUSC 430 Introduction to Music Bibliography ...................................... 3 Hr.
MUSC 460 Composition ....................................................................... 6 Hr.
MUSC 475 Pedagogy of Theory ............................................................ 3 Hr.
MUSC 470 Transcription and Arranging ................................................ 3 Hr.
MUSC 468 Compositional Tech. in Contemporary Music or
MUSC 483 Theory Topics ................................................................. 3 Hr.
MUSC 497 Research (Thesis) ............................................................... 4 Hr.
Music electives (must include two of the following) ................................ 9 Hr.
MUSC 460 Composition (electronic music)
MUSC 467 Analytical Techniques
A Musc History or Literature Course
Total ..................................................................................................... 31 Hr.

Theory
PR: Level 8 in the major performance area; Level 4 in piano.
Music 430 Introduction to Music Bibliography ....................................... 3 Hr.
Graduate music history ......................................................................... 3 Hr.
MUSC 467 Analytical Techniques ........................................................ 3 Hr.
MUSC 468 Compositional Techniques in Contemporary Music ............. 3 Hr.
MUSC 475 Pedagogy of Theory ............................................................ 3 Hr.
MUSC 483 Theory Topics .................................................................... 3 Hr.
MUSC 497 Research (thesis) ............................................................... 4 Hr.
Electives (at least four credits in music) ................................................. 8 Hr.
Total ..................................................................................................... 30 Hr.

Additional Requirements
Master’s degree students must establish an overall grade-point average of 3.0.
A representative public recital is required of candidates majoring in performance. Com-
position majors must submit as a thesis a composition in a large form. All candidates for
the master of music degree are required to participate for credit for two semesters (or
summer sessions) in a performing group which meets at least two clock hours per week
and which is selected with the advisor’s approval.

Music 259
A general comprehensive oral examination must be passed by all candidates for the master of music degree. Unsuccessful candidates may repeat this examination after a three-month period. The results of the second oral examination will normally be considered final. The examining committee will decide immediately after an unsuccessful second attempt whether a petition for a third attempt will be granted.

Students must complete their programs in eight calendar years. Failure to do so will result in the loss of credit for courses taken at the outset of the program.

**Doctor of Philosophy**

The doctor of philosophy curriculum in music education prepares students for careers as teachers in higher education. Acceptance into the doctoral program is competitive. Applicants to the program leading to the degree of doctor of philosophy must present necessary credentials for evaluation of previous training and experience to the Division of Music. These include transcripts showing an average of at least a 3.0 grade-point average in a minimum of 28 hours in liberal arts studies, submitted through the WVU Office of Admissions and Records. A sample of writing (such as a term paper), a videotape of teaching (preferably of a K–12 music class), and three letters of recommendation from individuals qualified to judge the applicant’s potential success as a graduate student in music must be submitted directly to the director of graduate studies in music. Normally, the admission process also includes an on-campus interview with the music education faculty, which may include an audition demonstrating proficiency in the applicant’s major performance area. Applicants who do not meet all of the criteria for regular admission to the Ph.D. degree program may be granted a provisional admission subject to the satisfactory completion of certain specified courses or the attainment of a specified grade-point average within a semester’s work.

**Course Work** The exact amount and nature of course work undertaken will be determined by the advisor with the approval of the student’s doctoral committee in light of previous preparation and field of specialization. The student is expected to take music 494 *Graduate Seminar* as required by the field of specialization. Whatever preparatory courses (languages, statistics, bibliography, etc.) are needed must necessarily be taken early in the course of study. A paradigm of recommended courses and other requirements is available upon request.

**Candidacy** Upon completion of the requirements of the Division of Music and the general WVU graduate studies requirements, the student will be recommended for admission to candidacy for the degree. These requirements are (in order of occurrence):

1. Demonstrate a satisfactory reading knowledge of German or French or satisfactorily complete statistics 311-312. Upon recommendation of the advisor, a different romance language may be substituted for French.
2. Pass written qualifying examinations satisfactorily to show:
   a. Broad knowledge in theory and in music history and literature.
   b. Appropriate knowledge in the minor field.
   c. In-depth knowledge in the field of specialization.
3. Pass satisfactorily a comprehensive oral qualifying examination.
4. Present and have accepted an outline and prospectus of the dissertation.

The requirement for doctoral seminars must be completed before the presentation of the prospectus. Graduate students who have met these requirements and who have maintained a minimum average of B (3.0) in courses completed shall be admitted to candidacy. The qualifying examinations shall be considered as one integral examination consisting of the written and oral parts. If the first attempt is unsuccessful, the student is
allowed to try the entire examination a second time. The second attempt will be consid-
ered final. The applicant’s committee may elect to discourage a second attempt if the first
does not indicate probable success upon repetition.

Residence Requirements Completion of the requirements for this degree normally re-
quires at least three years of full-time graduate work. A minimum of two consecutive
semesters must be spent in residence in full-time graduate study at WVU beyond the
master’s degree or its equivalent.

Dissertation The candidate must submit a dissertation produced at WVU under the
direction of a major professor which demonstrates a high order of independent scholar-
ship, originality, and competence in research, and which makes an original contribution
to the field of specialization.

After the dissertation has been approved and all other requirements have been fulfilled,
the candidate’s doctoral committee will administer the final oral examination. However, a
final examination will not be given in the same semester as the qualifying examination. At
the option of the student’s committee, a final written examination may also be required. The
final examination(s) shall be concerned with the dissertation, its contribution to knowledge,
its relation to other fields, and the candidate’s grasp of the field of specialization.

Time Limitation Following admission to candidacy, doctoral students are allowed five
years to complete all remaining degree requirements. An extension of time may be per-
mitted only upon repetition of the qualifying examination and completion of any other
requirements specified by the student’s doctoral committee.

Doctor of Musical Arts

The degree of doctor of musical arts may be taken in performance and literature (with
specialization in piano, organ, voice, percussion, flute, oboe, clarinet, bassoon, horn,
trumpet, trombone, tuba, violin, viola, cello, or double bass) or in composition. The pri-
mary objective is professional competence at the highest level. Historical and theoretical
knowledge sufficient to support individualized interpretations for performers and original
creative work for composers is also expected. Writing and speaking skills needed to
communicate clearly and effectively are required. To assist the student in achieving these
objectives, the course of study includes requirements in performance or composition,
academic course work, and research.

Admission Acceptance into doctoral programs is competitive. Applicants to the pro-
gram leading to the D.M.A. must present necessary credentials for evaluation of previ-
ous training and experience. These include transcripts showing an average of at least a
3.0 grade-point average in a minimum of 28 hours in liberal arts studies, submitted through
the WVU Office of Admissions and Records. Copies of programs of recent major recitals,
and three letters of recommendation from individuals qualified to judge the applicant’s
potential success as a graduate student in music must be submitted directly to the direc-
tor of graduate studies in music. Normally, the admission process also includes an on-
campus audition and interview with the faculty of the major performance area. Applicants
to the D.M.A. in composition must also submit scores and recordings for review. Appli-
cants who do not meet all of the criteria for regular admission to the D.M.A. degree
program may be granted a provisional admission subject to the satisfactory completion
of certain specified courses or the attainment of a specified grade-point average within a
semester’s work.
Curriculum  The exact amount and nature of course work undertaken will be determined by the student's advisor with the approval of the doctoral committee in light of previous preparation and field of specialization. A paradigm detailing recommended courses and other requirements is available upon request.

Candidacy  Upon completion of the requirements of the Division of Music and the general WVU graduate studies requirements, the student will be recommended for admission to candidacy for the degree. These requirements are (in order of occurrence):

1. Demonstrate reading proficiency in a foreign language by successful completion either of an examination administered by the Division of Music or the equivalent of the fourth semester of recent language study with a minimum grade of B. The language must be of recognized world significance and appropriate to the student's field of concentration.
2. Pass written qualifying examinations satisfactorily to show:
   a. Broad knowledge in theory and music history and literature.
   b. In-depth knowledge of the literature of the field of specialization or of the craft of composition.
3. Pass satisfactorily a comprehensive oral qualifying examination.

Graduate students who have met these requirements and who have maintained a minimum average of B (3.0) in courses completed shall be admitted to candidacy. The qualifying examinations shall be considered one integral examination consisting of written and oral parts. If the first attempt is unsuccessful, the student is allowed to try the entire examination a second time. The second attempt will be considered final. The applicant's committee may elect to discourage a second attempt if the first does not indicate probable success upon repetition.

Residence Requirements  Completion of the requirements for this degree normally requires at least three years of full-time graduate work. A minimum of two consecutive semesters must be spent in residence in full-time graduate study at WVU beyond the master’s degree or its equivalent.

Performance Requirements  Performance requirements (for performance majors) include private lessons, master classes in applied repertory, and public performance of at least two solo recitals and other types of presentations appropriate for the preparation of an artist-teacher, such as chamber music programs, concerto performances, major roles in opera or oratorio, or major accompaniments. Credit for each public performance is established in advance by the student's committee. Performances will be prepared under the direction of a WVU regular graduate faculty member.

Composition Requirements  Composition requirements (for composition majors) include private lessons and the creation of a composition portfolio. Credit for each composition is established by the student's committee prior to its completion; it will be subsequently evaluated on a pass-fail basis. Ten credits of the composition portfolio must be completed before admission to candidacy. Work on the major project may commence only after admission to candidacy.

Academic course requirements include courses in music history and theory, and, for performers, an appropriate course in the literature of the major performance area.

Research Requirements  Research requirements are intended to develop theoretical and historical investigative techniques sufficient to enable the performer to form valid individualized interpretations and to assist the composer in developing an original style. These requirements consist of the course Introduction to Music Bibliography (MUSC 430), demonstration of reading proficiency in a foreign language of major importance, for
composers a doctoral seminar, and for all students a research project culminating in an extended written study related to the student’s area, although not necessarily constituting original research. This project will be supervised by a regular graduate faculty member who is a member of the student’s doctoral committee in consultation with the entire doctoral committee.

**Final Examination**  For performers, the final examination will consist of a major solo recital (which will be regarded as the equivalent of the Ph.D. dissertation defense). Immediately following the public performance the candidate’s committee will meet to evaluate the performance as evidence of mature musicianship and finished technique. The final recital will not occur in the same semester as the qualifying examination.

For composers, when all compositions and the major project have been approved and all other requirements have been fulfilled, the candidate’s doctoral committee will administer the final oral examination. At the option of the committee, a written examination may also be required. The final examination(s) shall be concerned with the compositions, the major project, and the candidate’s grasp of the field of specialization and its relation to other fields. The final examination will not be given in the same semester as the qualifying examination.

**Time Limitation**  Following admission to candidacy, doctoral students are allowed five years to complete all remaining degree requirements. An extension of time may be permitted only upon repetition of the qualifying examination and completion of any other requirements specified by the student’s doctoral committee.

**Music (MUSC)**

310 A-Z. **Secondary Performance.** I, II, S. 1 Hr. (May be repeated for credit.) Group or individual instruction in performance on a minor instrument (or voice), with emphasis on methods and materials for school music teachers.

312. **Keyboard Performance and Pedagogy.** I, II. 1-3 Hr. (May be repeated for credit.) (Offered in one-credit modules of which students may take one or more each semester.) Pedagogy, repertoire, interpretation, and other topics which will enhance preparation of private piano teachers.

313. **Jazz Performance and Pedagogy.** 1-3 Hr. (May be repeated for credit.) Methods and materials, observation. Offered in modules of which students may take one or more each semester: Survey of jazz literature, survey of teaching technique, practical teaching experience, or special topics.

333. **Survey of Orchestral Music.** 3 Hr. PR: 6 Hr. upper-division music history or consent. Survey analysis of orchestral music from the late Baroque period to the present from the perspective of the conductor.

334. **Survey of Wind Music.** 3 Hr. PR: 6 Hr. upper-division music history or consent. Survey and analysis of wind music from the late Baroque period to the present from the perspective of the conductor.

335. **Survey of Vocal Music.** I. 3 Hr. PR: 6 Hr. upper-division music history. Survey of masses, oratorios, cantatas, and opera from late Renaissance to the twentieth century. Sole repertoire will not be included.

341. **Music In The Elementary School.** 3 Hr.

342. **Teaching Music Appreciation.** 3 Hr.

343. **Contemporary Techniques in Classroom Music.** 3 Hr. PR: MUSC 152 or consent. Principles and practice of contemporary techniques in elementary and junior high school classroom music, including those of Orff and Kodaly.
344. Appalachian Music for the Classroom. I. 3 Hr. Lecture, demonstration, and practical experience in performance of Appalachian vocal and instrumental music and in use of this music in public school classrooms. May involve field trips and construction of inexpensive instruments.

346. Music making in Middle school/Junior High. II. 3 Hr. PR: MUSC 151, 152, equivalent or consent. Identification and sequencing of appropriate concepts and skills for general music class students. Selection and use of materials including popular music. Emphasis on student music-making activities. Evaluation procedures included.

347. Music in Early Childhood. S. 3 Hr. PR: MUSC 151, 152, or equivalent; or consent. Musical experiences for children three through ten years. Emphasis on intellectual, physical, and social/emotional needs and characteristics of children. Materials and activities for developing music concepts, skills, and positive response.

350. Choral Conducting and Proceed. 3 Hr.

357. Instrumental Methods and materials. 3 Hr. PR: MUSC 51, 44, and 45. Methods, materials, and administration of K-12 instrumental music programs; sequential instruction; conceptual and skill development; aural and reading competencies in music. Bi-weekly lab. (3 hr. lec.)

358. Choral Music Methods and Materials. 3 Hr. PR: MUSC 49 and 51. Methods, materials, and administration of choral music programs; sequential instruction; conceptual and skill development; teaching aural and reading competencies. Bi-weekly lab. (3 hr. lec.)

359. General Music Methods and Materials. 3 Hr. PR: MUSC 51. Introduction to major pedagogical approaches used in K-12 general music classrooms; examination and development of materials and curricula; analysis of teaching and learning styles. Bi-weekly lab. (3 hr. lec.)

360. Chamber Music: Brass. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small brass ensembles.

361. Chamber Music: Guitar. I. II. 0-3 Hr. (May be repeated for credit.) Performance in small guitar ensembles.

362. Chamber Music: Jazz. I, II. 0-3 Hr. (May be repeated for credit.) Performance in jazz ensembles, instrumental or vocal.

363. Chamber Music: Percussion. I, II. 0-3 Hr. (May be repeated for credit.) Performance in percussion ensembles.

364. Chamber Music: Percussion-Ethnic. I, II. 0-3 Hr. (May be repeated for credit.) Performance in percussion ensembles emphasizing music from non-Western cultures.

365. Chamber Music: Percussion-Gamelan. I, II. 0-3 Hr. (May be repeated for credit.) Performance in Gamelan ensembles.

366. Chamber Music: Percussion Steel Band. I, II. 0-3 Hr. (May be repeated for credit.) Performance in steel band ensembles.

367. Chamber Music: Piano. I, II. 0-3 Hr. (May be repeated for credit.) Performance in piano 4-hand chamber music or performance by pianists in other ensembles.

368. Chamber Music: String. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small string ensembles.

369. Chamber Music: Voice. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small vocal ensembles.
370. Chamber Music: Woodwind. I, II. 0-3 Hr. (May be repeated for credit.) Performance in wind quintet and small woodwind ensembles.

371. Chamber Music: Other. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small mixed ensembles.

390. Perspectives of Music History. I. 3 Hr. A survey of western vernacular and art music from the Middle Ages to the present with particular attention to historiography, social context, and evolution of musical styles.

391 A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

392. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

397. Research. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

398. Master's Recital. I, II, S. 2-4 Hr. PR: MUSC 299 (senior recital) or consent. May be repeated for credit. Master’s performance students shall be permitted to give a recital only after they pass a qualifying audition before a designated faculty committee at least six weeks before the recital is to be given.

400 A-Z. Performance. I, II. 1-4 Hr. (Open to qualified students in any field in performance. May be repeated.) Normally offered for two credits (one 30-minute lesson per week) or four credits (one 60-minute) lesson per week. A student must demonstrate ability of grade-level 4 on an instrument to receive credit in MUSC 400 on that instrument.


410. Conducting. S. 3 Hr. PR: MUSC 53 or equivalent. Instrumental and choral conducting. Major works are prepared and conducted through the use of recordings and music organizations.

411. Conducting Seminar. 3 Hr. PR: MUSC 410. Instrumental and choral conducting of major works under the supervision of the conductor of a major ensemble.

419. Opera Theatre. I, II. 0-4 Hr. PR: MUSC 19 or consent. Continuation of MUSC 19. Performance of major roles and advanced production techniques. Qualified students will undertake production-direction projects under supervision.


425. Choral Literature. 3 Hr.

428. Aesthetics Of Music. 2 Hr.

429. Survey of Sacred Music. S. 4 Hr. PR: MUSC 33, 34 or equivalent. Study of music suitable to the liturgical year, including the historical background of the Jewish, Catholic, and Protestant liturgies.

430. Introduction to Music Bibliography. I. 3 Hr. Survey of music bibliography and research techniques.

432. Ethnic Percussion. II. 3 Hr. PR: MUSC 119 and MUSC 218 and MUSC 219; graduate percussion majors only. Examination of selected music from regions such as Africa, Asia, and Latin America; focus on music, instruments, and performance techniques and practices; functions of percussion music in society.

433. Seminar in Ethnic Music. II. 3 Hr. PR: Consent. Open to graduate music majors only. Examination of selected ethnic music from Africa, Asia, and Latin America. Focuses on the music, instruments, and performance techniques and practices of these regions, and how the music functions in society.

438. History of Notation. II. 3 Hr. PR: Graduate standing. Detailed study in transcribing the musical manuscripts of the Middle Ages.

439. History of Notation. II. 3 Hr. PR: Graduate standing. Continuation of MUSC 438 covering the Renaissance period.

440. Choral Techniques. II. 2 Hr. PR: MUSC 151 and MUSC 152 or equivalent. Advanced techniques and procedures involved in development of choral ensembles.

442. Instrumental Techniques. I. 2 Hr. PR: MUSC 151 and MUSC 152 or equivalent. Advanced techniques and procedures involved in individual performance and instruction through lecture demonstrations by performance faculty.

443. Historical Foundations of Music Education. 3 Hr. Examination of the history of music education from classical antiquity to the present, with particular emphasis on practices in the United States; examination and application of historical research methods. (3 hr. lec.)

444. Music Education. II. 3 Hr. PR: MUSC 151 and MUSC 152 or equivalent. Survey and critical study of the total music education program.

446. Introduction to Research in Music Education. I. 3 Hr. PR: MUSC 151 and MUSC 152 or equivalent. Methods and measures necessary for conduct and understanding of research in music education.

449. Psychology of Music. II. 3 Hr. Introductory study of musical acoustics and psychology of perception of music.

460. Composition. I, II. 3 Hr. (May be repeated for credit.) PR: Consent. Primarily for candidates for graduate degrees in theory or composition.


470. Transcription and Arranging. I, II. 2 Hr. (May be repeated once for credit.) PR: MUSC 172 or equivalent. Major projects in scoring for orchestra, band, or wind ensemble.

475. Pedagogy of Theory. I, II, S. 3 Hr. PR: MUSC 68 or consent. Consideration of various approaches to the teaching of theory.

483. Theory Topics. I, II, S. 3 Hr. (May be repeated for max. 8 hr. credit.) Various types of analytical and theoretical problems and approaches to their solutions.

488. Doctoral Recital. I, II, S. 1-4 Hr. PR: MUSC 398 (master’s recital) or consent. Number of credits depends upon length and content of the program; it must be approved in advance by the student’s doctoral committee. Acceptance of the recital will be at the discretion of the doctoral committee.
Lecture Recital. I, II. 2 Hr. PR: MUSC 430.

Teaching Practicum. 1-3 Hr.

Advanced Topics. I, II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

Directed Study. I, II. 1-6 Hr. Directed study, reading, and/or research.

Advanced Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

Seminar. I, II. 1-6 Hr. Seminars arranged for advanced graduate students.

Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis (697), problem report (697), research paper or equivalent scholarly project (697), or a dissertation (797). (Grading may be S/U.)

Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their students’s reports (698), thesis (698), or dissertations (798). (Grading may be S/U.)

Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s, Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit my not be counted against credit requirements for master’s programs.

Professional Development. Courses intended for professional development and require students to possess a bachelor’s degree, but the course does not count toward graduation and is not applicable towards attaining a graduate degree. (Grading is S/U only.)

Theatre

William J. Winsor, Chairperson
307-A Creative Arts Center
www.wvu.edu/~theatre

Degree Offered: Master of Fine Arts

The Division of Theatre at WVU offers the master of fine arts as the terminal degree in theatre, with concentrations in acting and theatre design (scene, costume, and lighting).

Admission

Prospective candidates for the degree of master of fine arts in theatre must have a B.A. or B.F.A. degree or equivalent from an accredited institution. Ordinarily, a minimum of 30 semester hours in theatre at the undergraduate level is expected to have been completed with a grade-point average of no less than 2.75, although students with an undergraduate grade-point average of 2.25-2.5 may be admitted with probationary status.
Auditions
Applicants must audition/interview. Applicants intending to specialize in acting must submit a complete resume of their acting experience, at least two letters of recommendation from acting coaches or directors, and must present an audition before at least one member of the acting faculty. Those intending to specialize in design must submit a complete portfolio of their work, a resume of their design experience, and at least two letters of recommendation from design instructors or directors. An interview with at least one member of the design faculty is also required.

For further details regarding these requirements, address inquiries to: Chairperson, Division of Theatre, West Virginia University, P.O. Box 6111, Morgantown, WV 26506-6111.

Advanced Standing
Students may be eligible for 18 hours of graduate transfer credit for advanced standing if they meet the regular requirements of graduate admission. Students admitted with advanced standing are required to be in residence at WVU for a minimum of two semesters and a summer session. The request for advanced standing should be made to the division chairperson at the time of application.

Master of Fine Arts Degree Programs
For the master of fine arts degree, students must complete requirements for one of the following two programs.

Acting
The acting option is a highly disciplined period of training that focuses on performance. Students will explore basic exercises leading to intensive scene work fully supplemented by technique courses in voice, speech, and movement. The actor takes courses in various areas that are essential to his/her craft (theatre history, text analysis, criticism, etc.) in order to strengthen his/her background. However, the greatest part of time is centered in the acting studio work every afternoon from 1:00 to 5:00 p.m. During acting studio, students spend intensive time studying acting, voice, and movement as well as auditioning techniques, and related aspects of the profession.

Successful completion of the minimum number of required graduate hours in one of the two following programs.

- As part of the course of study, students study both the design and technical aspects of each area of his/her chosen concentration.
- Two academic years and one summer of graduate course and production work totaling 59 credit hours.
- A performance thesis project.
- Oral defense of the thesis project.
- A successful evaluation following the completion of the first year.
- Overall 3.0 grade-point average.

Design
The design option is a three-year course of study for students seeking professional preparation leading to the M.F.A. degree in scenic, costume, or lighting design. Studio design courses, together with practical laboratory exercises, progressively offer students challenges related to the expectations found in the commercial world.

- Three academic years of graduate course and production work totaling 67 credit hours.
- A production thesis or research design project; and successful oral defense.
- A successful evaluation following the completion of the first and second years.
- An overall 3.0 grade-point average.
M.F.A. in Acting Suggested Program

Semester I
THET 375 Acting ................................................................. 3 Hr.
THET 351 Voice and Speech ............................................... 2 Hr.
THET 371 Movement ....................................................... 2 Hr.
THET 491 Makeup ............................................................ 1 Hr.
THET 331 Research ......................................................... 3 Hr.
THET 200 Text Analysis ................................................... 3 Hr.
14 Hr.

Semester II
THET 376 Acting ................................................................. 3 Hr.
THET 352 Voice and Speech ............................................... 2 Hr.
THET 372 Movement ....................................................... 2 Hr.
THET 200 Text Analysis ................................................... 3 Hr.
THET 460 Theatre History ................................................ 3 Hr.
13 Hr.

Semester III (Summer)
THET 278 Repertory Theatre ............................................. 9 Hr.

Semester IV
THET 353 Voice and Speech ............................................... 2 Hr.
THET 373 Movement ....................................................... 2 Hr.
THET 377 Acting .............................................................. 3 Hr.
THET 386 Criticism .......................................................... 3 Hr.
THET 400 Performance Thesis .......................................... 3 Hr.
13 Hr.

Semester V
THET 374 Movement ....................................................... 2 Hr.
THET 354 Voice and Speech ............................................... 2 Hr.
THET 378 Acting .............................................................. 3 Hr.
THET 400 Performance Thesis .......................................... 3 Hr.
10 Hr.

TOTAL .................................................................................. 59 Hr.

M.F.A. Scene Design Suggested Program

Semester I
THET 220 Costume History and Design ......................... 3 Hr.
THET 367 Scene Design .................................................... 3 Hr.
THET 361 Sceno-graphics ................................................. 3 Hr.
THET 331 Research Methods ........................................... 3 Hr.
12 Hr.

Semester II
THET 221 Costume History and Design ......................... 3 Hr.
THET 225 Theat reRigging Electricity ............................... 3 Hr.
THET 3647 Scene Design ................................................. 3 Hr.
THET 379 Rehearsal and Performance ............................. 1 Hr.
THET 262 Scene Painting ................................................ 3 Hr.
13 Hr.
Semester III
THET 367 Scene Design .......................................................... 3 Hr.
THET 369 Lighting Design ...................................................... 3 Hr.
THET 386 Dramatic Criticism .................................................. 3 Hr.
THET 379 Rehearsal and Performance ...................................... 3 Hr.
12 Hr.

Semester IV
THET 367 Scene Design .......................................................... 3 Hr.
THET 369 Lighting Design ...................................................... 3 Hr.
THET 379 Rehearsal and Performance ...................................... 3 Hr.
THET 395 Period Styles .......................................................... 3 Hr.
12 Hr.

Semester V
THET 400 Thesis ..................................................................... 3 Hr.
THET 379 Rehearsal and Performance ...................................... 3 Hr.
THET 334 Portfolio Preparation ............................................. 3 Hr.
9 Hr.

Semester VI
THET 400 Thesis ..................................................................... 3 Hr.
THET 333 Sem. Production Research ....................................... 3 Hr.
Elective .................................................................................. 3 Hr.
9 Hr.

TOTAL .................................................................................. 67 Hr.

Similar curriculum tracks are offered in costume design and lighting design with course work specific to each discipline.

Theatre (THET)
307. Sound Seminar. II. 3 Hr. An exploration of sound design for the theatre with practical emphasis on producing and recording sound effects.

310. Graduate Theatre Makeup. II. 2 Hr. PR: Consent. Lecture-laboratory course exploring practical, physical applications of a stage character with makeup. In depth study of facial anatomy and potential alterations through two and three dimensional appliances.

331. Research Methods. I. 3 Hr. Methods of production research for graduate students in acting and design, with particular emphasis on writing, library use, and manuscript preparation.

333. Seminar in Production Research. II. 3 Hr. PR: THET 331 and THET 367. Seminar approach to individual design projects with oral and written presentations of research materials. Intensive critique within class by faculty and peers.

334. Professional Aspects of Design. I. 3 Hr. PR: THET 367 and THET 368 and THET 369. An in-depth work in the packaging and presentation of the design portfolio, resume writing, and job opportunities. Emphasis is placed on methods of making a successful transition from an academic environment into the performance industry.

335. Graduate Scene Study 1. 1 Hr. The presentation of scenes, chosen from modern and contemporary theatre, before a panel of acting, voice, and movement faculty for critique.

336. Showcase Development. 2 Hr. PR: THET 378. Using of skills learned in monologue and scene work, students will develop a performance of selected works, develop a mailing list of professional agents and perform two showcases.
337. Modern and Contemporary Theatre Organizations. 3 Hr. PR: THET 331. This course studies the philosophical and organizational structure of modern and contemporary theatres (1898-present). The class will function as a graduate seminar.

351. Graduate Vocal Techniques. I. 2 Hr. PR: Consent. In depth vocal work, with special care taken to address each actor’s individual qualities, beginning with breath, alignment, and release of habitual tension. Open resonance and free articulation to support the actor’s voice.

352. Graduate Voice Techniques. II. 2 Hr. PR: Consent. Continue the work introduced in THET 351 with text exploration. Introduce the International Phonetic Alphabet (IPA) and structure.

353. Advanced Graduate Vocal Techniques. I. 2 Hr. Intensive vocal exploration with Shakespearean text, character choices, and dialect work.

354. Advanced Graduate Vocal Techniques. II. 2 Hr. PR: Consent. Continuation of THET 353 with emphasis on period style texts and voice-over skills.

356. Graduate Sceno-Graphic Techniques. I. 3 Hr. Advanced techniques in drafting in accordance with current graphic standards for stage design and technology. Refinement of technique and graphic style through projects and exercise.

357. Graduate CAD Seminar. 3 Hr. PR: THET 265. Advanced study of the graphic applications in computer assisted design in lighting. With emphasis on developing project work to create an “electronic portfolio.”

358. Graduate Scene Design. I. 3 Hr. Graduate level study of scenic design including conceptualization, mechanical perspective, drafting, model building, and color rendering. Emphasis placed on transferring the script into a visual design.

359. Graduate Lighting Design. I, II. 3 Hr. PR: THET 203 or consent. (May be repeated for a max. 9 hr. credit.) Lecture/studio; Intensive practical experience of lighting design for the theatre. Emphasis is placed on conceptualization, drafting, and rendering techniques related to the development presentation of lighting design.

360. Graduate Stage Movement 1. I. 2 Hr. PR: Consent. Study of human movement in performance, including movement patterning, body and space awareness, and basic experiential anatomy.

361. Graduate Stage Movement 2. II. 1 Hr. PR: THET 371. Continuation of THET 371 through work on directed projects; special topics in issues related to physicality in performance.

362. Advanced Graduate Stage Movement. I. 2 Hr. PR: Consent. Advanced study of movement techniques for character work, including rhythms of basic language/movement connections and period styles of movement.

363. Advanced Graduate Stage Movement 2. 1 Hr. PR: Consent. Continuation of THET 373 through work on directed projects; special topics in issues related to physicality in performance.

364. Graduate Acting Studio 1. I. 3 Hr. PR: Consent. Foundation of the craft of acting including sensory elements ensemble building, environment, personalization, imagination communication, conflict, and audition skills. Concentration is on modern and contemporary theatre.
376. **Graduate Acting Studio 2.** II. 3 Hr. PR: THET 375. Continued exploration of the craft of acting using the rehearsal and performance of a full length play, chosen from modern and contemporary theatre literature.

377. **Advanced Graduate Acting Studio 1.** I. 3 Hr. PR: THET 376. Continued exploration of the acting process focusing on heightened text and issues of period and style using the works of William Shakespeare.

378. **Advanced Graduate Acting Studio 2.** II. 2 Hr. PR: THET 377. Continued exploration of the craft of acting using the rehearsal and performance of a full length play that presents the challenges of heightened text and issues of style.

379. **Rehearsal and Performance.** I. 3 Hr. (May be repeated for max. 12 hr. credit.) PR: Consent. Participation in assigned performance projects.

380. **Advanced Graduate Scene Design.** I, II. 3 Hr. Continued study of conceptualization and techniques of presentation used in the creation of scenic environments. Emphasis on alternative forms including opera, ballet, display, and industrial venues. (Repeatable to 9 hrs.)

381. **Graduate Costume Design 2.** 3 Hr. PR: THET 368. Intensive studio/practical study of costume design. Exploring conceptual process of design for text, movement, dance, opera, and puppetry. Emphasis on rendering, composition, and fabric applications. (May repeat for max. of 6 hrs.)

382. **Graduate Scene Studio 2.** 1 Hr. PR: THET 375. The presentation of scenes chosen from Shakespeare and other plays of heightened text, before a panel of acting, voice, and movement faculty for critique.

383. **Tour Development 1.** 4 Hr. PR: Consent. This class is the first half of a two course sequence. This class creates a touring theatre company, including an organization structure, scripts, and educational workshops to be offered in conjunction with the productions.

384. **Tour Development 2.** 4 Hr. PR: Consent. This class is the second half of a two-course sequence. The class rehearses and tours scripts and workshops developed in **Tour Development 1.**

386. **Dramatic Theory and Criticism.** I. 3 Hr. A survey of the major documents addressing the theories of drama and theatre from the ancient Greeks to the present.

391. **Advanced Topics.** 1-6 Hr.

395. **Period Style.** I. 3 Hr. (Alternate years). An in-depth exploration of architecture, costumes, customs, and ornamentation in period style for the theatre from Egyptian through contemporary.

397. **Research.** 1-15 Hr.

400. **Thesis.** I, II. 3 Hr. PR: Consent. Creative performance project. Requires the projection of a written record which traces the acting or design process as it develops during planning, rehearsal, and performance.

460 A-Z. **Seminar.** 3-9 Hr. (May be repeated for max. 9 hr. credit.) PR: Consent. Selected fields of study in theatre.

490. **Teaching Practicum.** 1-3 Hr.

491 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation in advanced subjects which are not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.
Directed Study. 1-6 Hr.

Special Topics. 1-6 Hr.

Seminar. 1-6 Hr.

Independent Study. 1-6 Hr.

Graduate Seminar. 1 Hr.

Research. I, II. 1-15 Hr.

Thesis. 2-4 Hr.

Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use University facilities, and participate in its academic and cultural programs.

Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition-waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.
The School of Dentistry was established by an act of the West Virginia Legislature on March 9, 1951, and offers baccalaureate, professional, and advanced degrees. The school is located on the first floor of the Health Sciences Center North. Modern clinical facilities include over 140 treatment areas and new state-of-the-art clinical and preclinical simulation teaching laboratories.

The majority of the faculty are full-time and have had advanced education in all of the recognized specialty areas. All programs are fully accredited by the Commission on Accreditation of the American Dental Association. The School will be expanding its specialty and research areas as additional space and funds become available.

The School of Dentistry offers several advanced education programs beyond the D.D.S. and B.S. degrees.

The Department of Endodontics offers a program of advanced study and clinical training leading to the master of science degree. The program requires a minimum of 24 months (two academic years and two summers) of full-time residency in the School of Dentistry. The program is designed to qualify dentists for careers in endodontic clinical practice, teaching, and research.

The Department of Orthodontics offers a program of advanced study and clinical training leading to the master of science degree. The program requires a minimum of 34 months (three academic years and two summers) of full-time residency in the School of Dentistry. The program is designed to qualify dentists for careers in orthodontic clinical practice, teaching, and research.

The Department of Dental Hygiene offers a program of advanced study and specialized training leading to the master of science degree. The program requires the completion of a minimum of 36 semester hours through full- or part-time enrollment in the School of Dentistry. The program is designed to qualify dental hygienists for careers in teaching, administration, and management.

The School of Dentistry offers one four-year residency in oral and maxillofacial surgery, eight one-year general practice residencies, and two one-year advanced education in general dentistry residencies.

Graduates of both North American and international dental schools are considered for admission to the dental specialty programs. Graduate assistantships are available in the second year of the endodontic program and the third year of the orthodontic program. Stipends are provided for the residency programs.

Information concerning admission requirements and courses of study may be obtained from the Office of the Associate Dean for Academic and Postdoctoral Affairs, WVU School of Dentistry, P.O. Box 9402, Health Sciences Center, Morgantown, WV 26506-9402. Telephone (304) 293-3549, fax (304) 293-2859, e-mail mpowley@wvuvphs1.hsc.wvu.edu.

Graduate Programs

Dental Hygiene M.S.
Dental Specialties M.S.

Professional Degree

Dentistry D.D.S.

(Please see the Robert C. Byrd Health Sciences Center Catalog.)
## Faculty
† Indicates regular membership in graduate faculty.
* Indicates associate membership in graduate faculty.

### Professors
- **Christina B. DeBiase, Ed.D. (WVU).** Dental hygiene, Curriculum and administration, Special patient care.
- **Marcia A. Gladwin, Ed.D. (U. Ky.).** Dental hygiene, Dental materials, Ethics, Curriculum.
- **Elizabeth C. Kao, D.M.D. (U. Penn.).** Restorative dentistry.
- **Barbara K. Komives-Norris, M.S. (Ohio St. U.).** Director, Dental hygiene. Educational administration.
- **Carol A. Spear, M.S. (U. Mich.).** Dental hygiene related topics, Instrumentation, Infection control, Education.

### Associate Professors
- **C. Russell Jackson, D.D.S., M.S. (WVU).** Endodontics, Pulpal trauma.

### Assistant Professors
- **Michael D. Bagby, D.D.S., Ph.D. (Loyola).** Biomaterials, Restorative dentistry.
- **Louise Tupta-Veselicky, D.D.S., M.Ed. (WVU).** Periodontics, Treatment therapy.
Dental Hygiene

Barbara K. Komives-Norris, Director, Division of Dental Hygiene, bkomives@wvu.edu
Christina B. DeBiase, Coordinator of the Graduate Program, cdebiase@wvu.edu
1189 Health Sciences North
www.hsc.wvu.edu/sod/dentalhygiene.html

Degree Offered: Master of Science

The School of Dentistry and its Division of Dental Hygiene offer a program of advanced study leading to the degree of master of science. This program requires a minimum of 36 semester hours through full-time or part-time enrollment in the School of Dentistry. It is designed to qualify dental hygienists for careers in teaching, administration, research and management.

Options for concurrent master’s degrees in the area of community medicine or public administration are also available.

Application Deadlines
Inquiries concerning this program should be directed to the Office of the Associate Dean for Academic and Postdoctoral Affairs, School of Dentistry. Applications should be filed by July 1 for fall admission and by November 1 for spring enrollment.

Admission Requirements
• A baccalaureate degree in dental hygiene from an accredited dental hygiene program or a baccalaureate degree in another field of study from an approved institution of higher education while holding a certificate or associate’s degree in dental hygiene from a program fully accredited by the American Dental Association Commission on Dental Accreditation.
• Evidence of scholastic and clinical achievement to indicate the applicant’s ability to progress in a program of this nature. Generally, a minimum grade-point average of 2.75 or above is required.
• Completion of one of these standardized tests: the Graduate Record Examination (GRE) general aptitude test with a combined score of 1,100 or above (400 verbal, 350 analytical, 350 quantitative), or the Miller Analogies Test with a score of 50 or above.
• Applicants who do not meet the minimum requirements for admission must gain provisional acceptance into the program. All provisions of admission must be met no later than completion of the 18th credit hour to be reclassified as a regular student. A student who fails to meet the provisions of admission or who fails to meet the required GPA will be suspended.
• Submission of all information requested in the graduate application to the Office of the Associate Dean for Academic and Postdoctoral Affairs.

Degree Requirements
• Completion of a minimum of 36 semester credit hours: 21 required credit hours and 15 credit hours in an elective area(s) of dental hygiene specialization. Two elective areas of specialization are offered. These areas are teaching/administration and special patient care. The student chooses one area of study. Courses within these specializations are taught by a number of schools or colleges within the University. An individualized program will be devised for each student which includes a maximum of six hours in research leading to an acceptable thesis. Oral defense of the thesis is required.
• All students are required to provide clinical patient care at least one semester and student teaching in the undergraduate clinic a minimum of one semester.
GPA
• Achievement of a 3.0 GPA or an overall academic average of at least a B in all work attempted in the master’s program. A grade of C or below in one course will require a faculty review of the student’s progress. A second C or below will result in dismissal from the program. A student may repeat only one course one time to bring the GPA up to the 3.0 requirement.
• Removal of all conditions, deficiencies, and incomplete grades. Credit hours for courses with a grade lower than C do not count toward degree requirements.

M.S. Curriculum

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>ED P 311 Statistics</td>
<td>3</td>
</tr>
<tr>
<td>ED P 330 Test and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>DTHY 380 Critical Issues in Health Care</td>
<td>3</td>
</tr>
<tr>
<td>DTHY 381 Expanded Functions</td>
<td>3</td>
</tr>
<tr>
<td>DENT 391 Computer Applications in Dentistry</td>
<td>2</td>
</tr>
<tr>
<td>DENT 391 Research Methods</td>
<td>1</td>
</tr>
<tr>
<td>DTHY 397 Research (Thesis)</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

Elective Area(s) of Dental Hygiene Specialization ................................................................. 15

Dental Hygiene (DTHY)

380. Dental Hygiene Seminar and Practice 1. I. 3 Hr. PR: Graduate standing and consent. Examination of the critical environmental issues affecting the future of health care; particular impact on oral health care trends will form major focus. Dental hygiene clinical practice is also included.

381. Dental Hygiene Seminar and Practice 2. II. 3 Hr. PR: DTHY 380. Expanded services for the dental hygienist with emphasis on restorative and periodontal functions.

382. Enhancing Class Administration. 1 Hr. The use of “office productivity” software to enhance classroom and clinic administration. Course targeted toward students destined for careers in dental hygiene or dental education.

385. Research Methods for the Dental Hygienist. II. 3 Hr. PR: EDP 311. Methods and techniques of research in dental hygiene. Major emphasis on planning and evaluating health programs, conducting oral health surveys, designing experiments, and critically analyzing research results.


Dentistry (DENT)

391 A-Z. Advanced Topics. (Fourth year.) I and II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

490. Teaching Practicum. I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of dentistry.
Endodontics
C. Russell Jackson, D.D.S., M.S., Director
1067 Health Sciences North
Degree Offered: Master of Science

The School of Dentistry and its Division of Endodontics offer a program of advanced study and clinical training leading to the degree of master of science. The program requires a minimum of 24 months (two academic years and two summer sessions) of full-time residency in the School of Dentistry and is designed to qualify dentists for careers in endodontic clinical practice, teaching, and research.

Inquiries concerning this program should be directed to the Office of the Associate Dean for Academic and Postdoctoral Affairs. Applicants will be processed in the School of Dentistry. Applicants approved for admission to the program will be notified soon after December 1.

Admission Requirements
The program’s admission requirements are as follows:
• Graduation from an accredited school of dentistry.
• Evidence of scholastic and clinical achievement that would indicate the applicant’s ability to progress in a program of this nature.

Each applicant must file with the Department of Endodontics all information requested in the departmental application form by September 15.

Program Requirements
For the master of science degree, the following requirements must be met:
• Fulfillment of University requirements for graduate study.
• Twenty-four months (two academic years and two summer sessions) of consecutive residency at the WVU School of Dentistry.
• An approved master’s thesis based on original research completed during the period of residency in an area related to endodontics.
• Successful completion of a final oral examination.
• Completion of a minimum of 63 credit hours, including 32 hours of endodontic courses, a minimum of 24 hours of selected basic sciences subjects, and a thesis (seven hours).
• Demonstration of satisfactory clinical competency in the student’s field.
• Maintenance of a grade level commensurate with graduate education.

Dentistry (DENT)
391 A-Z. Advanced Topics. (Fourth year.) I and II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.


399. Clinic Completion Practicum. I, II, S. 1-15 Hr. Supervised patient care in selected clinical areas specified for each individual student according to their clinical competency requirements. (Graded S/U.)


490. Teaching Practicum. I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of dentistry.
Endodontics (ENDO)


390. *Clinical Endodontics*. I, II, S. 1-5 Hr. (May be repeated for credit.) PR: Graduate of an accredited dental school and admission to the Advanced Education Program in Endodontics or consent. Clinical endodontic practice in the areas of: ordinary endodontic cases, complex endodontic cases, hemisection, root amputation, replantation, transplantation, endodontic implantation, vital pulp therapy, apexification, and bleaching.

391. *Advanced Topics*. (Fourth year.) I and II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.


Microbiology (MBIM)

317. *Special Problems in Microbiology*. I, II, S. 1-7 Hr. per sem. with a total of 24 Hr. available. Pathogenic microorganisms, including immunology and antimicrobial agents.

Pathology (PATH)

382. *Advanced Oral Histopathology*. (For dental and graduate students, residents, and interns.) I and II. 1-2 hr PR: Consent; DENT 338, 353. An elective seminar stressing the significant microscopic features and diagnosis of various oral lesions.

401. *Special Studies in Oral Pathology*. (For dental and graduate students, residents, and interns.) I. 1-3 Hr. PR: Consent. Advanced study of local or systemic disease processes affecting oral structures through seminars, assignment of specific topics, or research activities.

Pharmacology and Toxicology (PCOL)

360. *Pharmacology and Therapeutics*. (For dental and graduate students.) I. 4 Hr. PR: Dental student standing or consent. Lecture and demonstrations on pharmacological actions and therapeutic uses of drugs.

Statistics (STAT)

311. *Statistical Methods*. I, II. 3 Hr. PR: MATH 3. Statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regression, correlation, transformations, F and Chi-square distributions, analysis of variance and multiple comparisons. (Equivalent to EDP 311 and PSYC 311.)
Orthodontics

Peter Ngan, D.M.D., Chairperson
1077 Health Sciences North
www.hsc.wvu.edu/sod/orthodontics.html

Degree Offered: Master of Science

The School of Dentistry and its Department of Orthodontics offer a program of advanced study and clinical training leading to the degree of master of science. The program requires a minimum of 34 months (three academic years and two summers) of full-time residency in the School of Dentistry and is designed to qualify dentists for careers in orthodontic clinical practice, teaching, and research.

Inquiries concerning this program should be directed to the Office of the Associate Dean for Academic and Postdoctoral Affairs. Applications will be processed in the School of Dentistry. Those applicants approved for admission to the program will be notified soon after December 1.

Admission Requirements

- Graduation from an accredited dental school.
- Evidence of scholastic and clinical achievement that would indicate the applicant’s ability to progress in a program of this nature. Generally, a minimum grade-point average of 3.0 is required for admission.
- Each applicant must file with the department all information requested in the department application form by September 15.
- Fulfillment of WVU general requirements for graduate study.
- Thirty-four months (three academic years and two summers) of consecutive residency at the School of Dentistry.
- An approved master’s thesis based on original research completed during the period of residency in an area related to orthodontics.
- Satisfactory performance in a final oral examination.
- Completion of a minimum of 74 credit hours, including 46 hours of orthodontic courses, a minimum of 15 hours of selected basic sciences subjects, and a research/thesis (13 hours).
- Satisfactory demonstration of clinical competence in the student’s field.
- Maintenance of a grade level commensurate with graduate education.

Anatomy (ANAT)

316. Craniofacial Growth and Maturation. I. 1 Hr. PR: Consent of instructor. The current concepts of craniofacial growth and maturation are presented and integrated for application to clinical problems.

Orthodontics (ORTH)

391. Advanced Topics. (Fourth year.) I and II. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.


416. Biomechanics. I, II, S. 2 Hr. PR: Consent. Design and function of the teeth and their surrounding structures, and response of these tissues to orthodontic procedures.


419. Orthodontic Diagnosis. I, II, S. 1-3 Hr. PR: Consent. Seminar-type class on technique of patient examination, acquiring diagnostic records, and analyzing and correlating this information to the treatment of clinical problems.


422. Advanced Orthodontic Mechanics. I, II, S. 1 Hr. PR: ORTH 421. Continuation of DENT 421 involving more difficult type cases and introducing more sophisticated appliance therapy.

423. Growth and Development. II. 1-5 Hr. PR: Consent. Seminar-type course on normal and abnormal growth of the human head and its application to orthodontics.


490. Teaching Practicum. I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of dentistry.

Statistics (STAT)

311. Statistical Methods 1. I, II. S. 3 HR. PR: MATH 3. Statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regression, correlation, transformations, F and Chi-square distributions, analysis of variance and multiple comparisons. (Equiv. to EDP 311 and PSYC 311.)
Master of Science
Specialization in Prosthodontics
Mark Richards, DDS, Chairperson
1118 Health Sciences North

The School of Dentistry and its department of restorative dentistry offer a program of advanced study and clinical training leading to the degree of master of science (M.S.). The program generally requires 33 months (three academic years and two summers) of full-time residency in the School of Dentistry. It is designed to qualify dentists for careers in prosthodontic clinical practice, teaching, and research. Inquiries concerning this program should be directed to the office of the associate dean for academic and postdoctoral affairs. Those applicants approved for admission to the program will be notified December 1.

Requirements for Admission to the Prosthodontic Program
- Graduation from an accredited dental school.
- Evidence of scholastic and clinical achievement that would indicate the applicant’s ability to progress in a program of this nature. Generally, a minimum grade-point average of 3.0 is required for admission.
- Each applicant must file with the department all information requested in the department application form.

Requirements for Degree of Master of Science
- Fulfillment of general WVU graduate study requirements.
- Thirty-three months (three academic years and two summers) of residency at the School of Dentistry.
- An approved master’s thesis based on original research completed during the period of residency in an area related to prosthodontics.
- Satisfactory passage of a final oral examination.
- Completion of a minimum of 77 credit hours. These include 49 hours of prosthodontic courses, a minimum of 13 hours of selected basic sciences subjects, two hours of teaching practicum, and a thesis (13 hours).
- Demonstration of satisfactory clinical competence in the student’s field.
- Achievement of a 3.0 GPA or an overall academic average of at least a B in all work attempted in the master’s program. A grade of C or below in two courses will require a faculty review of the student’s progress. A third C or below will result in suspension from the program.

Prosthodontics (PROS)
389. Advanced Prosthodontic Theory. I, II, S. 1-6 Hr. Advanced theories and techniques in fixed and removable partial dentures, complete dentures, maxillofacial prosthetics, implantology, and geriatric prosthodontics to include case presentations, literature surveys, and articulator analysis seminars.

390. Advanced Clinical Prosthodontics. I, II, S. 1-6 Hr. Advanced prosthodontic practice in the areas of fixed and removable partial dentures, complete dentures, tempomandibular dysfunction, maxillofacial prosthetics, and implant prosthodontics.
Degrees Offered:

Aerospace Engineering .................................................. M.S.A.E., Ph.D.
Chemical Engineering.................................................. M.S. Ch.E., Ph.D.
Civil Engineering .......................................................... M.S.C.E., Ph.D.
Computer Engineering .................................................. Ph.D.
Computer Science .......................................................... M.S.C.S., Ph.D.
Electrical Engineering .................................................. M.S.E.E., Ph.D.
Engineering ................................................................. M.S.E.
Industrial Engineering .................................................. M.S.I.E., Ph.D.
Mechanical Engineering ................................................. M.S.M.E., Ph.D.
Mining Engineering ....................................................... M.S.Min.E., Ph.D.
Occupational Hygiene and Occupational Safety ............... M.S.
Occupational Safety and Health .................................... Ph.D.
Petroleum and Natural Gas Engineering ......................... M.S.P.N.G.E., Ph.D.
Safety Management ...................................................... M.S.
Software Engineering ...................................................... M.S.S.E.

College of Engineering and Mineral Resources (CEMR) graduate programs are administered through the Departments of Chemical Engineering, Civil and Environmental Engineering, Computer Science and Electrical Engineering, Industrial and Management Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, and Petroleum and Natural Gas Engineering.

The facilities are housed on the Evansdale campus in three buildings: the Engineering Sciences Building, the Mineral Resources Building, and the Engineering Research Building. These buildings house state-of-the-art research facilities, well-equipped teaching laboratories, classrooms, and offices for the faculty and administration of the graduate programs and Extension and Outreach.

The College offers a doctor of philosophy in most disciplines. The Ph.D. program prepares graduates for leadership in industrial, governmental, or academic fields. The areas of specialization in engineering are aerospace, chemical, civil, computer, electrical, industrial, mechanical, mining, and petroleum and natural gas engineering. In addition, the College offers a Ph.D. in computer science and a Ph.D. in occupational safety and health.

Designated master’s degrees are offered in aerospace, chemical, civil, electrical, industrial, mechanical, mining, petroleum and natural gas, software engineering, and computer science. A master of science in engineering (M.S.E.) degree is offered to qualified students as determined at the departmental level. The College offers two accredited master of science degrees in occupational hygiene and occupational safety and management. These engineering related programs are accredited by the Related Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Currently the College offers certificate programs in bioengineering, manufacturing systems engineering, materials engineering, and software engineering.

For specific information about a program, students should contact the graduate program coordinator in the area of interest or the associate dean for research and graduate studies at (304) 293-4821.
Special Requirements

A student desiring to take courses for graduate credit in the college must comply with the appropriate University regulations for graduate study. To become enrolled in a CEMR graduate program, a student must apply for admission through the Office of Admissions and Records to the major department of the student’s choice. Acceptance by the major department will depend upon review of the student’s academic background and available facilities in that department.

An applicant with a baccalaureate degree, or its equivalent, from a program accredited by the Accreditation Board for Engineering and Technology (ABET), Computer Science Accreditation Board (CSAB), or an internationally recognized program in engineering or computer science will be admitted on the same basis as engineering or computer science graduates of WVU. Lacking these qualifications, an applicant must first fulfill any special requirements of the department in which the student is seeking an advanced degree.

No credits which are reported with a grade lower than C are acceptable toward an advanced degree. To qualify for an advanced degree, the graduate student must have a grade-point average of at least 3.0 based on all courses acceptable for graduate credit for which the student has received a grade from WVU. Graduate students in the College must also comply with the regulations of their major department.

Individual departments may establish more stringent requirements than those adopted for CEMR as a whole. These departmental requirements are contained in the individual program sections of the graduate catalog.

Course Load

A full-time graduate student must register for at least nine, but no more than 15, credit hours during each regular semester, or at least six, but no more than 12, credit hours in the two summer sessions combined. Permission to carry a heavier load must be obtained in writing from the dean.

Master’s Program

For all master’s degree students, an advisory and examining committee consisting of at least three faculty members will be appointed. A plan of study must be jointly prepared and approved by the student and all members of the student’s advisory and examining committee, the department chair, and the dean or dean’s designate, either at the end of the second semester of the student’s attendance or at the completion of the twelfth course credit hour, whichever is later. The plan must contain a minimum of 30 semester credit hours, not more than nine of which can be at the 200 level. If a thesis or a problem report is part of the candidate’s program, not more than six semester credit hours of research leading to an acceptable thesis or more than three semester credit hours of work for an acceptable problem report may be applied toward the credit hour requirement.

Application for Transfer of Graduate Credit A student wishing to apply graduate credit earned at another institution to a master’s degree at WVU must complete an application for transfer of graduate credit to WVU and have an official transcript submitted to the WVU Office of Admissions and Records from the external institution. A maximum of 12 semester hours from other institutions may be acceptable for credit at WVU in master’s degree programs in CEMR. Departmental programs may choose to accept fewer transfer credit hours.

Time to Completion All requirements for the master’s degree must be completed within eight years preceding the student’s graduation.
Doctor of Philosophy

The academic units within the College that are approved for participation in the doctor of philosophy degree program are the Departments of Chemical Engineering, Civil and Environmental Engineering, Computer Science and Electrical Engineering, Industrial and Management Systems Engineering, Mechanical and Aerospace Engineering, Mining Engineering, and Petroleum and Natural Gas Engineering.

Admission as a graduate student is required of all applicants for admission to a program of study and research leading to the Ph.D. degree. Applicants for admission must hold or expect to receive a bachelor’s degree in engineering or computer science from an accredited or an internationally recognized program in engineering or computer science. Although a bachelor’s degree is the minimum requirement, a master’s degree in engineering or computer science is recommended for applicants. An applicant who holds a B.S. or M.S. in one of the physical sciences or mathematics may be considered for admission. Admission to graduate study does not necessarily assure entrance into a CEMR doctoral program.

Application for Transfer of Graduate Credit A student wishing to apply credit earned at another institution to a doctoral degree program at WVU must submit the an application for transfer of graduate credit to WVU and have an official transcript from the institution forwarded to the WVU Office of Admissions and Records. The approval of transfer credit is at the discretion of the student’s advisory and examining committee.

Advisory Committee The student, research advisor, academic advisor, and department chairperson appoint the student’s advisory and examining committee. For the Ph.D. program, each committee must consist of at least five members—at least three, including the chairperson, from the student’s major department and one from another discipline related to the student’s area of interest.

Plan of Study At the end of the second semester of a student’s attendance, at the completion of the twelfth credit hour, or when master’s degree requirements are completed, whichever is later, the student, with the advice and consent of the student’s academic advisor, graduate coordinator, and members of the student’s advisory and examining committee, will submit a plan of study, initiated in the student’s department, to the dean or dean’s designee. Some departments may require that a preliminary dissertation research proposal be submitted along with the plan of study.

Candidacy Examination After admission to the program and after the residence requirement are met, the applicant will take a candidacy examination in which the student must demonstrate: (a) a grasp of the important phases and problems of the field of study and an appreciation of their relation to other fields of human knowledge and accomplishments, and (b) the ability to employ the instruments of research developed in the student’s area of interest. When an applicant has passed the comprehensive examination, the student will be formally admitted to candidacy for the doctoral degree. A student will have only one opportunity for reexamination.

Credit Requirements The doctor of philosophy degree is not awarded solely on the basis of the accumulation of course credits and completion of a definite residence requirement. The amount and nature of the course work undertaken by a doctoral student will be established for each individual student with the objective of ensuring a reasonable and coherent progression of academic development beyond the baccalaureate and/or master’s degree.
Faculty

† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.

Chemical Engineering

Professors

† Eung H. Cho, Ph.D. (U. of Utah). Coal processing, Leaching and solvent extraction, Environmental science.
† Eugene V. Cilento, Ph.D. (U. Cincinnati). Physiological transport phenomena, Biomedical engineering, Image analysis, Mathematical modeling.
† Dady B. Dadyburjor, Ph.D. (U. Del.). Chairperson. Catalysis, Reaction engineering, Micellization, Coal liquefaction.
† Rakesh K. Gupta, Ph.D. (U. Del.). Polymer processing, Rheology, Non-Newtonian fluid mechanics, Composite materials.
† Hisashi O. Kono, Dr. Engr. (Kyushu U.). Fluidization, Powder technology, Powder material science.
† Alfred H. Stiller, Ph.D. (U. Cincinnati). Chemistry (physical inorganic chemistry), Solution chemistry, Coal liquefaction, Carbon science.

Associate Professors

† Charter D. Stinespring, Ph.D. (WVU). Wide band gap semiconductor growth and etching, Surface kinetics.

Assistant Professors


Civil and Environmental Engineering

Professors

† W. Joseph Head, Ph.D. (Purdue U.). Waste utilization, Highway and airfield pavements, Concrete.


Samir Shoukry, Ph.D. (Aston U.). Pavement modeling, Non-destructive evaluation, Structural dynamics.


Associate Professors

Karl Barth, Ph.D. (Purdue U.). Steel structures, Bridge design and rehabilitation, Connections, Stability analysis, Experimental mechanics.


Assistant Professors


Computer Science and Electrical Engineering Professors


Muhammad A. Choudhry, Ph.D. (Purdue U.). Graduate Coordinator for EE/CpE. Power system control, DC transmission, Stability, Power electronics.


†Franz X. Hiergeist, Ph.D. (U. Pitt.). Mathematics of computation.


†Powsiri Klinkhachorn, Ph.D. (WVU). Microprocessor applications, Computer architecture, Binary and nonbinary logic.

†Ali Mili, Ph.D. (U. Ill.). Software engineering, Program specification and verification.


†Craig S. Sims, Ph.D. (SMU). Emeritus.


**Associate Professors**


†V. Jagannathan, Ph.D. (Vanderbilt U.). Distributed Intelligent Systems, Internet and security technologies.


†William F. Klostermeyer, Ph.D. (U. Fla.). Design and analysis of algorithms, Combinatorics, Graph theory.

†Robert L. McConnell, Ph.D. (U. Ky.). Undergraduate coordinator. Electronic instrumentation, Power control, Microcomputer based applications, Engineering design.

†James D. Mooney, Ph.D. (Ohio St. U.). Operating systems, Computer architecture, Software portability.

†Afzel Noore, Ph.D. (WVU). Associate dean. Fault-tolerant computing, Design for testability, VLSI design and testing, Computer architecture, Distributed and parallel processing.


†Murali Sitaraman, Ph.D. (Ohio St. U.). Software engineering, Data structures, Software reuse.

†Frances L. Van Scoy, Ph.D. (U. Va.). Programming languages and compilers, Software engineering, Parallel processing.

**Assistant Professors**


†Bojan Cukic, Ph.D. (U. Houston). High-assurance systems, Software engineering, Parallel and distributed computing, Fault-tolerant systems, Medical imaging.


†Elaine M. Eschen, Ph.D. (Vanderbilt U.). Design and analysis of algorithms, Combinatorial optimization, Graph theory.

†Kathleen Meehan, Ph.D. (U. Ill. at U/C). Optoelectronic devices, Optical sensors design and fabrication.

†Stephanie Caswell Schuckers, Ph.D. (U. Mich.). Signal processing, Cardiovascular engineering, Medical devices.

†Matthew C. Valenti, Ph.D. (VPI & SU). Wireless and digital communications.

**Lecturers**

Sheila Arbaugh, M.S. (WVU). Programming languages, Operating systems, Artificial intelligence.

Cynthia D. Tanner, M.S. (WVU). Graduate coordinator for software engineering. Software engineering, Program understanding.

**Extension and Outreach**

Extension and Outreach is a unit within the College of Engineering and Mineral Resources (CEMER) that is composed of two programs: Mining Extension and Industrial Extension.

James M. Dean, M.S.W.M. (WVU). Director. Mine management, Mine safety and health, Initial miner training.


**Industrial Extension Service**

**Industrial Extension Specialists**


**Mining Extension Service**

**Professor**


**Associate Professors**


**Assistant Professors**

Luther B. Ferguson. Emeritus.

James H. Kincaid, B.S. (WV Tech.). Mine foreman training, Mandatory miner training courses, Mine management, CPR training.

**Mining Extension Agents**

Thomas W. Hall, B.S. (Fairmont St. C.). Mine foreman training, Mandatory miner training, Mining methods.


Ireland Sutton, B.S. (WVU Inst. of Tech.). Surface mine blasting, Underground and surface power systems, Mandatory miner training.

**Industrial and Management Systems Engineering**

**Professors**

†Rashpal S. Ahluwalia, Ph.D., P.E. (Western Ontario U.). Manufacturing systems, Quality and reliability engineering, and Robotics and automation.

†Majid Jaraiedi, Ph.D. (U. Mich.). Statistics, Quality control, Forecasting and transportation research.
†Warren R. Myers, Ph.D., C.I.H. (WVU). Chairperson. Industrial hygiene and safety, Worker exposure assessment and modeling, Aerosol filtration, Occupational respiratory protection design and testing.

Associate Professors
†B. Gopalakrishnan, Ph.D. (VPI & SU). Manufacturing processes and systems engineering, Information systems, Artificial intelligence applications, Expert systems development, Mechatronics, Facilities planning and materials handling, Databases, and Industrial energy/waste productivity management.

Assistant Professors
†Michael J. Klishis, Ph.D. (WVU). Safe behaviors, Training and loss control, Instructional development, Mine safety and health.
†Dianne McMullin, Ph.D. (Neb.). Physical ergonomics, Safety engineering, Occupational safety, Expert systems.
David Whaley, Ph.D., C.I.H. (St. U. of NY at Buffalo). Chemical hazard ranking, Pollution prevention, Geographic information system mapping, Air and water pollutant dispersion modeling, Environmental justice.

Mechanical and Aerospace Engineering
Professors
†Richard A. Bajura, Ph.D., P.E. (U. N. Dame). Director of NRCCE. Fluids engineering.
†Reda Bata, Ph.D. (U. of Fla.). Alternate fuels, Thermal sciences, Engine testing.
Edward F. Byars, Ph.D., P.E. (U. Ill.). Emeritus.
†Ismail Celik, Ph.D. (U. Iowa). Fluids engineering.
†Russell K. Dean, Ph.D. (WVU). Associate provost. Engineering mechanics.
†Mridul Gautam, Ph.D. (WVU). Fluid mechanics.
†Steve Lewellen, Ph.D. (UCLA). Research. Fluid dynamics.

† Majid Jaraiedi, Ph.D. (U. Mich.). Statistics, Quality control, Forecasting and transportation research.
† Warren R. Myers, Ph.D., C.I.H. (WVU). Chairperson. Industrial hygiene and safety, Worker exposure assessment and modeling, Aerosol filtration, Occupational respiratory protection design and testing.

Associate Professors
† B. Gopalakrishnan, Ph.D. (VPI & SU). Manufacturing processes and systems engineering, Information systems, Artificial intelligence applications, Expert systems development, Mechatronics, Facilities planning and materials handling, Databases, and Industrial energy/waste productivity management.

Assistant Professors
†Michael J. Klishis, Ph.D. (WVU). Safe behaviors, Training and loss control, Instructional development, Mine safety and health.
†Dianne McMullin, Ph.D. (Neb.). Physical ergonomics, Safety engineering, Occupational safety, Expert systems.
David Whaley, Ph.D., C.I.H. (St. U. of NY at Buffalo). Chemical hazard ranking, Pollution prevention, Geographic information system mapping, Air and water pollutant dispersion modeling, Environmental justice.

Mechanical and Aerospace Engineering
Professors
†Richard A. Bajura, Ph.D., P.E. (U. N. Dame). Director of NRCCE. Fluids engineering.
†Reda Bata, Ph.D. (U. of Fla.). Alternate fuels, Thermal sciences, Engine testing.
Edward F. Byars, Ph.D., P.E. (U. Ill.). Emeritus.
†Ismail Celik, Ph.D. (U. Iowa). Fluids engineering.
†Russell K. Dean, Ph.D. (WVU). Associate provost. Engineering mechanics.
†Mridul Gautam, Ph.D. (WVU). Fluid mechanics.
†Steve Lewellen, Ph.D. (UCLA). Research. Fluid dynamics.


G. Michael Palmer, Ph.D. (WVU). Instrumentation, Microprocessor applications.

Samir Shoukry, Ph.D. (Aston U.). Structural dynamics, Neural nets, Instrumentation.


James E. Smith, Ph.D. (WVU). Mechanical design.

John E. Sneckenberger, Ph.D., P.E. (WVU). Mechanical design and automation.


Charles Stanley, Ph.D. (WVU). Pulmonary bioengineering, Mechanical instrumentation.


Associate Professors


Bruce Kang, Ph.D. (U. Wash.). Experimental mechanics, Advanced materials.


Assistant Professors

Alberta Ayala, Ph.D. (U. of Calif., Davis). Experimental fluid dynamics.


Kristine Craven, Ph.D. (WVU). Visiting.


Mine Emergency Preparedness Center


Mining Engineering
Professors
†A. Wahab Khair, Ph.D. (Penn. St. U.). Rock mechanics, Ground control.
†Syd S. Peng, Ph.D. (Stanford U.). Charles T. Hollard Distinguished Professor of Mining
 Engineering and chairman. Longwall mining, Ground control.

Associate Professors
Donald M. Bondurant, M.S.E.M. (WVU). Emeritus.

Assistant Professors.

Particle Analysis Center
†Thomas P. Meloy, Ph.D. (MIT). Benedum Professor. Powder science, Mineral liberation, Plant
circuit analysis.

Petroleum and Natural Gas Engineering
Professors
†Khayat Aminian, Ph.D. (U. Mich.). Natural gas engineering, Reservoir simulation.
oil recovery.
Larry Woodford, A.M. (Ind. U.). Adjunct.

Associate Professors
†Shahab Mohaghegh, Ph.D. (Penn. St. U.). Reservoir engineering.

Chemical Engineering
Dady B. Dadyburjor, Ph.D., Chairperson
403 Engineering Sciences Building
e-mail: che-info@cemr.wvu.edu
www.cemr.wvu.edu/~wwwche/

Degrees Offered: Master of Science in Chemical Engineering
 Master of Science in Engineering with a major in Chemical Engineering
 Doctor of Philosophy with a major in Chemical Engineering

The Department of Chemical Engineering, with 13 faculty members, 120 undergraduates, and over 30 graduate students, has one of the oldest doctoral-granting programs in the University. From the initial doctoral degree in 1932, the graduate course program has been based on advanced chemical engineering fundamentals, while the research program has reflected a balance of fundamental research areas and their application to relevant technological areas such as bioengineering, catalysis, coal conversion, materials, and polymer processing.

Faculty Research Areas
Chemical engineering faculty are presently involved in the following research areas: biochemical engineering, biomedical engineering, carbon science, catalysis, fluid mechanics, heat transfer, materials engineering, polymers and polymer rheology, reaction
engineering, separation processes, solution chemistry, surface science, and thermodynamics. These fundamental areas are finding applications in biochemical technology, biotransport, coal gasification and liquefaction, materials handling and processing, in-situ combustion, non-fuel uses of coal, carbon products, and synthetic fuels.

Faculty members possess a wide variety of industrial experience and are routinely in contact with their counterparts in industry. This contact with real engineering problems enables them to convey a practical experience to students while keeping in perspective many of the fundamental concepts involved in graduate study. During the last five years, the chemical engineering faculty have authored or coauthored two books, published over 90 refereed journal articles, have been issued five patents, made over 175 presentations at professional meetings, and supervised the completion of 50 master’s and 10 doctoral degrees, and over 10 post-doctoral students and visiting scholars. In addition, faculty members have taught short courses throughout the United States and abroad.

Degree Programs
The department is authorized to admit students to the following degree programs: master of science in chemical engineering (M.S. Ch.E.), master of science in engineering (M.S.E.), and College of Engineering and Mineral Resources interdisciplinary doctor of philosophy (Ph.D.). Students in these programs must comply with the rules and regulations as presented in the general requirements for graduate work in the College of Engineering and Mineral Resources and in the Department of Chemical Engineering. Students interested in pursuing work for a master’s or doctoral degree in chemical engineering should contact the department for copies of the required guidelines and application information.

Admission
Admission to the M.S.Ch.E. program is restricted to those holding a baccalaureate degree in chemical engineering or its equivalent. The M.S.E. program is available to students holding baccalaureate degrees in other fields of engineering and the physical sciences who wish to pursue a broad interdisciplinary program relevant to the major graduate areas administered by the department. To be admitted as a regular graduate student, an applicant must have a B.S. degree and a sound record in previous college work with a minimum 3.0/4.0 cumulative grade-point average. Applicants who cannot meet these conditions may be considered for admission in a conditional category. Students admitted with deficiencies in their undergraduate programs are required to take some chemical engineering courses as prerequisites for graduate courses. These requirements are stated as a condition for admission.

Planned Programs
M.S.Ch.E. candidates should expect to obtain their degree in about 18 months. M.S.E. students typically require 1 to 1 1/2 years beyond completion of prerequisite courses. Typically, the prerequisite courses include as a minimum: Ch E 110, 111, 112, 142, 145, and 172. All M.S. degree candidates are required to perform research and will follow a planned program which conforms to either of the following outlines:

- A minimum of 30 semester credit hours, excluding seminar, not more than six of which are in research leading to an acceptable thesis.
- A minimum of 33 semester credit hours, excluding seminar, not more than three of which are in research leading to an acceptable problem report.

The course work M.S. degree option is not offered by the Department of Chemical Engineering.
Required Courses

All students are required to take Ch E 301, 344, and 345, and all full-time students are required to take one credit of journal club/seminar (Ch E 400) for each semester enrolled. The research advisor, in conjunction with an advisory and examining committee (AEC) to be designated by each student, will be responsible for following departmental guidelines to determine the plan of study appropriate to the student’s program.

A written research proposal and oral presentation of this proposal is required of all M.S. students. This oral defense is administered by the student’s AEC and must be completed by the end of the second semester of the first year for M.S.Ch.E candidates, and as soon as possible but not later than the end of the second semester of the second year for M.S.E. candidates.

Final Examination

All students are required to pass a final oral examination, administered by their AEC, covering both the thesis or problem report (depending on the program selected) and related course material.

Doctor of Philosophy

A candidate for the degree of doctor of philosophy must comply with the rules and regulations as outlined in the general requirements for graduate work in engineering and the specific requirements stated in the departmental guidelines. Students who are interested in pursuing a Ph.D. degree in the Department of Chemical Engineering should contact the department for specific information. A program with a major in chemical engineering, designed to meet the needs and objectives of each student, will be developed in consultation with the student’s research advisor and advisory and examining committee (AEC). It should be emphasized that the Ph.D. degree is primarily a research degree, and therefore the research work for a doctoral dissertation should show a high order of originality on the part of the student and must offer an original contribution to the field of engineering science.

Admission

Admission to the Ph.D. program is open to students who qualify as regular graduate students and who have obtained a B.S. or M.S. degree in science or engineering. Students admitted must have demonstrated an excellent academic record in previously completed college course work with a minimum cumulative grade-point average of 3.0 (on a four-point scale). Three letters of recommendation, and GRE scores are required by the department. Students in the Ph.D. program should complete the requirements in two to four years.

Required Courses

All B.S. students entering the Ph.D. program are required to take Ch E 301, 344, and 345, while M.S. students entering the program must demonstrate equivalent courses taken for graduate credit. In addition, all full-time students must take one credit of seminar/journal club (Ch E 400) each semester. For a student admitted directly after the B.S. degree, the Ph.D. program consists of a minimum of 36 course credit hours, excluding research (Ch E 497) and seminar/journal club (Ch E 400). If the student has an M.S. in chemical engineering from WVU, the program consists of a minimum of 12 course credit hours (excluding Ch E 497 and Ch E 400). If the student has an M.S. in chemical engineering from another institution, the program consists of a minimum of 18 course credit hours (excluding Ch E 497 and Ch E 400). Students must complete a minor consisting of a minimum of nine semester hours of a coherent set of courses taken outside of the department. These courses may be related to the major research area. Nontechnical courses are considered only under exceptional circumstances. Courses at the 200 level may be acceptable. All courses must be approved by
the AEC and the academic advisor. Students must complete graduate courses with an overall course work average of 3.0 or better (exclusive of research credits) and complete all Ch E courses with an overall grade-point average of 3.0 (exclusive of research credits). A minimum of 24 credit hours in dissertation research is required. Also, two semesters of full-time attendance at the Morgantown campus is required to complete the residency requirement.

Examinations All students must pass the Ph.D. qualifying examination given in their first year at WVU. This examination is designed to assess the basic competency of students in the chemical engineering field to determine whether or not they have sufficient knowledge to undertake independent research.

Within twelve months of passing the qualifying examination or of entering the Ph.D. program, whichever is later, the student must successfully defend an original research proposition in an oral examination. The written proposition, developed by the student alone, remains the intellectual property of the student and must be on a topic unrelated to the student’s own research work for the dissertation.

Research Proposal A student must receive acceptance of a written dissertation research proposal and must also successfully defend this proposal to the student’s AEC. This requirement must be completed within six months of passing the qualifying examination or of entering the Ph.D. program, whichever is later. The research work for the doctoral dissertation should show a high order of originality on the part of the student and must offer an original contribution to the field of engineering science.

A student who has successfully completed all course work, passed the qualifying examination, and successfully defended the original research proposition and research proposal is defined as one who is a candidate for the Ph.D. degree.

In order to complete the Ph.D. requirements, a student must pass a final oral examination on the results embodied in the dissertation. This examination is open to the public and, in order to evaluate critically the student’s competency, may include testing on material in related fields, as deemed necessary by the AEC. In addition, since the Ph.D. degree is primarily a research degree that embodies the results of an original research proposal and represents a significant contribution to scientific literature, the student must submit a manuscript on this research to the AEC.

Chemical Engineering (Ch E)

301. *Transport Phenomena*. 3 Hr. PR: Consent. Introduction to equations of change (heat, mass and momentum transfer) with a differential-balance approach. Use in Newtonian flow, turbulent flow, mass and energy transfer, radiation, convection. Estimation of transport coefficients. (3 hr. lec.)


344. **Thermodynamics.** 3 Hr. PR: Consent. Logical development of thermodynamic principles. These are applied to selected topics including development and application of the phase rule, physical and chemical equilibria in complex systems, and nonideal solutions. Introduction to nonequilibrium thermodynamics. (3 hr. lec.)

345. **Chemical Reaction Engineering.** 3 Hr. PR: Consent. Homogeneous and heterogeneous reaction systems, batch and flow ideal reactors, macro- and micro-mixing, non-ideal reactors, diffusion and reaction in porous catalysts, reactor stability analysis, special topics. (3 hr. lec.)

351. **Fluidization Engineering.** 3 Hr. PR: Consent. Fundamentals of fluidization, two-phase flow theory and powder characteristics, structure and property of the emulsion phase and bubbles, mass- and heat-transfer in fluidized beds with and without chemical reaction. (3 hr. lec.)

352. **Powder Technology.** 3 Hr. PR: Consent. Characterization of powders, structure of powders, powders in two-phase flow, measurement techniques, static and dynamic behavior of powders, grinding and agglomeration, chemistry of powders. (3 hr. lec.)

356. **Polymer Rheology.** 3 Hr. Qualitative behavior of polymeric liquids; Rheometry; stress, strain and rate of strain tensors; Equations of motion; Hookean solids and Newtonian liquids, Linear viscoelasticity; constitutive equations for solutions and melts. (3 hr. lec.)

360. **Corrosion Engineering.** 3 Hr. PR: Ch E 142 or CHEM 141 or equivalent. Basic mechanisms of various types of corrosion such as galvanic corrosion, pitting corrosion and stress corrosion cracking; methods of corrosion prevention such as cathodic and anodic preventions, by using coatings and inhibitors and by selecting proper alloys. (3 hr. lec.)

387. **Materials Engineering.** 3 Hr. A study of materials engineering fundamentals emphasizing semiconductor, polymer, metal, and ceramic/cementitious material systems. Mechanical and physical properties, theoretical aspects, testing, design criteria, manufacturing, and economics of material systems. Laboratory testing and evaluation. (Equivalent to CE 387, EE 387, EM 387, IMSE 387, and MAE 387.) (3 hr. lec.)

391 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

400. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

402. **Advanced Fluid Dynamics.** 3 Hr. PR: Consent. Analysis of flow of fluids and transport of momentum and mechanical energy. Differential equations of fluid flow; potential flow, laminar boundary-layer theory, and non-Newtonian fluids. (3 hr. lec.)

404. **Advanced Heat Transfer.** 2-5 Hr. PR: Consent. Theory of transport of thermal energy in solids and fluids as well as radiative transfer. Steady-state and transient conduction; heat transfer to flowing fluids; evaporation; boiling and condensation; packed-and fluid-bed heat transfer. (3 hr. lec.)

406. **Advanced Mass Transfer.** 2-5 Hr. PR: Consent. Theory of diffusion, interphase mass-transfer theory, turbulent transport, simultaneous mass and heat transfer, mass transfer with chemical reaction, high mass-transfer rates, multicomponent macroscopic balances. (3 hr. lec.)

432. **Optimization of Chemical Engineering Systems.** 3 Hr. PR: Consent. Optimization in engineering design, unconstrained optimization and differential calculus, equality-constraints optimization, search technique, maximum principles, goemetric and dynamic programming, linear and nonlinear programming, calculus of variations. (3 hr. lec.)
444. Applied Statistical and Molecular Thermodynamics. 3 Hr. PR: Ch E 344 and consent. The connection between microscopic phenomena (thermodynamics) and macroscopic phenomena (statistical and quantum mechanics). Thermodynamics modeling for process analysis. Equations of state, perturbation theories, mixing rules, computer simulation, group-contribution models, physical-property prediction. (3 hr. lec.)

446. Catalysis. 3 Hr. PR: CH E 345 or consent. Physical and chemical properties of catalytic solids, nature and theories of adsorption, thermodynamics of catalysis, theories of mass and energy transport, theoretical and experimental reaction rates, reactor design and optimization. (3 hr. lec.)

447. Non-Catalytic Solid-Fluid Reactions. 3 Hr. PR: Ch E 345 or consent. Reaction models, pseudo-steady-state approximation, effectiveness factor, transport and chemical reaction properties, geometric, thermal and transitional instabilities, simultaneous multiple reactions, selectivities in fixed-, moving- and fluidized-bed reactor design. (3 hr. lec.)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Chemical Engineering. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading will be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.
Civil and Environmental Engineering

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Degrees Offered: Master of Science in Civil Engineering
Master of Science in Engineering with a major in Civil Engineering
Doctor of Philosophy with a major in Civil Engineering

The Department of Civil and Environmental Engineering offers the master of science in civil engineering (M.S.C.E.). In conjunction with the College of Engineering and Mineral Resources, the master of science in engineering (M.S.E.), and the doctor of philosophy degrees are available with emphases in civil engineering.

The Department of Civil and Environmental Engineering has a full-time faculty of 19, who are active in teaching, research, and professional commitments.

Areas of Emphasis
There are four major areas of interest of the faculty and graduate studies:

• Environmental and hydroelectrical engineering, which includes occupational health, solid-hazardous waste management and site remediation, water supply and pollution, groundwater hydraulics, and hydrology.
• Geotechnical engineering, which includes soil mechanics, foundations engineering, soil-structure interaction, geomechanics, environmental geotechnology, ground water and seepage, geosynthetics, contaminant transport, landfill design, earthwork design, waste by-product utilization, materials engineering, and construction materials.
• Transportation engineering, which includes planning, design, construction, operations, and maintenance of transportation facilities/systems (roadways, railroads, airports, and public transportation) as well as related areas of infrastructure management and export systems.
• Structural engineering includes advanced structural mechanics, structural dynamics, bridge engineering, building design for static and dynamic loads, advanced materials for civil infrastructure, and nondestructive testing and evaluation.

Faculty
With few exceptions, faculty members are licensed professional engineers registered in one or more states and are involved in state, regional, and national professional organizations, serving on numerous technical committees. They are successful researchers and have published extensively in technical journals. The civil engineering faculty produces graduates who can assume the problem solving, decision making, and technical leadership roles of a professional engineer and who have the sound educational background for the continuing professional development the field requests.

Students tailor their program of study to satisfy their own special interests, with guidance from a faculty advisor. Opportunities abound within the master’s and doctoral tracks for a research experience which provides a chance for a student to tackle an engineering problem individually, with guidance from a faculty advisor. The graduate program in civil engineering was established with the aim of developing its students’ abilities to use today’s contemporary methods of engineering analysis and design to solve tomorrow’s engineering problems.
Application

An application package can be obtained from the Graduate Program Director, Department of Civil and Environmental Engineering, West Virginia University, P.O. Box 6103, Morgantown, WV 26506-6103.

Admission

To be eligible for admission into the M.S.C.E. degree program, a candidate must hold or expect to receive a B.S.C.E. degree from either an accredited ABET curriculum or an internationally recognized program. Candidates with superior academic records and a baccalaureate degree in another engineering field, mathematics, or science may be eligible for admission into any of the masters programs offered by the department but will normally be required to attain a baccalaureate level of proficiency in certain engineering areas of the department. **An engineering technology (non-calculus based) degree is not sufficient qualification for admission into any of the graduate programs offered by the department.**

To be eligible for admission into the Ph.D. degree program, a candidate must hold or expect to receive an M.S. degree in some discipline of engineering from an institution which has an ABET accredited undergraduate program in engineering or an internationally recognized program in engineering.

The other requirements for admission into the graduate programs of the department are summarized as follows.

- To be admitted as a regular graduate student, an applicant must have a grade-point average of 3.0 or better (out of a possible 4.0) in all previous college work and must meet all other requirements below.
- The applicant must first submit to the WVU Office of Admissions and Records a completed application, application fee, and transcripts of all college work completed (directly from the institution).
- Each applicant is required to have three reference letters (using standard forms available from the department) sent directly to the department; at least two of the three references should be from the institution the applicant last attended.
- A minimum score of 550 on the TOEFL is required of all applicants from countries where the native language is not English. (Students who have completed a recent four-year bachelor’s degree in the USA need not submit these scores.)
- All applicants who have not received their undergraduate degree in the United States are required to submit GRE General Test scores with the Engineering Subject Test score being optional.

Provisional Admission An applicant who is not qualified for regular graduate student admission status due either to insufficient grade-point average, incomplete credentials, or inadequate academic background, can be admitted as a provisional student. Requirements for attaining regular student status must be stated in the letter of admission. Provisional students must sign a contract, which lists these requirements in detail, no later than their first registration.

Program Outlines Students must comply with rules and regulations as outlined in the general requirements for graduate work. Each candidate will, with the approval and at the discretion of the graduate committee, follow a planned program which must conform to one of the following outlines.

- A minimum of 30 semester credit hours, not more than six of which are in research leading to an acceptable thesis.
- A minimum of 33 semester credit hours, not more than three of which are in research leading to an acceptable problem report.
A minimum of 36 semester credit hours, with no thesis or problem report required. No rigid curricula are prescribed for the degrees of master of science in civil engineering and master of science in engineering. Graduate-level work in mathematics, mechanics, or other appropriate areas of science is customary; however, at least 15 semester hours of credit should normally be selected from graduate civil engineering courses.

**Thesis** A thesis or problem report is normally required of all candidates. While required credit in research (C E 497) is devoted to the thesis or report preparation, the thesis or problem report is not automatically approved after the required number of semester hours of research work have been completed. The thesis or problem report must conform with the general WVU requirements for graduate study and with any additional requirements established by the department.

**Examinations** A candidate shall be required to pass an examination which may be written or oral or both, to be administered by the student’s advisory and examining committee. The examination shall cover course material and the thesis or problem report, depending upon the program followed.

Approval for the M.S.C.E. degree is restricted to those holding a baccalaureate degree in civil engineering.

**Master of Science in Engineering**

The master of science in engineering program is available to students approved for the graduate program who possess a baccalaureate degree in a technical area other than civil engineering. Students entering this graduate program must complete appropriate undergraduate work as specified by departmental regulations. This degree program is administered by the College of Engineering and Mineral Resources; the program may emphasize civil engineering.

**Doctor of Philosophy**

The doctor of philosophy degree is administered through the College’s interdisciplinary program; civil engineering may be the major. A candidate for the degree of doctor of philosophy must comply with the rules and regulations outlined in the general requirements of the College of Engineering and Mineral Resources. The research work for the doctoral dissertation must show a high degree of originality on the part of the student and must constitute an original contribution to the art and science of civil engineering.

**Civil Engineering (CE)**

311. *Pavement Design*. 3 Hr. PR: CE 281 or consent. Effects of traffic, soil, environment, and loads on the design and behavior of pavement systems. Design of pavement systems. Consideration of drainage and climate. Pavement performance and performance surveys. (3 hr. rec.)

320. *Groundwater Dynamics*. 3 Hr. PR: Consent. Introduction to groundwater, formulation of equations for saturated and unsaturated flow, analytical solutions for steady and transient cases, transport of pollutants, and numerical techniques. (3 hr. rec.)

322. *Free Surface Hydrodynamics*. 1 Hr. PR: CE 122 or consent. The dynamics of liquid flow with a free surface under the influence of gravity; open channel hydraulics, wave motion, and buoyancy effects. (3 hr. lec.)

328. *Groundwater Contaminant Transport*. 1 Hr. PR: CE 320. Solute and particle transport; aqueous geochemistry; mathematics of mass transport; transformation; retardation, and attenuation of solutes; modeling contaminant transport and remediation. (3 hr. lec.) (Every third year.)
332. Airport Planning and Design. 3 Hr. PR: CE 132 or consent. Financing, air travel demand modeling, aircraft trends, traffic control, site selection, ground access, noise control, geometric design, pavement design, terminal facilities. (3 hr. rec.)

333. Geometric Design of Highways. 3 Hr. PR: Consent. The theory and practice of geometric design of modern highways. Horizontal and vertical alignment, cross-slope, design speed, slight distances, interchanges, and intersections. Critical analysis of design specifications. (2 hr. lec., 3 hr. lab.)

334. Introduction to Traffic Engineering. 3 Hr. PR: CE 132 or consent. The purpose, scope, and methods of traffic engineering. Emphasis on the three basic elements of each element and interactions between the elements. Laboratory devoted to conducting simple traffic studies, solving practical problems, and designing traffic facilities. (2 hr. lec., 3 hr. lab.)

336. Highway Planning. 3 Hr. PR: Consent. Theory and practice of highway investment decision-making with emphasis on quantitative techniques of traffic assignment and travel demand forecasting, system evaluation, establishing priorities and programming. Both rural and urban highway systems are considered. (3 hr. rec.)

337. Public Transportation Engineering. 3 Hr. PR: Consent. Design of rail and highway models for urban and rural areas. Consideration of vehicle technology, facility and route design, conventional and paratransit services, and related marketing, finance, and coordination issues. (3 hr. rec.)

338. Highway Safety Engineering. 3 Hr. PR: CE 231 or consent. Relationship between human, vehicular, and roadway factors which impact safety; functional requirements of highway safety features; legal aspects; accident analysis; evaluation of highway safety projects. (3 hr. rec.)

339. Traffic Engineering Operations. 3 Hr. PR: CE 334. Theory and practice of application of traffic engineering regulations; traffic control concepts for urban street systems and freeways; freeway surveillance and incident management; driver information systems; traffic control system technology and management. (3 hr. rec.)

349. Solid Waste Disposal. 3 Hr. PR: Consent. Patterns and problems of solid waste storage, transport, and disposal. Examinations of various engineering alternatives with appropriate consideration for air and water pollution control and land reclamation. Analytical approaches to recovery and reuse of materials. (2 hr. lec., 3 hr. lab.)

350. Sanitary Chemistry and Biology. 3 Hr. PR: CE 122 or consent. Study of physical and chemical properties of water. Theory and methods of chemical analysis of water, sewage, and industrial wastes. Biological aspects of stream pollution problems. (2 hr. lec., 3 hr. lab.)

355. Environmental Physicochemical Process. 3 Hr.

356. Principles of Biological Waste Treatment. 3 Hr. PR: CE 350 or consent. Examination of biological treatment systems related to microbiology and function. Models used to describe system behavior and kinetics are developed. Laboratory and field experiments are performed to understand the relation between operation and design. (2 hr. lec., 3 hr. lab.)

361. Statically Indeterminate Structures. 3 Hr. PR: CE 261 or consent. Force and displacement methods of analysis; energy principles and their application to trusses, frames, and grids; effects of axial forces; influence lines for frames, arches, and trusses; secondary stress analysis. (3 hr. rec.)

363. Introduction to Structural Dynamics. 3 Hr. PR: CE 361 or CE 460. General theory for dynamic response of systems having one or several degrees of freedom. Emphasis on the application of dynamic response theory to structural design. (3 hr. rec.)
364. **Nondestructive Material and Structural Evaluations.** II. 3 Hr. PR: Consent. Nondestructive evaluation (NDE) using techniques based on mechanical and electromagnetic wave propagation; theory and applications of various NDE techniques including infrared thermography, dynamic characterization, seismic reflection and refraction, ultrasonics, acoustic emission, and radar. (3 hr. lec.)

366. **Advanced Materials for Infrastructure.** I. 3 Hr. PR: CE 270 and CE 271. Introduction to principles of material science; material structure, characterization at coupon and component level, practical information on fiber reinforced shapes; establishment of failure analysis and standardization. (3 hr. lec.)

373. **Prestressed Concrete.** 3 Hr. PR: CE 261 and CE 270 or consent. Behavior and design of prestressed concrete members. Materials, bending, shear, torsion, methods of prestressing, prestress losses, deflections, compression members, composite members, indeterminate structures. (3 hr. rec.)

380. **Soil Properties and Behavior.** 3 Hr. PR: CE 281 or consent. Soil mineralogy and the physicochemical properties of soils and their application to an understanding of permeability, consolidation, shear strength, and compaction. Prediction of engineering behavior of soils in light of physicochemical concepts. (3 hr. rec.)

381. **Soil Testing.** 3 Hr. PR: CE 181 or consent. Experimental evaluation of soil properties and behavior. Emphasis is placed on the proper interpretation of experimental results and application of such results to practical problems. (1 hr. lec., 6 hr. lab.)

382. **The Finite Element Method.** II. 3 Hr. PR: Graduate standing in CE or MAE or consent. Introductory treatment of theoretical basis of finite element method, mathematical formulation, different types of elements, stress analysis in solids, applications, and computer implementation.

385. **Airphoto Interpretation.** 3 Hr. Study of techniques for obtaining qualitative information concerning type and engineering characteristics of surficial materials. Use of airphoto interpretation for evaluation of engineering problems encountered in design and location of engineering facilities. (3 hr. rec.)

387. **Materials Engineering.** 3 Hr. A study of materials engineering fundamentals emphasizing semiconductor, polymer, metal, and ceramic/cementitious material systems. Mechanical and physical properties, theoretical aspects, testing, design criteria, manufacturing, and economics of material systems. Laboratory testing and evaluation. (Equivalent to CHE 387, EE 387, EM 387, IMSE 387, and MAE 387.)

391 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

393. **Advanced Finite Element Methods.** 3 Hr. PR: Consent. Formulation procedures and applications of finite element methods to two-and three-dimensional problems, techniques for nonlinear analysis computer implementation; applications in field problems, flow, and dynamics.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

421. **Environmental Fluid Mechanics.** II. 3 Hr. PR: Consent. Equations of motion including buoyancy and Coriolis force; mechanics of jets and plumes; diffusion, dispersion, and mixing in rivers, lakes, reservoirs, and estuaries. (3 hr. lec.) (Every third year.)

427. **Wastewater System Conveyance.** I. 3 Hr. PR: CE 122 or equivalent, or consent. Water and wastewater flows and measurement, design of water transportation systems, design of gravity-flow sanitary sewers and stormwater drainage systems, pumps and pump systems, and design of pumping stations. (3 hr. lec.)
432. Transportation Systems Analysis. 3 Hr. PR: Consent. Systematic examination of the interaction between transport technology, activity systems, and traffic flows. Quantitative analysis of the relationship among vehicle cycles, networks, congestion, choice behavior, cost functions, and resulting travel-market equilibration. (3 hr. rec.)

440. Deterministic Hydrology. 3 Hr. PR: Consent. An in-depth treatment of the dynamics of the accumulation of runoff, including the formulation of the unsteady surface flow equations and the unsteady saturated-unsaturated subsurface flow equations. Both analytical and numerical solutions are presented with applications. (3 hr. rec.)

441. Stochastic Hydrology. 3 Hr. PR: Consent. The use of probabilistic and random processes techniques in the study of hydrologic problems, including multivariate time series and frequency-domain analyses of hydrologic data, and stochastic modeling of multidimensional hydrologic processes. (3 hr. rec.)

450. Environmental Systems Engineering. 3 Hr. PR: CE 252 or consent. Mathematical and computer modeling of environmental systems with emphasis on decision-making; applications will be selected from some or all of the following areas: water quality, water resources planning, solid waste management, waste treatment. (3 hr. rec.)

452. Water Treatment Theory. 3 Hr. PR: CE 350. Theory of various procedures and techniques utilized in treatment of water for municipal and industrial use. Review of water quality criteria. Design of water purification facilities. (2 hr. lec., 3 hr. lab.)

454. Industrial and Advanced Waste Treatment. 3 Hr. PR or Conc.: CE 350 or consent. Basis physical and chemical unit operations used in industrial and advanced waste treatment; applications for waste water reclamation and reuse; study of industrial wastes from standpoint of process, source, and treatment. (2 hr. lec., 3 hr. lab.)

458. Design of Sanitary Works. 3 Hr. PR: CE 121. Water supply and waste water disposal problems. Design of treatment facilities. (2 hr. lec., 3 hr. lab.)

460. Finite Element Methods in Structural Analysis. 3 Hr. PR: CE 361 or consent. Relationships of elasticity theory; definitions and basic element operations; direct and variational methods of triangular and rectangular elements related to plane stress, plane strain, and flat plates in bending; variational principles in global analysis. (3 hr. rec.)

461. Bridge Engineering. 3 Hr. PR: CE 361 or consent. Statically indeterminate trusses, continuous trusses; steel and concrete arches; long-span and suspension bridges; secondary stresses. (3 hr. rec.)

462. Numerical Analysis of Engineering Systems. 3 Hr. PR: CE 361 or consent. Numerical methods for the solution of equilibrium, eigenvalue and propagation problems of discrete and continuous structural systems with special emphasis on weighted residual techniques. (3 hr. rec.)

470. Behavior of Steel Members. 3 Hr. PR: CE 271 or consent. Elastic behavior of steel members subjected to axial load, bending, and torsion. Elastic and inelastic response of beams, columns, and beam-columns to load and the resulting design implications. Comparison with standard steel codes and specifications. (3 hr. rec.)

471. Light Gage Metal Design. 3 Hr. PR: CE 261 and CE 271 or consent. Analysis and design of light gage material systems; flexural and compression members design; investigations into post buckling strength and optimum weight systems. (3 hr. rec.)

473. Structural Design for Dynamic Loads. 3 Hr. PR: CE 363 or consent. Nature of dynamic loading caused by earthquakes and nuclear weapons blasts; nature of dynamic resistance of structural elements and structural systems; criteria for design of blast-resistance and earthquake resistant structures; simplified and approximate design methods. (3 hr. rec.)
475. *Analysis and Design of Multistory Structures.* 3 Hr. (May be repeated once.) PR: CE 363 and CE 270 or CE 271. Introduction; service, structural, and construction systems; analysis and design for lateral and gravity forces; structural modeling; computer applications; approximate methods; connections; foundations; review of standard building codes; special topics. (3 hr. rec.)

476. *Behavior of Reinforced Concrete Members.* 3 Hr. PR: CE 270 or consent. Studies of actual member behavior; members in flexure, combined flexure, shear, and torsion; bond and anchorage; combined axial load and flexure; slender columns; deep beams; derivation of current code provisions. (3 hr. rec.)

481. *Advanced Mechanics of Soils.* 3 Hr. PR: CE 181 and CE 381 and MAE 318 or consent. Stress invariants, stress history and stress path, elastic and quasi-elastic models for soils; soil plasticity, failure theories for soils; critical state soil mechanics, and determination of construction parameters. (3 hr. lec.)

482. *Advanced Foundation Analysis.* 3 Hr. PR: CE 281 or consent. Study of soil-structure interaction. Applications of principles of soil mechanics and numerical methods for analysis and design of geotechnical structures: strip footings, axially and laterally loaded piles, braced excavations, sheet pile walls, tunnel lining, and buried pipes and culverts. (3 hr. rec.)

483. *Advanced Earthwork Design.* 3 Hr. PR: CE 283 or consent. Application of the principles of theoretical soil mechanics to the design of embankments of earth and rock. In-depth study of compaction theory, stability of natural and man-made slopes by limit equilibrium and deformation considerations. (3 hr. rec.)

484. *Groundwater and Seepage.* 3 Hr. PR: Consent. Flow of groundwater through soils and its application to the design of highways and dams and to construction operations. Emphasis is placed on both the analytical and classical flow net techniques for solving seepage problems. (3 hr. rec.)

485. *Geotechnical Risk Assessment.* 3 Hr. PR: CE 281 and CE 283 or consent. Application of probabilistic and statistical principles to geotechnical analysis and design. Random spatial variability of soil properties; decision under uncertainty; reliability of geotechnical structures. (3 hr. rec.)

486. *Soil Dynamics.* 3 Hr. PR: CE 380 and consent. Consideration of the simple damped oscillator, wave propagation in elastic media, dynamic field and laboratory tests, dynamic soil properties, and foundation vibrations. Introduction to geotechnical aspects of earthquake engineering. (3 hr. rec.)

488. *Geotechnical Case Histories.* 3 Hr. PR: CE 281 and CE 283 or consent. Application of the principles of geotechnical engineering to professional practice as taught through the case histories approach. Study of actual problems in geotechnical engineering and their solutions. (3 hr. rec.)

490. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of civil engineering. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492. *Directed Study.* I, II, S. 1-6 Hr. Directed study, reading, and or research.

493. *Special Topics.* I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. *Seminar.* I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
Graduate Seminar. 1 Hr. PR: Consent. Each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis or dissertations. (Grading will be S/U.)

Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Computer Science and Electrical Engineering

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Degrees Offered: Master of Science in Computer Science
  Master of Science in Electrical Engineering
  Master of Science in Engineering with a major in Computer Engineering
  Master of Science in Engineering with a major in Electrical Engineering
  Master of Science in Software Engineering
  Doctor of Philosophy with a major in Computer Engineering
  Doctor of Philosophy with a major in Electrical Engineering
  Doctor of Philosophy with emphasis in Computer and Information Sciences

Faculty

The Department of Computer Science and Electrical Engineering, with 31 faculty members, 462 undergraduate students, and 189 graduate students, offers an excellent graduate program. Faculty members in the department have diverse and extensive expertise in industry, research, and graduate instruction, providing opportunities for students to pursue graduate study in either theory-oriented or application-oriented fields.
Overview of Programs

The Department of Computer Science and Electrical Engineering offers master’s programs leading to the master of science in computer science (M.S.C.S.), the master of science in electrical engineering (M.S.E.E.), and the master of science in software engineering (M.S.S.E.). It also participates in the College of Engineering and Mineral Resources interdisciplinary program offering the master of science in engineering (M.S.E.). Master of science students must comply with the rules for master’s degrees as set forth by both the college in the Guidelines for Masters Degree Programs Offered in the College of Engineering and Mineral Resources and by the department in the Master of Science Program Guidelines.

The department also offers programs leading to the doctor of philosophy (Ph.D.) in computer science, and the doctor of philosophy (Ph.D.) with specialization in electrical engineering or computer engineering. Ph.D. students must comply with the rules set forth by both the college in The College of Engineering and Mineral Resources Doctor of Philosophy Program Guidelines and the department in the Doctor of Philosophy Program Guidelines.

How to Apply

Students can apply for WVU admission on-line at www.wvu.edu (choose Admissions), or by an e-mail request to the proper graduate coordinator for an application. Do not send applications to the CSEE department. Instead, mail to Office of Admissions and Records, P.O. Box 6009, Morgantown, WV 26506-6009.

Information on degree programs and course descriptions can be found at our CSEE website (www.csee.wvu.edu). Send other inquiries to the appropriate graduate coordinator of: Computer Science, Electrical and Computer Engineering, or Software Engineering (whichever applies), P.O. Box 6109, Morgantown, WV 26506-6109.

Deadlines for Applications

Application deadlines are as follows:

<table>
<thead>
<tr>
<th>Semester</th>
<th>Deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall semester</td>
<td>March 1</td>
</tr>
<tr>
<td>Spring semester</td>
<td>October 1</td>
</tr>
<tr>
<td>Summer session</td>
<td>January 1</td>
</tr>
</tbody>
</table>

Applicants failing to meet these deadlines have no guarantee of consideration for timely entrance into the program for which they apply.

Admission Requirements for All Programs

All master’s and Ph.D. programs require applicants to satisfy the three items below in consideration for admission. Specific programs may have additional requirements. Exception: These requirements do not apply to nontraditional students in the Certificate of Software Engineering program and M.S.S.E. program (see certificate program and M.S.S.E. program for more information):

• A GRE score on the general test of either the 80th percentile on the quantitative part or 1800 total (verbal + quantitative + analytical).
• A minimum cumulative grade-point average of 3.0 or equivalent, based on 4.0 system.
• Three letters of reference.

Additional Admission Requirements for Specific Programs

• M.S., Ph.D. in C.S.
  A bachelor’s degree in computer science, engineering, mathematics, or the sciences.
• M.S.E.E.
  A bachelor’s degree in electrical or computer engineering.
• M.S.E.
  A bachelor’s degree in engineering (other than EE or Cp E) or the sciences.
• M.S.S.E. (software engineering).
  See: Certificate in Software Engineering; Master of Science in Software Engineer-
  ing for requirements.
• Ph.D. with major in Cp E or EE.
  A master’s degree in engineering or the sciences and a statement of purpose.

Regular, Provisional, and Non-Degree Admission

Students admitted into a program are designated as regular, provisional, or non-
degree status. Regular status is given to students who are granted unconditional ad-
mission. Provisional status is given to students who have deficiencies to make up such
as incomplete credentials or other reasons as identified by the graduate coordinator. In
all cases, the student’s letter of admission will state what must be done to attain regular
status, and students must sign and date this letter no later than the first registration.
Non-degree status is granted case-by-case by the graduate coordinator. Basically, a
non-degree student is one who may take courses, but sometimes with no plan of study
nor any guarantee for attaining provisional status.

Programs

Master of Science in Computer Science (M.S.C.S.)

The M.S.C.S. program qualifies a student to assume a professional role in an educa-
tional, industrial, or governmental research project, teach in a junior or senior college,
or undertake advanced training toward a doctorate in computer science. Because many
students receive baccalaureate degrees from colleges which do not offer undergradu-
ate programs in computer science, a student with an outstanding undergraduate record
does not need a degree in computer science to enter the master’s program.

Removing Deficiencies for M.S.C.S.

Students admitted to the M.S.C.S. program must have a bachelor’s degree in either
computer science, engineering, mathematics, or the physical sciences, so each is re-
sponsible for knowledge of one year of calculus (MATH 15 and 16 or equivalent). Stu-
dents must also document via transcripts at least one course in statistics (STAT 201 or
equivalent), and knowledge of a high-level programming language such as Ada, Java,
Pascal, C, or C++ (CS 15 or equivalent).

Students not having a computer science bachelor’s degree will be admitted under
provisional or non-degree status and must earn the equivalent of a CS bachelor’s de-
gree while fulfilling all required master’s work. This means that a student must show
proficiency in six core areas required of all undergraduate CS majors at WVU.

• Data structures (CS 16 or equivalent)
• Software engineering (CS 176 or equiv).
• Discrete mathematics (CS 26 or equiv).
• Analysis of algorithms (CS 126 or equiv).
• Assembler language and computer organization (CS 56 or equiv).
• Theory of programming languages (CS 136 or equiv).

Each area represents a potential deficiency. Documentation via transcripts showing
that a student has completed an equivalent core area course is one way to remove a
deficiency. The only other way to remove a deficiency is to take an approved course in
that area.
Every fall semester, CSEE offers three accelerated courses that cover the six core areas:

- **CS 301 Foundations of Software Engineering** (bullets 1, 2 above).
- **CS 302 Foundations of Algorithms** (bullets 3, 4).
- **CS 303 Semantics of Program Languages** (bullets 5, 6).

A student with deficiencies may have to take all three courses. A course will be waived if a student can document satisfactory completion of both areas within that course. See our home page at [www.csee.wvu.edu](http://www.csee.wvu.edu) for course descriptions and other information.

**Program Requirements for M.S.C.S.**

Students may choose the thesis option or the problem report option. The thesis option requires 30 credit hours: 24 hours of formal coursework and six hours of research. At most nine hours of 200 level undergraduate coursework in computer science may count. This option requires writing an acceptable thesis which represents research suitable for publication in a refereed journal. All theses are archived in the University library.

The **problem report** option requires 33 credit hours: 30 hours of formal coursework and three hours of research. At most nine hours of 200 level undergraduate coursework in computer science may count. The project report option requires writing an acceptable report describing a research project carried out by the student.

Regardless of the option chosen, students must take at least one graduate course in each of three areas: theory, systems, and applications.

Each master’s student must form an Advisory and Examining Committee (AEC) of at least three members. Students do this when they have made progress on regular coursework and are ready to select the thesis or problem report option. Normally this occurs during the second or third semester of a student’s program. The committee must be formed before the graduation semester begins.

The AEC chair must have regular graduate faculty status and, for a committee overseeing a thesis, the majority of the members must also have regular graduate faculty status. Students submit for approval a program of study (coursework) to their AEC at the time of its inception.

All masters students must defend their thesis or problem report at an oral exam, attended by all members of the committee. The exam typically consists of two parts: a presentation of the research followed by a question period. The question period covers material from research results and other areas, if any, as designated earlier by the committee.

A student who fails the oral exam may retake the oral exam at most once, at a time determined by the AEC but not necessarily during the same semester.

**Master of Science in Electrical Engineering (M.S.E.E.)**

**Program Requirements for M.S.E.E.**

There are three options available for students to gain a master’s degree: coursework only (subject to the student’s advisory and examining committee approval), thesis option, or problem report option.

Students following the **coursework option** must take 33 credit hours of formal coursework plus two hours of graduate seminar. This option is open only to professionals employed full-time in local industry. At most nine hours of undergraduate coursework may count.

Students following the **problem report option** must take 35 credit hours: 30 hours of formal coursework, three hours of research, and two hours of graduate seminar. At most nine hours of undergraduate coursework may count.
Students following the thesis option must take 32 credit hours: 24 hours of formal coursework, six hours of research, and two hours of graduate seminar. At most nine hours of undergraduate coursework may count. Students supported by research assistantships are expected to pursue this option.

Students pursuing either the thesis or problem report option leading to the M.S. degree must have the thesis or problem report approved by the student's advisory and examining committee (AEC) before it can be accepted. The student must also pass a final oral examination and defense of the thesis or problem report administered by the AEC.

Those students who lack course prerequisites may require more than three semesters of full-time study to complete the degree. Students with research assistantships may also require more than three semesters to complete the degree.

**Master of Science in Engineering Program**

The master of science in engineering program is available to students who are interested in graduate work in electrical or computer engineering but hold a baccalaureate degree from another field of engineering or from another discipline. Students with a baccalaureate degree from another field of engineering or from one of the sciences should contact the department for further information. In general, a student in the M.S.E. program will be expected either to complete certain undergraduate prerequisite courses or to attain equivalent competence but may not be required to complete all of the requirements equivalent to the B.S.E.E. or B.S.Cp.E. degree. However, all graduate students will be required to meet the prerequisites for each course taken for credit.

**Software Engineering**

The department offers a Certificate in Software Engineering program and a master of science in software engineering. For some students, completion of the certificate is the first step towards earning an M.S.S.E.

**Certificate in Software Engineering**

The certificate in software engineering program provides further education to individuals who are currently working in the computer and information technology industry. This program is usually offered at evening times and off-campus locations convenient for the working professional.

**Admission Requirements**

Applicants for the certificate in software engineering must meet the following requirements:

- Hold a bachelor’s degree in any field from an accredited University;
- Submit a resume documenting at least three years of software-development experience, OR a statement from their employer attesting to the need for them to take the program;
- Provide names and addresses of three references who are familiar with the applicant’s work.

**Program Requirements**

The certificate program consists of completing five approved courses. Students who achieve a B or higher in each of the first four courses of the certificate program will qualify to enter the master of science in software engineering program, described below. Courses taken for the certificate program earn credit towards the master’s degree.
Master of Science in Software Engineering (M.S.S.E.)

The M.S.S.E. degree provides graduate level software engineering expertise to individuals who are either currently working in the computer and information technology industry or have academic credentials that provide a foundation to begin graduate work in software engineering. The M.S.S.E. program aspires to serve both adult learners from the local computer and information technology industry; and traditional, resident full-time graduate students. This program is usually offered at evening times and off-campus locations convenient for the working professional. It may also be available by distance learning methods.

Admission Requirements

Students seeking admission to the M.S.S.E. program must fall into one of three categories to be considered for admission the categories are:

CS, Cp E, or software engineering students Students who have recently completed a bachelor’s degree in CS, Cp E, or software engineering will be considered for admission with regular status if they satisfy requirements listed previously under Admission Requirements for All Programs.

Students from other disciplines Students who have recently completed a bachelor’s degree in a field other than CS, Cp E, or software engineering will be considered for admission with regular status if they meet the following requirements:

• A minimum GPA of 3.0 (on a 4.0 scale), or equivalent.
• A minimum GPA of 3.0 for coursework in the major.
• A GRE score on the general test of either 80th percentile on the quantitative part or a total of 1800 (verbal + quantitative + analytical).
• A GRE score on the computer science subject test of 40th percentile or higher.

Nontraditional students Students who have at least three years of software-development work experience in the high-technology industry are waived of all GRE and GPA requirements. In lieu of this, they will be considered for admission with non-degree status by meeting the following requirements:

• Hold a bachelor’s degree in any field from an accredited University.
• Submit a resume documenting at least three years of software-development experience.
• Provide names and addresses of three references who are familiar with the applicant’s work.

Nontraditional students may enroll in courses in the M.S.S.E. program, and must earn a grade of at least B in each of the first four courses. Upon meeting this requirement, students will be transferred from non-degree status to regular status for the M.S.S.E. program.

M.S.S.E. Program Requirements

Students pursuing an M.S.S.E. degree may elect a coursework only option, a problem report option, or a thesis option. The coursework option and the problem report option require completion of a total of 33 graduate credit hours: 33 hours of formal coursework, or 30 hours of formal coursework and three hours of research (SENG 397). The thesis option requires a total of 30 credit hours: 24 hours of formal coursework and six hours of research.
Doctor of Philosophy in Computer Engineering
Doctor of Philosophy in Electrical Engineering

Description
The doctor of philosophy program should be considered by those with superior academic achievement and who desire to pursue a career of research or teaching. Students interested in the Ph.D. program in electrical engineering or computer engineering should see our home page at www.csee.wvu.edu for information. If additional information is needed, contact the graduate coordinator of Electrical and Computer Engineering.

Admission
As a first step, students must satisfy provisions under the Admission Requirements for All Programs and must submit a statement of purpose.

Students who hold an M.S.E.E. or M.S.E. (or equivalent) degree will be considered for admission with regular status into the Ph.D. program. Students who hold a master’s degree in the sciences or engineering, excluding M.S.E.E. or M.S.E., will be considered for admission with provisional status and will likely have coursework deficiencies to remove. All other students must apply for admission into a master’s program as the first stage in attaining the Ph.D.

Removing Deficiencies for Ph.D. in Cp E or EE
Prior to the first week of classes, new Ph.D. students must meet with the graduate coordinator to select classes. This interview determines if the student needs remedial work in order to pursue a graduate degree.

Students with deficiencies may be required to take courses as prerequisites for graduate courses. Deficiencies are usually noted as a condition for admission. However, they may also be specified during the interview or later.

During the second semester, students must form their advisory and examining committee (AEC) and write a plan of study. The AEC may also identify additional deficiencies to be removed, but this is rare since deficiencies should have been identified earlier in the student's career.

Program Requirements
Coursework
Students must complete at least 18 hours of formal coursework at the 300 and 400 level at WVU, beyond that required of the master’s degree. Students with the help of their AEC select courses that will develop expertise in the student’s area of interest, and that will strengthen knowledge of other areas supportive of research endeavors.

Examinations
Ph.D. students must pass a written qualifying examination, normally within one year of their first enrollment in the Ph.D. program. The student must also pass a written and oral candidacy examination given by the AEC, and must successfully defend in oral examination a written research proposal.

When all requirements are completed, the qualifying and candidacy examinations are passed, and the research proposal is successfully defended, the student is formally admitted to candidacy for the Ph.D. degree. For full-time students, admission to candidacy must occur within three years of entering the Ph.D. program.

After the student completes the research (at least 24 credit hours) and prepares a dissertation, the final examination consists of a public defense of the dissertation. All requirements for the degree must be completed within five years after the student has been admitted to candidacy.
Research
Research work for the doctoral dissertation must represent a significant contribution to engineering. It may entail a fundamental investigation into a specialized area or a broad and comprehensive system analysis or design. A minimum of 24 credit hours of research (Cp E 497 or EE 497) is required.

Program Length
A typical Ph.D. program requires four to five years beyond the baccalaureate degree, although scholarly achievements are more important than length of program.

Doctor of Philosophy in Computer and Information Sciences (Ph.D. C.S.) Description
The doctor of philosophy is a research degree rather than a coursework degree. Doctoral students are required to complete a number of advanced courses but more time is spent in original research in close association with an experienced researcher. The Ph.D. program prepares a student for teaching and research in computer and information science for business, industry, and educational institutions.

Admission Requirements
Students who satisfy provisions under the Admission Requirements for All Programs and also under Additional Requirements for Specific Programs will be considered for admission.

Removing Deficiencies for Ph.D. in C.S.
Prior to the first week of classes, new Ph.D. students must meet with the graduate coordinator to select classes. This interview determines if the student needs remedial work in order to pursue a graduate degree.

Students with deficiencies in their undergraduate programs may be required to take courses as prerequisites for graduate courses. Deficiencies are usually noted as a condition for admission. However, they may also be specified during the interview or later.

During the second semester, students must form their advisory and examining committee (AEC) and write a plan of study. The AEC may also identify additional deficiencies to be removed, but this is rare since deficiencies should have been identified earlier in the student’s career.

Applicants not satisfying these requirements should work on a master’s degree in computer science before applying for admission to the Ph.D. program.

Program Requirements
Coursework
Doctoral students must earn, or already have, the equivalent of an M.S.C.S. degree, thesis or project excluded. This requires a minimum of 24 hours of formal master’s degree coursework in computer science. See Program Requirements for M.S.C.S.

Students who have completed coursework required of an M.S.C.S. degree must take, additionally, 18 hours of advanced graduate coursework at the 400-level with at most six hours in Directed Study (CS 492).

Students must take a minimum of 24 credit hours of research (CS 497). Our faculty believes that performing and reporting research is a vital component of any Ph.D. degree.
Examinations

Within three years of admission to the doctoral degree program, applicants must pass each of the departmental qualifying examinations, demonstrating a breadth of knowledge in computer science. A student may receive one of two grades on each exam: pass or fail. Students are permitted two sittings to pass the exams, but need not retake exams on which they previously received an acceptable grade. A student who fails twice may appeal to the graduate faculty of the department, who may grant a third attempt under exceptional circumstances. A Ph.D. student who does not receive a pass on these examinations after two attempts may transfer all credits earned in the doctoral program toward acquiring a master’s degree.

All doctoral students must demonstrate reading competency in scientific literature written in a language other than the student’s native tongue. The choice of a foreign language other than French, German, Russian, Japanese, or Spanish must be approved by the computer science graduate faculty.

After satisfactorily passing the departmental qualifying examination, a doctoral student will be permitted to stand for the comprehensive examinations. These examinations will be prepared, administered, and evaluated by the student’s AEC committee.

Usually after completion of the comprehensive examinations, the doctoral student will present a research prospectus to the AEC committee, outlining the original research which the student is to perform. The prospectus will consist of a statement of the research problem, a review of the pertinent scientific literature in the area, and a description of the methods which will be employed by the student in an attempt to solve the research problem. After the committee has questioned the student on the prospectus and approved it as the doctoral research topic, the student will be recognized as a doctoral candidate.

After the doctoral candidate has completed the original research outlined in the prospectus, the dissertation will be presented to the AEC, after which the candidate will formally defend the dissertation at a public meeting. Full degree requirements are met when the AEC deems that the candidate has successfully completed the research outlined in the prospectus and has performed satisfactorily in defense of the work.

Doctoral candidates must satisfy the University’s one-year residency requirement. It is expected that this one year of residency will be spent performing research after completion of the comprehensive examinations by completing nine hours of research in each of two consecutive semesters.

Research

Research work for the doctoral dissertation must represent an original, significant contribution to computer science. It normally entails a fundamental investigation into a specialized area of computer science. At least 24 credit hours of research (CS 497) are required.

Program Length

A typical Ph.D. program requires four to five years beyond the baccalaureate degree, although scholarly achievements are more important than length of program. As a minimum, a student with a B.S.C.S. degree or equivalent will take an additional 42 hours of formal coursework and 24 hours of research, whereas a student with an M.S.C.S. degree will require an additional 18 hours of formal coursework and 24 hours of research.

Facilities and Centers for All Programs

CSEE has its main office, instructional lab, and research lab space on the Evansdale campus occupying four floors of the Engineering Sciences Building and one floor of the Engineering Research Building. We also have one floor in Eiesland and Armstrong Halls on the downtown campus.
The department also has research activities and facilities at the NASA IV&V Center and the Alan B. Mollohan Innovation Center of the West Virginia High-Tech Consortium Foundation in Fairmont, WV. Our research facilities constitute a rich and diverse resource which span the needs of research and graduate education in computer science, computer engineering, and electrical engineering. Laboratories and centers include the Software Research Laboratory (SRL), the Reusable Software Research Group, the Institute of Combinatorial Computing and Discrete Mathematics (jointly with the Department of Mathematics), the Lab for Advanced Information and Computation Systems (LAICS), the Computer-Aided Lumber Processing Lab, the ElectroMechanical Systems Lab (EMSL), the Power Control Systems Lab, and the Virtual Environments Lab. The Microelectronic Systems Research Center (MSRC) is part of the department and is affiliated with the LAICS. MSRC facilities include a microsystem fabrication lab, photonic systems lab, systems prototyping lab with CAE/CAD tool suites and workstation cluster, electronic systems test (device through systems), surface mount multilayer PCB fab, and system testbed development facility. Department faculty serve as the primary leadership and technical staff for the Concurrent Engineering Research Center (CERC) and the Institute for Software Research (ISR), both of which are University research units.

Computing Facilities
All graduate students have access to a broad variety of computing platforms for both class work and research. The CSEE department operates and maintains a variety of dedicated computer systems, clusters, and networks supporting both the instructional and research activities of the department. These systems include numerous SUN UNIX workstation clusters as well as PC and Macintosh workstations. The department also maintains a SGI Origin 2000 six-node parallel computer and has access to the WVU CM-5 Parallel Computer. An additional laboratory by Hewlett-Packard supports large databases and medical informatics. Students have access to a rich set of software packages and tool suites available either on department systems or the College of Engineering and Mineral Resources. All department, college, and University computing resources are fully networked via ethernet and FDDI with a campus wide ATM backbone being implemented enabling interface to the statewide ATM network. All computing systems have internet access enabling worldwide connectivity and access to several additional computing services via the Pittsburgh Supercomputing Center. The University is also a member of internet2, vBNS, and SURANET, of which faculty in the department are active participants.

Areas of Research: Overview
The department is enthusiastically and vigorously involved in research, technical publication, and graduate instruction at the forefront of the field. The areas of emphasis are:
  • Theory of computation, including foundations, complexity, algorithm analysis, parallelism, and graph theory.
  • Computer systems, including microprocessor applications, advanced computer architecture, neural networks, fuzzy logic, parallel processing, VLSI testing techniques, fault tolerant design, software metrics, and software engineering.
  • Control systems, including classical and modern control theory and applications.
  • Communications and signal processing, including computer networks and image processing systems.
  • Bioengineering and biometric systems including biosignal processing, bi instrumentation, telemedicine, biometric devices, and algorithms.
• Electric power systems and power electronics, including stability and control, transients, and steady state analysis, real time control, protection, electric machines, drives, and advanced motion controllers, electric and hybrid electric vehicles.
• Microelectronic and photonic systems, including integrated electronic, optoelectronic, and optical devices and circuits, VLSI, microelectromechanical systems (MEMS), and microfabrication.
• Software engineering, including reuse and portability, verification and validation, language issues, and user interface issues.

Areas of Research: Specifics

Theory of Computation
Research in the theory of computation covers a variety of areas ranging from foundational mathematics to analysis of the performance of algorithms. A core of faculty performs research in areas such as graph theory, topology, and discrete mathematics, partly in connection with the Institute of Combinatorial Computing and Discrete Mathematics. Another key area of interest is the development and analysis of algorithms, especially those suited for parallel and distributed systems.

Computer Systems
Computer systems is a very broad area, covering hardware, firmware, and software components of complex digital systems and system components. Software and hardware systems design are among the most technologically intensive components of the CSEE curricula. A large selection of hardware and software graduate courses are offered in this category. These cover topics such as switching theory, digital communication systems, VLSI design and testing, fault-tolerant computing, computer architecture, neural networks, applied fuzzy logic, and real-time software design and development. Graduate students are encouraged to include courses in their programs of study from across the spectrum of disciplines in the department. A broad spectrum of research topics of both applied and theoretical nature are undertaken under this heading. Some examples are: software development environments for signal processing applications, parallel processing of fingerprint image comparison systems, fast adaptive routing algorithms for processor arrays, communication switching systems, information systems, computational accelerator using digital signal processing arrays, an automated lumber processing system, neural network medical and industrial applications, autonomous robotics, computer controlled electric and hybrid vehicle instrumentation, a distributed microprocessor monitoring system, knowledge-based decision support system, and microprocessor-based instrumentation. The department offers dedicated laboratories equipped with personal computers and workstations to support classroom instruction and research. A number of faculty have close cooperation with several interdisciplinary research centers at WVU such as the Concurrent Engineering Research Center, the Alternate Fuel Research Center, and the Constructed Facility Research Center.

Control Systems
The study of control systems is highly mathematical with a broad range of applications. This subject area interests those who wish to apply technology to the control of dynamical systems, for which signals from sensors, usually processed by a computer, are necessary. Consequently, the student interested in control systems will also take in computer systems and digital signal processing. The graduate curriculum in control and systems engineering consists of courses in both classical and modern control theory and applications, including modeling techniques in both the frequency and time domains for continuous and discrete time systems, optimal control, digital control, and estimation theory; classical techniques for control systems and design tools such as
root locus, Nyquist, and Bode methods for linear time-variant systems are also included. Additional courses are available in adaptive control, large scale systems, and stochastic control. Currently, the faculty in control systems are actively involved in a number of research areas, including both sponsored and unsponsored research activities, with some projects relating to specific applications and some being of a theoretical nature and having a wide range of applications. Research projects in control and systems engineering include: research in large scale systems, design of fast-estimation algorithms for distributed systems, reduced-order systems design, application of H-infinity methods, nonlinear systems control, deconvolution methods for seismic signal processing, and application of control theory to power systems and communications.

Faculty research in the control area currently is sponsored by the U.S. Department of Energy, the National Science Foundation, the state of West Virginia, and private organizations.

Communications and Signal Processing

Communications and signal processing, though distinct topics, are alike in many ways. Communications has evolved rapidly from the basic voice telephone service to a rich set of communications systems carrying voice, data, video, and other information. The integration of computers with communications systems has enabled powerful information systems for a wide range of applications such as health care and the world wide web. Advances in signal processing theory, physical technologies, and powerful digital signal processors (DSPs) have combined to dramatically expand the applications of signal processing.

Research activities address the primary areas of theory, technology, and applications. Research in communications theory explores new principles for higher performance or improved analysis of communications systems. Signal processing theory research explores new principles for the understanding and manipulation of analog and digital signals. These theoretical foundations drive a wide range of applied research. Projects include state space approaches to adaptive equalization and optimal and robust receivers for CDMA. Research on technologies extends from basic devices through full testbed systems. Projects include photonics and high speed electronics for optical communications, advanced system packaging and interconnections for high performance systems, and parallel DSP arrays. Applications research includes information systems which integrate computing and communications for distance education, distance collaborations, medical informatics and other information-age applications. Image processing applications in areas such as pattern matching, medical imaging, and inspection systems are also investigated. The department serves as the focal point for the NSF Medical Imaging and Image Processing Research Cluster at WVU.

Bioengineering and Biometric Systems

Bioengineering is the multidisciplinary application of engineering to medicine and biology including such areas as biomedical signal and image processing, medical informatics, and biomedical instrumentation within CSEE. Biometrics is a specific area of bioengineering in which biological signatures (fingerprint, voice, face, DNA) are used for identification or authentication in criminal justice, e-commerce, and medical applications. Specific research projects in include signal processing for prediction of sudden cardiac death in an animal model of heart failure, development of algorithms for arrhythmia detection in implanted medical devices, telemedicine for rural health care delivery in West Virginia, analysis of temporal fingerprint images for determination of vitality, CMOS fingerprint sensor design and modeling, neural net fingerprint matching, and 3-D cranofacial reconstruction. Sponsors for this work include the National
Science Foundation, the American Heart Association, the National Institute of Health, and industry. Faculty efforts leverage ongoing collaborations with the University of Memphis, University of Houston, and industry.

Electrical Power Systems
Electrical power systems historically have been an area of emphasis in the electrical engineering curriculum, and the graduate program in power systems at WVU is mature. Five graduate courses are offered on a regular basis. In addition, there are four senior elective/graduate courses: distribution, industrial power systems, power electronics, and advanced power systems analysis. Recent and current research activities include: reliability, grounding, transmission, electric transportation, modeling, stability analysis, optimal design, design of modulation controllers for multiterminal ac/dc power systems, electric drives, electric machines, advanced motion control systems, and power electronics. Externally funded projects include: robust design of modulation controllers for flexible ac/dc transmission lines, optimal design of permanent magnet brushless machines, spacecraft power storage controllers, investigation of voltage/current characteristics of MOS-controlled thyristors with static and dynamic loads, and identification and decentralized control of critical modes. These projects provide excellent support for both graduate student and faculty research. Extensive interaction with industry provides ample opportunity for direct contact with practitioners in the field.

Microelectronic and Photonic Systems
Microelectronic and photonic systems comprise the hardware which is at the foundation of the information technology. Innovative new integrated electronic and optical devices provide the required functionality for the realization of next generation sensing, power, computing, and communication systems. The CSEE research program explores advances in a wide range of topics at the device and system levels. Research topics include nano-scale structures and devices, wide bandgap semiconductor devices, optical micro electro-mechanical systems (MEMS), integrated optics and optoelectronics, optical biosensors, and CMOS capacitive sensor arrays. Much of this research is supported by the laboratory facilities of the Microelectronic Systems Research Center msrc.wvu.edu as well as those of engineering and physics faculty in the Photonic and Microelectronic Technologies Research Working Group. Faculty have ongoing collaborations with academic groups, centers, and national laboratories. Research sponsors include the NSF, Department of Defense, Department of Energy, NASA, and industry.

Software Engineering
Software engineering covers a well-defined and integrated set of activities to produce correct, consistent software products effectively and efficiently. Faculty perform research in many areas some of which include component based development, validation and verification, software reuse, software portability, user interfaces and graphic visualization. Research associations exist with the NASA Independent Verification and Validation Facility, the Institute for Software Research at the West Virginia High-Tech Consortium and the Concurrent Engineering Research Center.

Computer Engineering (CPE)
320. Application of Neural Networks. II. 3 Hr. PR: Consent theories, principles, techniques, and procedures used in design implementation of supervised and unsupervised Neural Networks. Algorithms and computer programming for software realization with engineering applications.


360. *Advanced Information Systems*. 3 Hr. This course will provide students with a background in the principles practice, and research directions of the hardware/software architecture of digital communications systems and networks. Topics include basic principles and development of digital communication systems; communication standards and protocols; transmission fundamentals; network access protocols; local area and wide area networks, SONET, ATM, and Gigabit networks.

370. *Switching Circuit Theory 1*. 3 Hr. PR: CPE 71 or equivalent. Course presumes an understanding of the elements of Boolean or switching algebra. Study of both combinational and sequential switching circuits with emphasis on sequential networks. Advanced manual design and computer-aided design techniques for single and multiple output combinational circuits. Analysis and design of sequential circuits. Detection and prevention of undesired transient outputs. (3 hr. rec.)

372. *Advanced Computer Architecture*. 3 Hr. PR: CPE 71 and 110, 111 or consent. Formal tools for designing large digital systems are introduced; formal descriptive algebras such as ISP, PMS, AHPL, CDL, and others. An in-depth study of computer systems designs including instruction design and data path design.(3 hr. rec.)

373. *Design of Computer Arithmetic Circuits*. 3 Hr. PR: CPE 71 or equivalent. Study of logic networks usable in performing binary arithmetic. Emphasis is on design of high-speed, parallel arithmetic units using binary numbers. Consideration of systems for representation of negative numbers. Available arithmetic subsystems are studied. (3 hr. rec.)

390. *Independent Study*. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.


471. *Switching Circuit Theory 2*. 3 Hr. PR: CPE 370, MATH 236, or equivalent. Switching circuit theory is used to model the operations of networks of logic gates and flip-flops. Networks of this type are one form of discrete parameter systems. Studies of the use of linear sequential machine as a means of modeling the general class of discrete parameter information systems. Systems approach and the techniques of abstract algebra used throughout. (3 hr. rec.)

472. *Digital Systems Design 2*. 3 Hr. PR: CPE 372 or consent. Students will design a specific digital system, i.e., CPU control, interrupt structure, memory, or input/output system. They will design and test a project oriented toward one specific objective.

490. *Teaching Practicum*. 1-3 Hr. PR: Consent. Supervised practice in college teaching of computer engineering. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)
491 A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

498. Thesis. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading will be S/U.)

499. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

Computer Science (CS)

302. Foundations of Algorithms. I. 3 Hr. For CS provisional graduate students only. Topics from discrete mathematics including sets, relations, functions, counting principles, graphs and trees, topics from analysis of algorithms including recurrences, sorting, graph and greedy algorithms, and advanced data structures.

304. Semantics of Programming Languages. I. 3 Hr. For CS provisional graduate students only. Operating systems, machine organization, number systems and the theoretical and practical aspects of assembler and other programming languages.


326. Advanced Analysis of Algorithms. II. 3 Hr. PR: CS 126 CS 326. Advanced Analysis of Algorithms. II. 3 Hr. PR: CS 126. Analysis and design techniques for efficient sequential and analysis and design techniques for efficient sequential and parallel algorithm design; NP-completeness, advanced parallel algorithm design; NP-completeness, advanced analysis techniques, advanced algorithms, and parallel analysis techniques, advanced algorithms, and parallel algorithms.

328. Artificial Neural Networks. 3 Hr. PR: MATH 143 or MATH 241 or consent.; fluency in a high-level programming language. Theory of artificial neural networks (ANN) as mathematical models; techniques of linear algebra and calculus applied to understanding ANN-based learning and recall methods; introduction of several basic ANNs; ANN implementations via student-designed software.
330. Design of Language Processors. II. 3 Hr. PR: CS 236. Study of the design and construction of automatic programming language processors. Investigation of the structure of scientific and business oriented compilers, list processors, and information processing languages.

336. Formal Specification of Language. I. 3 Hr. PR: CS 236. Specifications of language syntax and semantics by grammars and automata and by attribute grammars, denotational semantics, and action equations; algebraic, denotational, and operational semantics, application of formal specifications to construction of software tools.

346. Advanced Automata Theory. II. 3 Hr. PR: CS 246. Survey of automata outside the Chomsky hierarchy with applicability to parallel processing, learning, temporal logic, and language processing.

350. Software Engineering in Data Communications. I. 3 Hr PR: CS 256. Data communication principles, testing and debugging techniques, networks and data link control, software design in a network environment. A “hands-on” project in data communications design is included.

356. Theory of Operating Systems. I. 3 Hr. PR: CS 256 Theoretical analysis of selected aspects of operating system design; topics include interaction of concurrent processes; scheduling and resource allocation; virtual memory management; access control; and distributed and realtime system issues.

366. Advanced Computer Systems Architecture. II. 3 Hr. PR: CS 266 or CPE 272. High performance techniques, pipelined and parallel systems, and high-level architectures; comparative evaluation of architectures for specific applications; emphasis on software implications of hardware specifications.

374. Developing Portable Software. 3 Hr. PR: CS 176 and CS 256 or consent. Issues, problems, and techniques in the practical development of portable software and in the adaptation of programs to new environments; development of a simple interactive application; porting to several diverse computing platforms.

375. Software Verification and Validation. II. 3 Hr. PR: CS 136 and CS 176. Principles of formal software specification; formal verification, testing, and other validation techniques.

376. Formal Methods in Software Engineering. I. 3 Hr. PR: CS 276. Principles of rigorous specification, designing, implementation and validation of sequential, concurrent and real-time software; emphasis on reading current papers on these topics.

377. Object-Based Software Design. II. 3 Hr. PR: CS 176. Data type and structure specification, axiomatic and model-based specifications, data abstraction facilities in modern programming languages, examples, and associated algorithms.

378. Theory of Database Systems. I. 3 Hr. PR: CS 278. Abstract and newer database models; introduction to database design techniques in the context of semantic data modeling; equivalence of different relational models; object-oriented databases.

386. Advanced Artificial Intelligence Techniques. II. 3 Hr. PR: CS 286. Reasoning under uncertainty; nonmonotonic reasoning, statistical reasoning, fuzzy logic; planning, parallel, and distributed AI, natural language processing, learning, connectionist models, temporal logic, common sense knowledge, and qualitative reasoning, AI techniques and robotics.

388. Interactive Computer Graphics. I. 3 Hr. PR: CS 126. Viewing in three dimensions, projections, rendering of surfaces and solids, illumination and shading, interaction handling, display processors and programming systems, and graphics system organization.

390. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practices in college teaching of computer science. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

396. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

415. Computability and Recursive Function Theory. 3 Hr. PR: CS 315. Introduction to recursive function theory, approaches to computability, Church’s thesis, decidability, recursive and recursively enumerable sets, numbering computable functions, Godel’s incompleteness theorem, reducibility, and computational complexity.

418. Information Dissemination. 3 Hr. PR: CS 326. Research issues in information dissemination in graphs; emphasis on broadcasting and gossiping algorithms, including identification and solution of open research questions.

428. Advanced Neural Networks. 3 Hr. PR: CS 328 or equivalent. Continuation of CS 328. Unsupervised learning: Hebbian and competitive; Hamming and Euclidean distance classifiers; discussion of Hamming, Maxnet, Kohonen, and Art 1 ANN’s; presentation of papers by students from research literature.

446. Advanced Theory of Computing. I. (Alternate years.) 3 Hr. PR: CS 326 or 346. Advanced structural complexity theory and its relationship to algorithmic problems. Interactive proofs, hierarchies (polynomial time, low, high), and hardness of approximation.

458. Distributed Systems and Algorithms. 3 Hr. CS 458. PR: CS 126 and CS 356. Distributed and networked operating systems and the algorithms necessary to achieve such goals as transparency, sharing, fault tolerance, and efficient process and task scheduling.

472. Information Modeling. 2 Hr. PR: CS 278 or CS 377. Information modeling, data definition languages, graphical information models (NIAM and IDEF), computer-readable information models (NIAM and IDEF), computer-readable information models (EXPRESS); information exchange and information models (EXPRESS); information exchange and sharing using STEP application protocols.

475. Advanced Software Verification. 3 Hr. PR: CS 375. Formal and practical modular verification of functionality and performance; soundness and completeness of proof systems; module testing.

477. Software Reuse. 3 Hr. PR: CS 375 or CS 376. Formal and practical modular verification of functionality and performance; soundness and completeness of proof systems; module testing.

478. Advanced Databases Theory. 3 Hr. PR: 378. Design theory for relational databases; functional dependencies; multivalued dependencies and normal forms; projection mappings, tableaux and the chase; representation theory.

486. Global Knowledge Networks. 3 Hr. PR: CS 386. Representational formalisms and effective retrieval techniques to obtain information from international knowledge repositories connected via high-speed networks.

488. Advanced Graphics and Multimedia. 3 Hr. PR: CS 388 and fluency in C, Unix, and X. Computer graphics and multimedia; raster graphic architectures, advanced raster algorithms, ray tracing, radiosity, multimedia representation, multimedia communications, and similar topics.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of computer science. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)
491 A-Z. Advanced Study. I, II, S. 1-6 Hr. PR: Consent. Investigation in advanced subjects which are not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

492 A-Z. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading will be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her departments 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

900. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education community health, geology). The continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Electrical Engineering (EE)
311. Applied Nonlinear Control. II. (Alternate yea.) 3 Hr. PR: EE 216 or consent. Study of the major analytical tools that are being used to analyze and control nonlinear systems such as phase plane analysis, Lyapunov theory, describing function analysis, feedback linearization, and sliding control.


315. Linear Control Systems. 3 Hr. PR: Consent. Basic concepts in the theory of linear control systems; state variable representation; solution of state equations, controllability, observability, stability, transfer function descriptions, design of controllers and observers. (3 hr. rec.)

316. Optimal Control. 3 Hr. PR: Consent. Methods of direct synthesis and optimization of feedback systems; Wiener theory; Pontryagin's maximum principle; dynamic programming; adaptive feedback systems. (3 hr. rec.)
317. Digital Control. 3 Hr. PR: EE 216 or equiv., or consent. Sampling of continuous-time signals; transform analysis of discrete-time systems. Translation of analog design. Controllability and observability. State-space design methods; and introduction to optimal control for discrete systems. (3 hr. rec.)

330. Advanced Electrical Machinery. 3 Hr. PR: EE 131 and EE 136 or consent. Theory and modeling of synchronous, induction, and direct-current machines, and their steady-state and transient analysis. (3 hr. rec.)

333. Comp Appl Power System Analysis. 3 Hr. PR: 231 or consent. Steady state analysis by digital computers of large integrated electrical power systems. Bus admittance and impedance matrices, load flow studies, economic dispatch and optimal power flow, steady state security analysis, fault studies. (3 hr. rec.)

334. Power System Control and Stability. 3 Hr. PR: EE 131 and EE 315. Review of stability theory, classical transient analysis, dynamical models of synchronous machines, power system stability under small and large perturbations, dynamic simulation of power systems. (3 hr. rec.)

336. Adv Power Electronics/Drives. II. (Alternate years.) 3 Hr. PR: EE 236. Study of solid-state power semi-conductor devices with emphasis on their applications in power conditioned electric motor drives systems. Examination of control philosophies, steady-state models, and numerical simulation. Current topics of interest from the literature.

343. Biomedical Instrumentation. 3 Hr. This course covers biomedical instrumentation used to measure signals generated by living systems. A significant portion of the course deals with the origin and characteristics of biological signals. (3 hr. lec.)

357. Linear Integrated Circuits. 3 Hr. PR: EE 158, 159 or equivalent. (Primarily for students specializing in communication and electronics.) Techniques of integrated circuit design and fabrication. Development of models descriptive of linear and nonlinear transistor operation. Design and analysis of high-frequency tuned, direct-current, and differential amplifiers. (3 hr. rec.)

358. Integrated Logic Circuits. 3 Hr. PR: EE 156,157 or equivalent, or consent. (Intended for students specializing in digital circuits.) Techniques of integrated circuit design and fabrication. Development of transistor model for nonlinear operations. Design, analysis, and comparison of emitter-coupled, direct-couples, diode-transistor, transistor-transistor integrated logic circuits. (3 hr. lec.)

364. Communication Theory. 3 Hr. PR: EE 264 or consent. Detailed study of probability theory and its use in describing random variables and stochastic processes. Emphasis on applications to problems in communication system design. (3 hr. rec.)

387. Materials Engineering. 3 Hr. A study of materials engineering fundamentals emphasizing semiconductor, polymer, metal, and ceramic/cementitious material systems. Mechanical and physical properties, theoretical aspects, testing, design criteria, manufacturing, and economics of material systems. Laboratory testing and evaluation. (Equivalent to CHE 387, CE 387, EM 387, IMSE 387, and MAE 387.)

390. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

391 A-Z. Advanced Topics. I, II. S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)
411. Nonlinear Control System Analysis. 3 Hr. PR: Consent. Application of Liapunov’s and Popov’s methods to nonlinear control systems, together with classical techniques. (3 hr. rec.)

415. Large-Scale System Modeling, Cont. 3 Hr. PR: EE 315. Characterization of large-scale systems, model simplification through aggregation and perturbation methods, optimal and chained aggregation, balanced realization and cost component procedures; optimal model reduction; simplification effects; decentralized control: feasibility and design. (3 hr. lec.)

416. Stochastic Estimation and Control. 3 Hr. PR: EE 316 or consent. Techniques of optimal estimation and control for linear systems. Balanced emphasis is placed on both continuous and discrete time systems. Some advanced topics of interest will be considered. (3 hr. rec.)

430. Real Time Control of Power System. 3 Hr. PR: EE 315 and EE 316 and EE 333. Application of computers to modern control theory for reliable and economic real-time operation of integrated power systems. (3 hr. rec.)

432. Protection of Power Systems. 3 Hr. PR: EE 231 or consent. Principles of relay protection for faults on transmission lines and other devices. Use of overcurrent, differential distance, and pilot relaying systems. Special relay applications. Determination of short-circuit currents and voltages from system studies. (3 hr. rec.)

433. HVDC Transmission. I. (Alternate years.) 3 Hr. PR: EE 236 and EE 333. Line-commutated converter analysis, operation of two-terminal and multiterminal dc systems, harmonics and filters, modeling of ac/dc system, and design of modulation controllers.

443. Advanced Signal Processing. 3 Hr. PR: EE 314 or Consent. Statistical aspects of signal processing. Includes advanced techniques, such as autocorrelation/crosscorrelation, autoregressive models, linear prediction, power spectral density, and other topics. Course will contain significant student-driven application component using biomedical, communication, and/or other signals. (3 hr. lec.)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of electrical engineering. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)
498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading will be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

**Software Engineering (SENG)**
310. Software Project Management. 3 Hr. Techniques and tools for managing the software development process for large development projects.

320. Software Analysis and Design. 3 Hr. Defining software requirements and an introduction to the principles and concepts relevant to the design of large programs and software systems.

340. Software Lifecycle and Capability Maturity Model. 3 Hr. Software process and the Capability Maturity Model (CMM), software maintenance and evolution, program understanding, reengineering, software configuration management, and software tools related to these issues.

**Industrial and Management Systems Engineering**

*Warren R. Myers, Ph.D., C.I.H., Chairperson*

321 Mineral and Energy Resources Building
E-mail: wmyers@wvu.edu

Graduate IE web page: www.cemr.wvu.edu/~wwwie/iegraduate

Graduate Occupational Hygiene and Occupational Safety web page:
www.cemr.wvu.edu/~wwwohos/

Graduate Safety Management web page: www.cemr.wvu.edu/~wwwsem/

**Degrees Offered:** Master of Science in Industrial Engineering
- Master of Science in Engineering with a major in Industrial Engineering
- Master of Science in Occupational Hygiene and Occupational Safety
- Master of Science in Safety Management
- Doctor of Philosophy with a major in Industrial Engineering
- Doctor of Philosophy with a major in Occupational Safety and Health

One of the defining attributes in the success of the department is the dedication and talent of its 17 faculty and three staff. The aggregate careers of our faculty and staff represent nearly 300 years of service to students at WVU. In these 300 years of service is embodied the wisdom and experience to successfully prepare industrial engineers and occupational health and safety professionals for the 21st century. The faculty and staff typically educate 110 to 120 undergraduate, 210 to 230 M.S., and seven to 10 Ph.D. students. The department is in the unique position in the USA of having two complimentary graduate programs in occupational health and safety accredited by the ABET/RAC. The combined resources and faculty talents of these two programs create synergies that provide our students with outstanding academic and research experiences in the field of occupational safety and health. Excellent academic and research opportunities are also available for students in the areas of operations research, decision sciences, and manufacturing.
Faculty Research

The department has quality research laboratories in manufacturing, robotics and vision systems, CAD/CAM, operations research, production planning and control, decision sciences, ergonomics, industrial hygiene, and safety. Graduate students are encouraged to utilize these resources to explore and develop their capabilities. Research initiatives and on-going funding opportunities are available to students in the areas of: 1) ergonomics; 2) operations research; 3) manufacturing; 4) occupational safety and health; 5) artificial intelligence; and 6) respirator research.

Master’s Degree Programs in Industrial and Management Systems Engineering

Graduate programs in industrial and management systems engineering are designed to give students experience in developing innovative solutions to real problems by implementing creative ideas. Students can expect to develop their creative abilities in order to be effective in innovative environments while improving their abilities to communicate and implement new ideas.

Four degrees are offered at the master’s level: M.S.I.E., M.S.E., M.S. in occupational health and safety, and M.S. in safety management

- The M.S. industrial engineering degree program is appropriate for students with a B.S. in industrial engineering or other engineering discipline. See our graduate IE web page at www.cemr.wvu.edu/~wwwie/iegraduate.
- The M.S. engineering degree program is designed for students having a baccalaureate degree in a technical field other than industrial engineering who wish to pursue a broader, more interdisciplinary program of graduate studies. An undergraduate degree in either another engineering field or the basic sciences is required for admission to the M.S.E. See our graduate IE web page at www.cemr.wvu.edu/~wwwie/iegraduate.
- The occupational hygiene and safety degree program is accredited in industrial hygiene by the Related Accreditation Committee of the Accreditation Board of Engineering and Technology (ABET). It is designed for students with undergraduate training in the areas of engineering, chemistry, biology, medical sciences, animal sciences, or the physical sciences who have an interest in occupational and environmental health and safety. The three disciplines that form the basis of occupational hygiene and occupational safety are industrial hygiene, industrial safety, and ergonomics. See our graduate OHOS program web page at www.cemr.wvu.edu/~wwwohos/.
- The safety management degree program is accredited in safety by the Related Accreditation Committee of the Accreditation Board of Engineering and Technology (ABET). It is designed for students trained in the areas of business and economic sciences, animal sciences, chemical and biological sciences, engineering and technology sciences, medical sciences, and the physical sciences who have an interest in safety and environmental management. Students who have a strong interest in environmental management may earn an Environmental Area of Emphasis which is designated on the transcript. See the Safety and Environmental Management graduate program web page at www.cemr.wvu.edu/~wwwsem/.
Admission To qualify as a regular graduate student, applicants must have as a minimum, the equivalent of a 3.00 GPA. Applicants with a minimum 2.50 GPA (or the equivalent) may be admitted on a provisional basis. Foreign students must demonstrate proficiency in communicating in English (550 or more in TOEFL). Students must comply with the rules and regulations as outlined in this catalog for graduate work in the College of Engineering and Mineral Resources.

- For admission into the I.M.S.E. and M.S.E. programs applicants must have a bachelor of science degree from an engineering department, or from physics, chemistry, computer sciences, mathematics, or similar technical or science program. In general a degree in one of the "hard" science programs is required with at least two years of calculus or equivalent mathematics.
- For admission into the occupational health and safety program applicants must meet ABET/RAC prerequisite course requirements which are currently a minimum of 63 credit hours of approved science, mathematics, and other technical courses. Of these, at least 15 credit hours must be junior or senior level. Specific pre/co-requisite course requirements include one semester of computer application (must include spreadsheets and databases) and statistics and two semesters of general/ inorganic chemistry and physics. On an individual basis, the faculty may identify additional pre/co-requisite course work often including organic chemistry and human physiology. Applicants will be advised about their specific requirements at the time of admission. Applicants not meeting all of the listed requirements may be considered for admission as provisional students.
- For admission into the safety management program applicants must meet ABET/RAC prerequisite course requirements [currently a minimum of 21 credit hours of science and mathematics, 42 credit hours of technology, engineering, or safety related specialties (including management and human behavior). On an individual basis, the faculty may identify additional prerequisite course work. Applicants will be advised about their specific requirements at the time of admission. Applicants not meeting all of the listed requirements may be considered for admission as provisional students.

Required Courses Required courses are determined by the student’s degree program and area of emphasis. Specific course information by program area is available at the following web sites:

Industrial Engineering: www.cemr.wvu.edu/~wwwie/iegraduate.
Occupational Hygiene and Occupational Safety: www.cemr.wvu.edu/~wwwohos.
Safety Management: www.cemr.wvu.edu/~wwwsem.

Thesis When a student elects the thesis or problem report option, the thesis or problem must conform to the general requirements of the University and to written requirements of the Department of Industrial and Management Systems Engineering.

Graduation Requirements The M.S.I.E. or M.S.E. degree requirements for the thesis option include completion of a minimum of 24 credit hours, plus a six-hour thesis; or candidates may take 33 credit hours and complete a three-hour thesis report. A candidate for the M.S.I.E., M.S.E., or M.S.O.H.O.S. degrees must pass an oral examination on course work and the thesis or problem report. M.S. safety management degree candidates may opt to complete a minimum of 30 credit hour, plus a six-hour thesis, or they may opt to complete a minimum of 33 credit hours and a problem report or a 36 credit hour all coursework program. Candidates who take the 33- or 36-hour options are also required to pass a final comprehensive written examination. All graduate students must have a final grade-point average of at least 3.0.
Doctor of Philosophy

A candidate for the degree of doctor of philosophy (Ph.D.) must comply with the rules and regulations of the College of Engineering and Mineral Resources and the University. To be accepted in the Ph.D. program, applicants should have as a minimum the equivalent of a 3.40 GPA in their graduate work. They must also meet all the entrance requirements stated earlier for the master’s programs. Each student will develop a program with a major in industrial engineering, or occupational safety and health designed to meet his/her needs and objectives in consultation with an advisor and the advisory and examining committee. Required core courses for the Ph.D. program are determined by the student’s area of emphasis. In general, Ph.D. students take approximately 54 hours of course work beyond their baccalaureate degree, with a minimum of 30 hours in industrial engineering. The research work for the doctoral dissertation may entail a fundamental investigation or a broad and comprehensive investigation into an area of specialization.

Early in the doctoral program, the student must pass an examination to demonstrate master’s-level proficiency in industrial engineering subject matter. Upon completion of the course work, the student must pass a written examination in order to be admitted to candidacy. An acceptable dissertation must be written and defended.

Industrial and Management Systems Engineering (IMSE)

300 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

302. Advanced Manufacturing Processes. 3 Hr. PR: IMSE 202 and IMSE 203. Metal cutting economic models, solidification processes, bulk deformation, sheet metal and drawing, joining design and economics. Overall view of manufacturing systems. Introduction to numerical control programming and projects on numerical control equipment.

303. Reliability/Maintainability. 3 Hr.

304. Materials and Processing Systems Design. 3 Hr. PR: IMSE 202 and IMSE 203. The engineering design process, material design properties and selection systems, decision making and problem analysis techniques for materials and processing. Economic and cost systems, expert systems, failure analysis and quality systems for materials and process selection.

305. Computer Integrated Manufacturing. 3 Hr. PR: Graduate standing. Several aspects of computerized manufacturing systems will be covered. Emphasis will be placed on computer fundamentals, computer aided design and manufacturing, numerically controlled (NC) machine tools, part programming, system devices, and direct digital control. (2 hr. lec., 1 hr. lab.)

307. Robotics and Flexible Automation. 3 Hr. PR: Graduate standing. This course will provide an understanding of the principles, capabilities and limitations of industrial robots and other flexible automation tools. Emphasis will be placed on kinematic analysis, trajectory planning, machine vision, and manufacturing automation. (2 hr. lec., 1 hr. lab.)

308. Advanced Problems in Manufacturing Engineering. 1-3 Hr. PR: IMSE 300 or IMSE 302; graduate standing. Special problems relating to one of the areas of manufacturing engineering, such as manufacturing processes, robotics, CAD/CAM, group technology, and manufacturing systems engineering.

309. Computational Methods for Manufacturing Engineers. II. 3 Hr. PR: Graduate standing. Computational techniques applicable to manufacturing systems engineering problems; emphasis on use of personal computers. (2 hr. lec., 1 hr. lab.)

314. Design of Industrial Experiments. 3 Hr. PR: IMSE 214 or consent. Continuation of IMSE 214. More complex experimental design especially useful to engineering and industrial researchers, including factorials and optimum-seeking design. Emphasis on use of existing digital computer routines and interpretation of results.
325. *Engineering Management.* 3 Hr. Unique problems of engineering organizations including project planning, managing creativity, coordinating design and development, and other topics relevant to engineering organizations.


342. *Advanced Production Control.* 3 Hr. PR: IMSE 250. Different mathematical models useful in the design of effective production control systems. The various models include: static production control models under risk and uncertainty; dynamic models under certainty, under uncertainty, and under risk.

353. *Applied Linear Programming.* 3 Hr. PR: IMSE 250 or consent. Application of the assignment, transportation, and simplex algorithms to typical industrial problems. The methods and computational efficiencies of the revised simplex and other algorithms are also studied.

355. *Scheduling and Sequencing Methods.* 3 Hr. PR: IMSE 250. Theory and applications of analytical models used in the scheduling models; flow shop models; job shop models; and assembly line balancing methods.

358. *Special Topics.* I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

360. *Human Factors System Design.* 3 Hr. PR: IMSE 260 or consent. Theoretical aspects and practical applications of man/machine relationships as they influence future system design. The student will examine human limitations with respect to acceptance of information, decision making, and ability to transmit the result of such decisions to controlled equipment systems to obtain design optimization. (2 hr. lec., 3 hr. lab.)

361. *Industrial Hygiene Engineering.* 4 Hr. Introductory course in industrial hygiene with laboratory. Topic includes: recognition, evaluation, and control of occupational and environmental contaminants and physical agents; basic IH quantitative analysis; PPE selection and evaluation.

362. *Systems Safety Engineering.* 3 Hr. PR: IMSE 261 or consent. Analysis of manufacturing methods, processes, and properties of materials from a system safety engineering viewpoint. Emphasis will be on hazard analysis techniques (fault tree, MORT, failure modes, and effects) and machine guarding methods.

364. *Industrial Ergonomics.* 3 Hr. PR: IMSE 260 or consent. Practical experience in the application of ergonomic principles to industrial problems. Safety and production implications of work physiology, industrial biomechanics, and circadian rhythms, as well as current interest topics.

368. *Advanced Problems in Human Factors.* 1-3 Hr. PR: IMSE 260 or IMSE 360 and graduate standing. Special problems relating to one of the areas of human factors, such as simulation, controls, vigilance, safety, and occupational health.

377. *Advanced Engineering Economy.* 3 Hr. PR: Consent. Special emphasis on depreciation, engineering and economic aspects of selection and replacement of equipment; relationship of technical economy to income taxation; effect of borrowed capital and pricing model.

378. *Costing and Estimating for Manufacturing.* I. 3 Hr. PR: IMSE 277 or consent. Analysis of overhead, cost indexes, cost capacity factors, improvement curves; costing for materials with design considerations; conceptual cost estimating; costing for machining, joining, casting and forming; facility cost estimation.

387. *Materials Engineering.* 3 Hr. A study of material engineering fundamentals emphasizing semiconductor, polymer, metal, and ceramic/cementitious material systems. Mechanical and physical properties, theoretical aspects, testing, design criteria, manufacturing, and economics of material systems. Laboratory testing and evaluation. (Equivalent to CE 387, CHE 387, EE 387, EM 387, and MAE 387.)

397. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading will be S/U.)

451. Nonlinear Programming. 3 Hr. PR: IMSE 250 or consent. Advanced study of the techniques of nonlinear programming and their applications. Topics include steepest descent, Newton’s method, Fletcher-Powell, conjugate gradients, Powell’s method, and penalty function methods.

452. Queueing Theory. 3 Hr. PR: IMSE 113 and IMSE 250 or consent. Analytical modeling of waiting line systems with emphasis on determining the best operating conditions for those systems. Single-channel and multichannel models. Computational methods (including Monte Carlo techniques) are examined. Applications to problems such as maintenance and inventory control.

453. Theory of Linear Programming. 3 Hr. PR: IMSE 250 or consent. Study of procedures available for solving large-scale problems using linear programming. Topics include decomposition techniques, multiple pricing, cycling, inverse generation and storage, ranging procedures, and upper bound algorithms.

454. Inventory Theory. 3 Hr. PR: IMSE 113 and IMSE 250 or consent. Techniques used in optimization of inventory systems. Elements of static, deterministic inventory models, and static, stochastic inventory models. Selected inventory models. Selected topics related to inventory analysis.


457. Dynamic Programming. 3 Hr. PR: IMSE 250 or consent. Introduction to basic structure and computational aspects of dynamic programming and applications including sequential decision problems, deterministic and probabilistic models over finite and infinite planning horizons, and Markovian decision processes.

458. Integer Programming and Applied Networks. 3 Hr. PR: IMSE 250 or consent. Introduction to application of integer programming and maximum flow networks to engineering and operations research problems. Emphasis on problem formulation and solution.


484. Advanced Digital Simulation. 3 Hr. PR: IMSE 284 or consent. Analysis and comparison of special purpose digital simulation languages such as GPSS, SLAM, SIMAN, SIMSCRIPT, CSMP, DYNAMO, and JOB SHOP simulation.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of industrial and mgmt systems engr. Note: This course is intended to ensure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.
495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

498. **Thesis or Dissertation.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading will be S/U.)

499. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**Occupational Hygiene and Safety**

320. **Foundations of Environmental Health Practice.** I, II, S. 4 Hr. PR: Consent. Designed to enable the environmentalist to recognize and identify environmental stresses and the effect of these stresses on man. Topics include occupational health, physical stress, safety, and basic and broad principles of toxicology.


325. **Industrial Hygiene Sampling and Analysis.** II. 4 Hr. PR: IMSE 361 and consent. Calibration and use of sampling and analytical equipment used by industrial hygienists to evaluate the work environment. Advantages and disadvantages of different equipment under various conditions. Biological monitoring as an evaluation tool.

327. **I. H. Noise Assessment.** S. 3 Hr. PR: IMSE 361. Industrial hygiene aspects of assessing and controlling noise induced hearing loss. Practical experience with noise dosimeters, sound level meters, and instrumentation used to assess human noise exposure is provided by field trips and case studies.

328. **Noise and Ventilation Control Technology.** S. 3 Hr. PR: IMSE 361 or consent. The course will demonstrate techniques for the recognition, evaluation, and control of noise and ventilation problems. Students will use monitoring equipment to evaluate situations and perform several design projects.

380. **Internship.** I, II, S. 3-6 Hr. (May be repeated.) PR: Consent of committee chairperson and department chairperson. Professional internship providing on-the-job training under supervision of a previously approved environmentalist in settings appropriate to professional objectives.

490. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of occupational hygiene and safety. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.
492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Safety and Environmental Management

301. Safety Management Integration. 3 Hr. PR: Major or consent. Consideration of integrated arrangements, staff roles, management theory, staff liaison, project improvement, effectiveness audits, and collaboration needed to assure success of the safety function.

310. Controlling Environmental and Personnel Hazards. 3 Hr. PR: Consent. Investigation of hazard control principles relating to environmental facilities and equipment including control procedures recommended by authorities from the fields of engineering, medicine, and public health as well as from the field of safety.

318. Safety Evaluation and Research. 3 Hr. An introduction to the nature and purpose of research as it applies to safety; research designs and concerns; basic statistical procedures; evaluation and interpretation of safety data; and measurement and evaluation of safety performance.

331. Safety in Motor Transportation Services. 3 Hr. PR: Consent. Safety elements of automotive transportation including design, operation, planning, control, and effects of legislation.

333. Disaster Preparedness and Emergency Systems. 3 Hr. Major elements involved in disasters and emergencies, preparedness planning, systems utilization, and attention to essential human services, with emphasis on community action.

334. Establishing and Managing Fire Services. 3 Hr. Analysis of fire services usually provided under safety manager jurisdiction, with special attention to legal bases, organizational structure, services rendered, training needs, and management techniques.

335. Safety Legislation and Compliance Operations. 3 Hr. PR: Consent. Comprehensive study and analysis of federal and state legislation which mandates compliance with certain safety conditions and practices related to work performed in occupational and comparable settings.

340. **Instrumentation for Safety Managers.** 3 Hr. PR: Consent. Anticipation, recognition, evaluation of industrial hygiene topics encountered by safety managers. Fundamental instrumentation techniques are presented in laboratory and lecture formats. Management-oriented control and remediation programs are developed.

352. **Safety and Health Training.** 3 Hr. Analysis of safety and health performance discrepancies, development, and conducting training programs to eliminate those discrepancies and the evaluation of program effectiveness in terms of cost effectiveness and organizational impact.

358. **Substance Abuse in the Workplace.** II. 3 Hr. PR: Consent. The problem, nature, and effects of drug and alcohol use in the workplace; approaches for treatment and avoidance such as EAP’s, community programs, and testing; development of management approaches and programs.

366. **Loss Control and Recovery.** 3 Hr. PR: Consent. Identifying and elimination areas of loss or recovering from losses of people, property, and efficacy via management practices, insurance, and worker’s compensation, and other management techniques and resources effective in controlling those losses.

380. **Fundamentals of Environmental Management.** 3 Hr. Provide students with an introductory but comprehensive overview of topics related to environmental technology as it applies to safety management. Focus will be on regulation and technology relative to environmental management. Includes a field trip.


382. **Environmental Energy Impacts.** 3 Hr. Course covers environmental effect caused by the development and use of fossil fuels and alternative energy sources. Course includes history, compliance, energy economics, field trips, and laboratory or project presentation.

391 A-Z. **Advanced Topics.** 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. **Research.** 1-15 Hr. PR: Consent Research activities leading to a thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

452. **Human Resources and Safety.** 3 Hr. Safety positions and human resources, needs and problems in relation to efforts by business, industrial, governmental, and educational agencies to provide effective human resources for safety.

459 A-Z. **Directed Study.** 1-6 Hr. Directed study, reading, and or research.

460. **Biomechanics of Safety Management.** 3 Hr. PR: Departmental consent. Applying the laws of physics to describe the abilities and limitations of the human body biomechanically and physiologically in order to maintain safety, quality, and productivity objectives; based on safety management principles.

468. **Essential Safety Management Information.** 3 Hr. PR: Consent. Examination of information needed for safety management success, harm investigation procedures, evaluation techniques, unrealized profit calculations, and decision-making which should enhance improvement of all safety function affairs.
472. Professional Field Experience. Variable 1-18 Hr. PR: Consent (may be repeated up to a maximum of 18 hours.) Prearranged experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.

490. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of safety and environmental management. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491 A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

498. Thesis or Dissertation. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading will be S/U.)

499. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her departments, 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**Mechanical and Aerospace Engineering**

*Donald W. Lyons, Ph.D., P.E., Chairperson*

323 Engineering Sciences Building

e-mail: mae-info@cemr.wvu.edu

[www.cemr.wvu.edu/~wwwmae](http://www.cemr.wvu.edu/~wwwmae)

**Degrees Offered:** Master of Science in Mechanical Engineering

Master of Science in Aerospace Engineering

Master of Science in Engineering with a major in Mechanical or Aerospace Engineering

Doctor of Philosophy in Engineering with a major in Mechanical or Aerospace Engineering
Faculty

Faculty members in the department have extensive industrial and teaching experience and have published widely. Their combined experience helps them assist students in selecting relevant courses and research topics to meet their educational goals. The department has extensive laboratory space in the Engineering Sciences Building and in the Engineering Research Building to provide support for both instructional and research activities. The department has several special laboratories located nearby, which include the engine research center, the wind tunnel laboratory, and the aircraft-flight test hangar at the Morgantown Municipal Airport (Hart Field). Funded research allows the department to maintain up-to-date instrumentation, equipment, and facilities, including computer-controlled data acquisition systems for laboratory use.

Graduate Programs

The objectives of the departmental graduate-level programs are: (1) to provide master’s level education for students in or entering the engineering profession and/or (2) to provide an advanced graduate educational experience for students pursuing the doctoral degree. Three master’s degrees are offered in the department: the master of science in aerospace engineering (M.S.A.E.), the master of science in mechanical engineering (M.S.M.E.), and the master of science in engineering (M.S.E.) with a major in mechanical engineering or with a major in aerospace engineering. The department also offers the doctor of philosophy (Ph.D.) degree with majors in mechanical engineering and aerospace engineering.

An application package can be obtained from the Graduate Program Director, Department of Mechanical and Aerospace Engineering, West Virginia University, P.O. Box 6106, Morgantown, WV 26506-6106.

Admission to Master’s Programs

To be eligible for admission into the M.S.A.E. or M.S.M.E. degree program, a candidate must hold or expect to receive (by the enrollment date) a B.S.A.E. or B.S.M.E. degree from either an accredited ABET curriculum or an internationally recognized program. Candidates with superior academic records in baccalaureate degrees in other engineering fields, mathematics, or science may be eligible for admission into any of the master’s programs offered by the department but will normally be required to attain a baccalaureate level of proficiency in certain engineering areas of the department. An engineering technology (non-calculus based) degree is not sufficient qualification for admission into any of the graduate programs offered by the department.

Doctor of Philosophy Program Admission

To be eligible for admission into the doctor of philosophy degree program, a candidate must hold or expect to receive (by the enrollment date) an B.S. degree in some discipline of engineering from an institution which has an ABET accredited undergraduate program in engineering or an internationally recognized program in engineering.

General Admission Requirements

The other requirements for admission into the graduate programs of the department are summarized as follows:

- To be admitted as a regular graduate student, an applicant must have a gradepoint average of 3.0 or better (out of a possible 4.0) in all previous college work and must meet all other requirements below.
- The applicant must first submit, to the office of admissions and records of West Virginia University, a completed application, application fee, and transcripts of all college work (directly from the institution) completed.
• Each applicant is required to have three reference letters (using standard forms available from the department) sent directly to the department; at least two of the three references should be from the institution last attended.
• A minimum score of 550 on the TOEFL is required of all applicants from countries where the native language is not English. (This requirement will be waived for applicants who have completed a recent four-year bachelor’s degree in the USA.)
• All international applicants who have not received their undergraduate degree in the USA are required to submit GRE general test scores with the engineering subject test score being optional. Minimum levels of 75th percentile (score of 670) on the quantitative part of the test and 60th percentile (score of 560) on the analytical part are required.

Provisional Admission
An applicant not qualifying for the regular graduate student admission status, either due to insufficient grade-point average, incomplete credentials, or inadequate academic background, can be admitted as a provisional student. Requirements for attaining regular student status must be stated in a letter of admission. Provisional students must sign a contract, which lists in detail all requirements to be met for attaining regular student status, no later than their first registration.
All of the degree programs require the student to attain an overall grade-point average of 3.0 or higher in order to meet graduation requirements. The grade-point average is calculated on the basis of courses and excludes credit for research, for which a grade of S is received. A maximum of nine credit hours of the course work can be at the advanced (200) undergraduate-level, dependent upon the program desired by the student and the agreement of his/her advisory and examining committee.

Courses
Only courses with grades of C or higher may be acceptable for graduate credit, although all course work taken will be counted in establishing the student’s grade-point average. No more than nine hours of 200-level credit can be counted toward meeting the course work requirements for the M.S. degree. For the Ph.D., even though the absolute minimum set by the College is 18 hours of course work at the 300-level or higher taken at WVU, the actual minimum is set by the student’s advisory and examining committee and is based on the student’s background and the area of dissertation. No more than 20 percent of the course work for a doctoral degree can be at the 200 level. A minimum of 24 semester hours of research credit at the Ph.D. level is required for dissertation requirements. Two semesters of full-time attendance at the WVU Morgantown campus are necessary to meet residency requirements in the Ph.D. program.

Math Requirements
The Department of Mechanical and Aerospace Engineering requires that the graduate course work include six hours of advanced mathematics for M.S. programs of study and a minimum of six additional hours of mathematics for the Ph.D. programs. A list of approved mathematics courses can be obtained from the graduate program director of the department.

Time Limitations
All requirements for a master’s degree must be completed within eight years preceding the student’s graduation. Students should petition for admission to candidacy for the degree during the first semester of residency by filing a plan of study approved by his/her advisory and examining committee. A minimum of 30 hours of course work (including research) is required for the degree. Students must pass a final examination administered by their advisory and examining committee before being certified for the degree.
Doctor of Philosophy
The doctorate is a research or performance degree and does not depend on the accumulation of credit hours. The requirements for the degree are: passing of the qualifying examination, admission to candidacy, residency, completion of dissertation research, and defense of a research dissertation. At least one member of the graduate faculty from outside the department is required to serve on the advisory and examining committee.

The Ph.D. degree signifies that the holder has the competence to function independently at the highest level in the chosen field. Hence, the number of years involved in attaining or retaining competency cannot be readily specified, nor can an exact program of study be defined. The course work taken should be sufficient to broaden the student's background in at least one other area of the department in addition to the major area of study.

Qualifying Exam The Ph.D. qualifying/candidacy examination is the method of assessing whether the student has attained sufficient knowledge of the discipline and supporting fields in order to undertake independent research or practice. Students are required to pass a qualifying examination administered by the department which tests for a minimum level of proficiency expected of all students in a given area. It is expected that students will take the qualifying exam during their first semester of enrollment in the Ph.D. program; however it is required that full-time students pass the qualifying examination no later than the end of the second semester of their Ph.D. program. As the student progresses, his/her advisory and examining committee is charged with evaluating the student’s competency in the specific area of study through the evaluation of a dissertation proposal for the research to be completed and the evaluation of the student’s plan of study and associated course work. After these requirements are completed, the student is formally admitted to candidacy for the Ph.D. degree. Only at this point can a student be called a doctoral candidate; admission to the graduate program for the purpose of pursuing the Ph.D. is not equivalent to becoming a Ph.D. candidate. Doctoral candidates are allowed no more than five years to complete the remaining degree requirements after admission to candidacy. An extension of time can be obtained only by repeating the qualifying examination and meeting any other requirements specified by the student’s committee.

M.S.A.E. Degree
Students wishing to pursue a program leading to an M.S.A.E. degree are required to have a B.S.A.E. or B.S.M.E. from an accredited ABET curriculum or the equivalent. Students with an engineering background other than aerospace or mechanical engineering normally will be required to strengthen their background. Programs of study must comply with the rules and regulations as outlined in the general requirements for graduate work in the College of Engineering and Mineral Resources. The student’s program of study is formulated jointly by the student and his/her committee. Normally, a thesis is required of all candidates for the degree of master of science in aerospace engineering.

Course Requirements The plans of study for the M.S.A.E. degree must include six semester hours of advanced mathematics beyond a first course in differential equations and at least 12 semester hours of courses taken from any two areas of the department. The remainder of the course work may consist of other courses from mechanical and aerospace engineering, other departments in the College of Engineering and Mineral Resources, or advanced course work in mathematics, chemistry, and physics. A maximum of six hours of research credit is counted toward degree requirements for thesis work. Students not completing a thesis will be required to include six hours of methods courses in their plans of study.
M.S.M.E. Degree

Students wishing to pursue a program leading to an M.S.M.E. degree are required to have a B.S.M.E. or B.S.A.E. from an accredited ABET curriculum or its equivalent. Students with an engineering background other than mechanical or aerospace engineering normally will be required to strengthen their background.

The plan of study must include at least six hours of advanced mathematics beyond a first course in differential equations, and 12 total hours of courses from at least two areas of study in mechanical engineering. Students are normally required to write a thesis. On occasion, part-time off-campus students may be given permission to substitute a problem report for a thesis when they can present compelling evidence of equivalent experience. A maximum of six hours of research credit is counted toward meeting degree requirements for the thesis option; a maximum of three hours of research credit is counted for the problem report option. The student's plan of study is formulated jointly with his/her advisory committee based upon the interests and educational goals of the student. Students not completing a thesis will be required to include six hours of methods courses in their programs of study.

M.S.E. Degree

The M.S.E. programs with a major in mechanical engineering or in aerospace engineering are intended for students who wish to pursue graduate work in these areas but do not have an undergraduate degree in either discipline. Students desiring to pursue such a program in the department must meet similar general requirements as for the M.S.A.E. and M.S.M.E. degree programs.

Plan of Study Each plan of study in the M.S.E. program must include six hours of advanced mathematics and nine hours from each of any two academic areas in the department. Students are normally required to write a thesis. On occasion, part-time on-campus students may be given permission to substitute a problem report for a thesis when they can present compelling evidence of equivalent experience. A maximum of six hours of research credit is counted toward meeting degree requirements for the thesis option; a maximum of three hours of research credit is counted for the problem report option. The student's plan of study is formulated jointly with his/her advisory committee based upon the interests and educational goals of the student. Students not completing a thesis will be required to include six hours of methods courses in their plans of study.

Ph.D.

Students intending to pursue a doctoral program in the College of Engineering and Mineral Resources with an emphasis in mechanical or aerospace engineering should have earned a B.S. and an M.S. degree in some discipline of engineering. While it is possible for a student with a B.S. degree to enroll directly in the Ph.D. program, it is very rarely permitted.

The doctoral courses of study are selected to fit the individual interests and objectives of the student, with proper attention given to broadening related areas of study. The research work for the doctoral dissertation may entail a fundamental investigation into a specialized area or a broad and comprehensive program of study.
Academic Areas

Courses in the department are organized under four academic areas: aerodynamics and fluids engineering; solid mechanics, materials, and structures; system control and manufacturing and design; and thermal sciences and engineering. Students who are pursuing an advanced degree in either mechanical or aerospace engineering may work in one of these areas. In addition, students may pursue studies leading to a specialization in bioengineering.

Aerodynamics and Fluids

A variety of courses and facilities support graduate research in aerodynamics and fluid mechanics. Laboratories are located in college buildings and remote sites. Flow facilities include instrumented subsonic and supersonic wind tunnels, shock tubes, and several flow loops mainly used for research in gas-solid and density stratified flows. Available instrumentation includes eight channels of hot wire/film anemometry, two single-component and one three-component, laser doppler velocimeter (LDV) systems. The department owns well-instrumented V/STOL and Cessna U-206 flight test aircraft housed in hangar facilities at Hart Field. A significant portion of the current activity involves numerical solutions to flow problems and is supported by a computing facility dedicated to graduate research.

Although the faculty background and interests in the areas of aerodynamics and fluid mechanics are broad, recent research has been concentrated on problems in multiphase and density-stratified flows, low-speed aerodynamics, shock phenomena in two-phase systems, flow in microgravity, boundary layer control, and high-speed aerodynamics. These research areas include topics such as fluidized bed combustion, aerosol sampling, flow metering, flow distribution systems, numerical solutions to gas-solid flows, and fluid-particle turbulence interactions, including deposition on solid surfaces. The low-speed aerodynamics work is related to the design of vertical axis wind turbines and STOL airfoils. The research in high-speed aerodynamics deals with viscous-inviscid interactions in transonic, supersonic, and hypersonic flow.

Solid Mechanics, Materials, and Structures

The solid mechanics, materials, and structures (SMMS) area encompasses the theoretical, numerical, and experimental study of solid bodies, from concentration on local behavior of deformable bodies to the global response of structural elements or the motion of rigid bodies. Hence, SMMS students may explore the mechanical behavior of materials in the neighborhood of micro-scale defects such as cracks or investigate the behavior of large-scale bodies such as aerospace structures.

The SMMS faculty carries out basic and applied research related to problems in engineering using state-of-the-art computational and experimental techniques. The areas of research include aeroelasticity, fracture mechanics, nonlinear dynamics and vibrations, composite materials, biomechanics, computational methods such as finite-element and boundary-element, and experimental techniques, including optical methods. Furthermore, in cooperation with the Department of Civil and Environmental Engineering, SMMS students may pursue studies related to civil engineering. A large array of research facilities includes laboratories (materials, structures, vibrations, photomechanics, biomechanics, fracture mechanics, and computer aided engineering), computers (IBM and VAX mainframes, work stations, personal computers, and supercomputers), and shop facilities.
Required Core Courses
Regardless of the chosen specialty, the SMMS student is required to take six hours of courses from a core group consisting of MAE 311, MAE 320, and an introductory FEM course. This requirement may be waived for students who can demonstrate that they possess equivalent knowledge. These courses, combined with the entire plan of study, including research credits, prepares the SMMS student to apply mechanics to modern engineering challenges.

System Control, Design, and Manufacturing
The system control, design, and manufacturing academic area offers instructional and research opportunities for students who want to challenge themselves to attain the expertise required to design or control the behavior of a system in a dynamic environment. Instructional offerings furnish students with a foundation for developing prototype systems and for improving the performance of existing systems. These offerings provide such emphasis as elastodynamic analysis, computerized design, active control in automated machines, and manufacturing systems engineering.

The research endeavors of its faculty reflect a close association with current industrial-type situations. Faculty have research ongoing in the areas of engine acoustic impedance modeling, the control of energy systems in buildings, concurrent engineering, robotics, artificial intelligence, CAD, process control, microprocessor applications, and computer-aided manufacturing.

Thermal Sciences
The thermal sciences and engineering area encompasses the fields of thermodynamics, combustion, heat transfer, and power and energy systems. Graduate course offerings cover a wide range of topics in this area with applications to both aerospace and mechanical engineering problems. Recent research efforts include topics such as the analysis of fluidized bed combustion, energy analysis of buildings, oscillating jet combustion, alternative fuels testing, internal combustion engine performance and emissions, heat transfer, numerical analysis of thermal systems, deposition on turbine blades, and reactor design.

Research facilities include a high-altitude simulation chamber for ablation and wear studies, a fluidized bed combustion laboratory, thermal analyzers, an electrically-heated, natural convection water facility, Schlieren systems for flows with varying density, recording thermocouple data-acquisition systems, a water reservoir for thermal stratification studies, an engine research laboratory, and an emissions research laboratory.

Bioengineering
The MAE department, in conjunction with other departments in the College of Engineering and Mineral Resources and the Health Sciences Center, offers a program in bioengineering culminating in master’s and Ph.D. degrees. The plan of study for a master’s degree requires a minimum of 30 credit hours. This includes at least six hours of bioengineering or medical courses. Students are encouraged to continue toward a Ph.D. by following a plan of study tailored specifically to their research interests. Students whose B.S. degrees are in disciplines other than engineering may be required to complete prerequisite courses.

Areas of research specialization include respiratory and diseased tissue mechanics, orthopedic mechanics, bone growth and fracture, and the application to rehabilitation of computer-aided design and microprocessor-based instrumentation. Research facilities include an aerosol inhalation exposure system, laser-based holographic and moire interferometric equipment, a lung acoustic impedance measurement system, and modern orthopedic, rehabilitation, and computer research laboratories.
Mechanical and Aerospace Engineering (MAE)

300. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

305. **Analytical Methods in Engineering.** 3 Hr. PR: Consent. Index notation for determinants, matrices, and quadratic forms; linear vector spaces, linear operators including differential operators; calculus of variations, eigenvalue problems, and boundary value problems.

307. **Nonlinear Analysis in Engineering.** 3 Hr. PR: Consent. Special topics in nonlinear analysis of various types of engineering systems. Various numerical approximate, and analytical techniques chosen to suit the needs and interests of advanced graduate students.


311. **Advanced Mechanics of Materials.** 3 Hr. PR: Consent. Shear flow and shear center; curved beams; unsymmetric bending, energy methods in structural analysis; theories of failure; instability of structures; beams on elastic foundation.

312. **Inelastic Behavior of Engineering Materials.** 3 Hr. PR: MAE 311 or consent. Characterization and constitutive relations of engineering materials; nonlinear elasticity, plasticity, viscoelasticity, and creep; numerical implementation.

315. **Fluid Flow Measurements.** 3 Hr. PR: MAE 117 or consent. Principles and measurements of static and dynamic pressures and temperatures, velocity, and Mach number and forces. Optical techniques and photography. Design of experiments. Review of selected papers from the literature. (2 hr. lec., 3 hr. lab.)


318. **Continuum Mechanics.** 3 Hr. PR: MAE 42 and MAE 43. Mathematical preliminaries including index notation; analysis of stress; analysis of deformation; fundamental laws, field equations, and constitutive equations; application to fluids and solids.

320. **Theory of Elasticity 1.** 3 Hr. PR: MAE 132 or consent. Cartesian tensors; plane stress and plane strain; 2-D problems in Cartesian and polar coordinates; stress and strain in 3-D; general theorems; torsion of noncircular sections.

321. **Fracture Mechanics.** II. 3 Hr. PR: MAE 320. Linear-elastic and elastic-plastic fracture mechanics; fatigue, dynamic, and creep crack growth; fracture mechanics models for composite materials.

322. **Advanced Vibrations.** 3 Hr. PR: MAE 122 or consent. Dynamic analysis of multiple degree-of-freedom discrete vibrating systems; Lagrangian formulation; matrix and numerical methods; impact; mechanical transients.

325. **Experimental Stress Analysis.** 3 Hr. PR: MAE 132 or consent. Strain gage techniques and instrumentation; stress analysis using optical methods such as photoelasticity and interferometric techniques; NDE and NDT or problems involving stress analysis. (2 hr. lec., 3 hr. lab.)

326. **Advanced Mechanics of Composite Materials.** 3 Hr. PR: MAE 226 or consent. Manufacturing, testing, and diagnostics of composite materials. Anisotropic plates with cutouts. Inelastic behavior of polymer matrix composites. Analysis of advanced composites such as metal matrix, ceramic matrix, and textile.
328. **Mechanical Metallurgy.** 3 Hr. PR: MAE 52 and MAE 132 or consent. Elastic behavior and plastic theory. Dislocation theory. Strengthening mechanisms and fracture. Mechanical properties from materials testing including tension, torsion, fracture toughness, fatigue, and creep.

330. **Instrumentation in Engineering.** 3 Hr. PR: Consent. Theory of instrumentation suitable for measuring rapidly changing force, pressure, strain, temperature, vibration, etc.; computerized acquisition, analysis, and transmission of data; methods of noise reduction. (2 hr. lec. 3 hr. lab.)

333. **Advanced Machine Design.** 3 Hr. PR: MAE 135 or consent. Design for extreme environments, material selection, lubrication and wear, dynamic loads on cams, gears, and bearings, balancing of multiengines and rotors, electromechanical components.

335. **Advanced Kinematics of Mechanisms.** 3 Hr. PR: MAE 210 or consent. Analytical synthesis of mechanisms with up to five accuracy points; Burmester curve theory and path curvature theory; force and moment balancing of mechanisms; computer-aided dynamic analysis of mechanisms and inverse dynamic analysis.

340. **Advanced Thermodynamics 1.** 3 Hr. PR: MAE 141 or MAE 150. First and second laws of thermodynamics with emphasis on entropy production and availability (exergy); Maxwell's relationships and criteria for stability; equations of state and general thermodynamic equations for systems of constant chemical composition.

342. **Advanced Thermodynamics 2.** 3 Hr. PR: MAE 340 or consent. Thermodynamics of multi-component inert and reacting systems; equilibrium analysis; introduction to irreversible processes involving diffusion and chemical kinetics; application of concepts to heterogeneous systems.

350. **Conduction Heat Transfer.** 3 Hr. PR: MAE 158 or consent. Analytical and numerical solutions of steady and non-steady heat conduction problems in one, two, and three dimensional bodies; solution of linearized equations; applications include extended surfaces, moving surfaces, moving heat sources, and instrumentation techniques.

353. **Advanced Dynamics.** 3 Hr. PR: MAE 352 or consent. Analytical mechanics. Stability of autonomous and nonautonomous systems considered and analytical solutions by perturbation techniques introduced. Hamilton-Jacobi equations developed. Problems involving spacecraft, gyroscopes, and celestial mechanics studied.

354. **Convection Heat Transfer.** 3 Hr. PR: MAE 158 or consent. Laminar and turbulent flows in forced and free convection systems; external and internal flows with application to heat exchanger design; introduction to aerodynamic heating.

355. **Radiation Heat Transfer.** 3 Hr. PR: MAE 158 or consent. Classical derivation of black body radiation laws; gray body and non-gray analysis; radiant properties of materials, radiant transport analysis, specular-diffuse networks, gas radiation, thermal radiation measurements; analytical, numerical solutions, and study of selected publications. (3 hr. lec.)

360. **Fluid Mechanics 1.** 3 Hr. PR: MAE 114 or equiv. Advanced dynamics and thermodynamics of fluids. Basic laws of conservation of mass and momentum in differential, vector, and integral forms. Application to internal flows, fluid machinery, and structures.

361. **Dynamics of Viscous Fluids.** 3 Hr. PR: Consent. Derivation of and exact solutions for the Navier-Stokes equations; laminar boundary-layer theory, similarity solutions, and integral methods.

363. **Computational Fluid Dynamics. II.** 3 Hr. PR: MAE 361 or equiv. Finite difference methods; convergence and stability; Navier-Stokes equations; discretization methods; grid distribution; solution of difference equations; pressure coupling; application to conduction/convection, boundary layers, and recirculating flows; introduction to general purpose CFD codes.
364. *Turbomachinery.* 3 Hr. PR: MAE 101 or consent. Flow problems encountered in design of water, gas, and steam turbines, centrifugal and axial flow pumps and compressors, design parameters.


368. *Multiphase Flows.* 3 Hr. PR: MAE 114. Particle dynamics including particle-particle and particle-surface interactions; fluidized bed concepts; mathematical models and numerical methods as applied to multiphase flows; design and instrumentation pertaining to multiphase units.

375. *Advanced Computer Aided Design.* I. 3 Hr. PR: MAE 275 or equiv. Geometric modeling; finite element meshing; design approaches; case studies using CAD principles; projects utilizing state-of-the-art CAD packages (2 hr. lec., 3 hr. lab.)

374. *Feedback Control in Mechanical Engineering.* 3 Hr. PR: MAE 122 or consent. Emphasis on design of control systems using classical, frequency domain, and time domain methods; advanced mathematical modeling of physical systems, compensation, stabilization, pole placement, state estimation; extensive use of computerized design tools, especially Matlab.

386. *Robot Mechanics and Control.* 3 Hr. Kinematic and dynamic behavior of industrial robot manipulators; formulation of equations of motion for link joint space and end effector Cartesian space; path planning and trajectory motion control schemes.

387. *Materials Engineering.* 3 Hr. A study of materials engineering fundamentals emphasizing semiconductor, polymer, metal, and ceramic/cementitious material systems. Mechanical and physical properties, theoretical aspects, testing, design criteria, manufacturing, and economics of material systems. Laboratory testing and evaluation. (Equivalent to CE 387, CHE 387, EE 387, EM 387, and IMSE 387.)


394 A-Z. *Special Topics.* I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

397. *Research.* I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

399. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.


424. *Theory of Plates and Shells.* 3 Hr. PR: MAE 311 or consent. Classical and modern theories of plates; dynamic response, nonlinear effects, and exact and approximate solutions of plates; application to rectangular and circular plates; membrane shells; shells with bending stiffness.

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425. *Perfect Fluid Theory*. 3 Hr. PR: Consent. Conformal mapping including Schwarz-Christoffel and Joukowski transformations. Inviscid flows over airfoils, spheres, cones, wedges, and bodies of revolution. (3 hr. lec.)

445. *Hydrodynamic Stability Theory*. 3 Hr. PR: MAE 361 or MAE 425 or consent. Response of flow field to disturbances; classical instability mechanisms; inviscid centrifugal instabilities; inviscid parallel shear flow stability; viscous boundary layer stability, the Orr-Sommerfeld equation; Rayleigh-Benard flow; introduction to nonlinear stability theory.

450. *Fundamentals of Combustion*. 3 Hr. PR: MAE 141 or MAE 150. Thermodynamics, chemical kinetics, and diffusion of reacting gases; laminar and turbulent flames; flame stability and ignition.

484. *Advanced Topics in Control Theory*. 3 Hr. PR: MAE 384 or MAE 241. State feedback through eigenstructure assignment; observers and Kalman filters; multiple-model adaptive estimation and control; parameter estimation; direct and indirect model-reference adaptive-control algorithms; introduction to neural networks.

490. *Teaching Practicum*. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of College of Engineering and Mineral Resources. Note: This course is intended to insures that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


495. *Independent Study*. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.


498. *Thesis or Dissertation*. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading will be S/U.)

499. *Graduate Colloquium*. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research and entitled, through enrollment in his/her department’s 799 or 899 *Graduate Colloquium*, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**Mining Engineering**

*Syd S. Peng, Ph.D., Chairperson*

365A Mineral Resources Building

[www.cemr.wvu.edu/~www.mine](http://www.cemr.wvu.edu/~www.mine)

**Degree Offered:** Master of Science in Mining Engineering  
Doctor of Philosophy in Engineering with a major in Mining Engineering

**Master of Science in Mining Engineering (M.S.Min.E.)**

Students desiring to take courses for graduate credit at the master’s level in the College of Engineering and Mineral Resources must first apply for admission and state a major field.
Applicants with a baccalaureate degree from institutions other than WVU in mining engineering will be admitted on the same basis as graduates of WVU. Lacking these qualifications, the applicant must first fulfill the requirements of the Department of Mining Engineering.

**Academic Standards**

Each student will, with the approval of the student’s graduate committee appointed with the consent of the student within the first semester of registration follow a planned program. The program contains a minimum of 24 hours of course work and six hours of independent and original study in mining engineering leading to a master’s thesis. At least 60 percent of the course credits must be from 300-level or 400-level courses while the remainder can be made up of 200-level courses.

Approval for candidacy for a graduate degree by faculty action is required to establish eligibility for a degree. A graduate student may request approval by formal application after completing a minimum of 12 semester hours of graduate courses with a grade-point average of at least 3.0 (B), based on all graduate courses in residence for which final grades have been recorded.

No credits are acceptable toward an advanced degree which are reported with a grade lower than C. To qualify for an advanced degree, a student must have a grade-point average of at least 3.0, based on all courses completed in residence for each graduate credit. Each candidate for a degree must select a major subject and submit a thesis showing independent, original study in mining engineering.

**Doctor of Philosophy in Engineering (Ph.D.)**

The principal objective of the doctor of philosophy program in mineral engineering is the education and training of graduates so that they are capable of attaining the highest levels in the mineral engineering profession and performing the professional roles of developing and improving the efficient extraction of solid mineral resources. The two areas of specialization are mine systems, and rock mechanics and ground control.

All applicants must have earned a M.S. degree in mining engineering with a GPA of 3.5 or higher. For all foreign applicants whose native language is not English, a TOEFL test score of 550 or better is required. In addition, each applicant is required to submit at least three letters of recommendation, one of which must be from the applicant’s previous thesis advisor or an academic equivalent. All letters of recommendation should evaluate the student’s potential for performing independent doctoral-level research.

The Ph.D. program in mineral engineering consists of 54 hours of course work and 30 hours of independent research beyond a bachelor’s degree in mining engineering. The successful completion of a qualifying examination and an approved dissertation are also required.

**Mining Engineering (MINE)**

311. *Advanced Ground Control-Coal Mines*. I, II. 3 Hr. PR: MINE 211 or consent. Ground and strata control for underground and surface coal mining, including slope stability and subsidence.


320. Mobile Excavating and Materials Handling. I. 3 Hr. PR: Graduate standing and consent. Mobile mining equipment will be systematically analyzed as to functional, production, failure, and operational aspects. Included will be routine and innovative methods, and surface and underground applications, such as the hydraulic shovel and impactors.

321. Integrated Excavating and Materials Handling. II. 3 Hr. PR: Graduate standing and consent. Integrated mining equipment will be systematically analyzed as to functional, production, failure, and operational aspects. Included will be routine and innovative methods, and surface and underground applications, such as the longwalls and monorails.


329. Mine Wastes Management/Closure. 3 Hr. PR: Consent. Planning and design to control, detoxificate, and contain mine openings for mine and mill closure in mineral industry. Regulatory frameworks.

331. Mine Ventilation Network Analysis. II. 3 Hr. PR: MINE 231 and M 281 or consent. Theory and computational techniques for mine ventilation network problems with emphasis on computer-aided analysis of complex mine ventilation systems.

332. Advanced Mine Ventilation. II. 3 Hr. PR: MINE 231. Advanced topics in mine atmospheric control including control of methane, dust, humidity, and heat. Also covers leakage characteristics, fan selection, analysis of ventilation networks, and planning of mine ventilation system.

333. Coal Mine Methane Control. 3 Hr. PR: Graduate standing or consent. Control of explosive gas emissions in coal mines. Procedures for measurement, mitigation, capture, and utilization of mine-generated gases. Techniques for gas emission forecasting.

342. Advanced Mine Health and Safety. I. 3 Hr. PR: MINE 242 or graduate standing. Special emphasis will be placed on mine rescue, mine disaster prevention and organization, and mine property and equipment loss prevention.

351. Explosive Engineering Design. II. 3 Hr. PR: MINE 251 or consent. Rock drilling, total blast systems simulation, experimental studies in blast design, rock fracturing, chemical thermodynamics, kinetics, and reaction rates.

365. Deterministic Methods for Mineral Engineers. I. 3 Hr. PR: Graduate standing or consent. Analysis and solution of mineral engineering problems which require use of deterministic models. Application of deterministic methods to mineral transportation, mineral resource allocation and extraction problems, and mine planning and equipment utilization problems.

366. Stochastic Methods for Mineral Engineers. II. 3 Hr. PR: Graduate standing or consent. Application of stochastic stochastic methods to mineral engineering problems in methods to mineral engineering problems in equipment equipment selection, renewal processes, mine ventilation, selection, renewal processes, mine production, and mine extraction.

387. Materials Engineering. 3 Hr. A study of materials engineering fundamentals emphasizing semiconductor, polymer, metal, and ceramic/cementitious material systems. Mechanical and physical properties, theoretical aspects, testing, design criteria, manufacturing, and economics of material systems. Laboratory testing and evaluation. (Equivalent to CE 387, CHE 387, EE 387, IMSE 387, and MAE 387.)


394 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

395. Graduate Seminar in Coal Mining. 3-6 Hr.

396. Grad Seminar Coal Mine. 3-6 Hr.

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to a thesis, problem report, research paper, or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

398. Advanced Mine Design 1. 1-6 Hr. PR: MINE 296. Detailed design of the components of coal mine subsystems including ground control, excavation and handling, and life support subsystems. (1-6 hr. lec.)

399. Advanced Mine Design 2. 1-6 Hr. PR: MINE 296. Examination of the broad aspects of mine design for non-coal deposits. Consideration of deposits of various shapes, materials, and qualities including country rock. Comparison of principles established for coal mine design. (1-6 hr. lec.)

411. Theories of Surface Subsidence. 3 Hr. PR: MINE 312. Theories of surface subsidence due to underground coal mining including empirical, profile function, theoretical and physical modeling methods, and time factors. (3 hr. lec.)

412. Theory of Pilar Design. 3 Hr. PR: MINE 211 and MINE 311. Examination of various theories of pillar design for room and pillar mining and longwall mining including chain pillars, barrier pillars, and bleeder pillars.


417. Laboratory and Field Instrumentation. I. 3 Hr. PR: (MINE 211 and MINE 214) or consent. Principles and applications of strain gages and photoelasticity for stress analysis in rock/coal; displacement/velocity gages and accelerometer for ground motion; holography and acoustic emission for nondestructive tests.

418. Rock Mechanics in Mine Design. II. 3 Hr. PR: (MINE 211 and MINE 214) or consent. Design process in mining engineering; design approaches for excavations in rock; input parameters for design; empirical, observational, and analytical methods of design; integrated designs. (1 hr. lec., 2 hr. lab.)


451. Theory of High Explosives. II. 3 Hr. PR: MINE 351 or consent. The application of chemical thermodynamics and the hydrodynamic theory to determine properties of high explosives, chemical equilibria and calculation of detonation, and explosion-state variables.
465. **Optimization Applications in Mining.** 3 Hr. PR: Graduate standing and MINE 367. Detailed study and use of optimization techniques to solve mining problems, including programming techniques for large-scale linear, mixed-integer and 0-1, dynamic, nonlinear, and heuristic programming.

469. **Expert Systems in Mining.** II. 3 Hr. PR: Graduate standing. An overview of expert systems applications in mining, a detailed study of two mining applications, study of shells and their components, and study of a specific shell used to develop a project.

490. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of mining engineering. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)

491 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

498. **Thesis or Dissertation.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertation. (Grading will be S/U.)

499. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
Master of Science in Petroleum and Natural Gas Engineering

A student desiring to take courses for graduate credit at the master’s level in the College of Engineering and Mineral Resources must first apply for admission and state the major field.

An applicant with a baccalaureate degree or its equivalent in petroleum or natural gas engineering from another institution will be admitted on the same basis as graduates of WVU. Lacking these qualifications, the applicant must first fulfill the CEMR requirements of the Department of Petroleum and Natural Gas Engineering.

Each student will, with the approval of the student’s advising and examining committee—appointed with the consent of the student within the first semester of registration—follow a planned program. The program contains a minimum of 24 hours of course work and six hours of independent and original study in the petroleum and natural gas engineering field leading to a master’s thesis or 30 hours of course work and three hours of independent study leading to a comprehensive problem report. At least 60 percent of the course credits must be from 300- or 400-level courses while the remainder can be made up of 200-level courses.

Doctor of Philosophy in Engineering with a major in Petroleum and Natural Gas Engineering

A candidate for the degree of doctor of philosophy (Ph.D.) must comply with the rules and regulations of the College of Engineering and Mineral Resources and the University. In addition the applicants must meet the following requirements.

- B.S. or M.S. degree in petroleum engineering from an ABET accredited or an internationally recognized petroleum engineering program or equivalent; with a grade-point average (GPA) equal to or greater than 3.00 and 3.20, respectively.
- At least 75 percentile for Graduate Record Examination (GRE) quantitative analysis.
- A TOEFL test score of 550 or better is required for international applicants whose native language is not English.
- At least three recommendation letters, one of which must be from the applicant’s previous thesis advisor or an academic equivalent.

Each student will develop a program with a major in petroleum engineering, designed to meet her/his needs and objectives in consultation with an advisor and the advisory and examining committee (AEC). A minimum of 54 hours of course work and 30 hours of independent research above and beyond a bachelors degree; or 30 hours of course work and 24 hours of independent research beyond a M.S. degree are required. The student must take and pass a written qualifying examination no later than one semester after completion of the required courses. In order to be admitted to candidacy, the student must pass the candidacy exam which is designed to evaluate the student’s overall ability to engage in high-level research. At the completion of the dissertation research, the candidate must prepare a dissertation and defend it.
Petroleum and Natural Gas Engineering (PNGE)

340. Secondary Recovery of Oil by Water Flooding. I. 3 Hr. PR: PNGE 233. Theory of immiscible fluid displacement mechanism, evaluation and economics of water flood projects, and oil field flooding techniques. (3 hr. lec.)

343. Advanced Secondary Recovery. II. 3 Hr. PR: PNGE 340. Secondary recovery of oil by gas flooding, miscible fluid injection, in situ combustion, and heat injection. (3 hr. lec.)

362. Reservoir Simulation and Modeling. II. 3 Hr. PR: PNGE 262 or consent. Application of finite-difference equations to multi-phase fluid flow in porous media in two or three dimensions with gravity and capillary pressure effects. Simulation of waterflood performance and enhanced recovery techniques.

384. Pressure Transient Analysis. II. 3 Hr. PR: PNGE 234 or consent. Methods of analysis of pressure transient data obtained from well testing for the purpose of determining in-situ reservoir conditions including porosity, lateral extent, average reservoir pressure, and formation permeability.


394 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

401. Environmental Issues in Petroleum Engineering. II. 3 Hr. PR: Graduate standing. Environmental impacts of petroleum exploration and production, methods to minimize or eliminate potential environmental impacts, treatment and disposal of the drilling and production wastes, and remediation methods for petroleum contaminated sites.


411. Advanced Productions Engineering. I. 3 Hr. PR: PNGE 211. Advanced well completion methods, problem well analysis, well remediation and workover planning, multi-phase flow in pipes, system approach for oil and gas wells, application of NODAL analysis, surface and subsurface production equipment.


470. Advanced Natural Gas Engineering. II. 3 Hr. PR: PNGE 270. Application of reservoir modeling, history matching, and type curves techniques to analyze and predict the performance of conventional and unconventional gas reservoirs.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of petroleum and natural gas engineering. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)
491 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

498. **Thesis or Dissertation.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading will be S/U.)
Graduate Programs

Counseling Psychology ................................................................. Ph.D.
Education ....................................................................................... Ed.D.
Counseling ....................................................................................... M.A.
Educational Leadership Studies ...................................................... M.A.
Educational Psychology .................................................................. M.A.
Elementary Education ..................................................................... M.A.
Reading ............................................................................................ M.A.
Rehabilitation Counseling ............................................................. M.S.
Secondary Education ........................................................................ M.A.
Special Education ........................................................................... M.A.
Speech Pathology and Audiology ................................................... M.S.
Technology Education ..................................................................... M.A.

The College of Human Resources and Education, located in Allen Hall on the Evansdale campus, offers graduate level programs of study in counseling, counseling psychology, curriculum and instruction, educational foundations, educational leadership, educational psychology, elementary education, reading, rehabilitation counseling, secondary education, special education, speech pathology and audiology, and technology education. Thesis programs are devoted to the study and development of human talent and resources in the school, family, and community. Instruction, research, and extended service are carried out in close cooperation with related departments and units of the University.

Most graduate programs require the successful completion of clinical experiences in approved sites. Clinical placements are arranged by faculty and the professional judgements of faculty are used to determine continuation of students in these placements.

Doctoral Programs

If you would like additional information about the graduate programs in the College of Human Resources and Education, please contact the chairperson of the department most relevant to your program interests. Students in the doctor of education (Ed.D.) program may elect an area of emphasis in curriculum and instruction, educational leadership studies, educational psychology, reading, special education, or technology education. Specific information about doctoral studies in these emphasis areas is listed in the program description area of the catalog. Students interested in the doctor of philosophy (Ph.D) in counseling psychology will find information about that program in a separate area of this catalog.

Admission Admission, curriculum, and degree requirements of the various degree programs of the College of Human Resources and Education are provided in each program section in this catalog. It is the responsibility of the student to take steps to insure that he or she is properly informed of the degree requirements and/or the certification standards being sought. Graduates of our state approved preparation programs are eligible for recommendations for certification/licensure issued by appropriate state agencies. Since certification requirements are changed periodically by the state, the fulfillment of certification requirements as presented in this catalog can not guarantee compliance with the
most recent requirements. The West Virginia State Department of Education requires that a degree be from an accredited institution of higher education for licensure and salary purposes. Students are therefore encouraged to seek the counsel of members of the faculty, their advisors, and the college certification officer on matters pertaining to degree and certification requirements.

All applicants for admission to the doctoral program in the College of Human Resources and Education must submit their scores on the aptitude test of the Graduate Record Examination and/or the Miller Analogies Test, three letters of recommendation, a current vita, and a statement of long-range and short-range goals. Applicants to HR&E must comply with the general University graduate study regulations. Personal interviews are required by several programs. Additional information may be required by the faculty of a specific area of emphasis prior to program admission.

Committee Formation After admission to a specific program, the student, in consultation with the advisor, selects a chairperson and four committee members to serve as his or her doctoral committee. This committee must be approved by the department chair and the dean of the college. The doctoral committee must meet the following minimum standards.

- The doctoral committee must be composed of a minimum of five members, the majority of whom must be regular members of the graduate faculty.
- At least three members of the doctoral committee must be members of the graduate faculty of the College of Human Resources and Education.
- The student's major advisor must be from the student's major program area and must be a regular member of the graduate faculty. No more than two other members of the doctoral committee may be from the student's major program area of study.
- At least two members of the doctoral committee must be from the student's major program area of study.
- At least one member of the doctoral committee must be from the student's minor program area of study.
- The doctoral committee must include at least one member from outside the student’s program area, and that individual must have knowledge and insights relevant to the student's program of study.
- No more than one member of the doctoral committee may be a nonmember of the graduate faculty.

Program Plan The final determination of the program of course work and research is the responsibility of the student’s doctoral committee. The doctor of education degree is not awarded on the basis of the completion of any set number of credits, but is awarded on the basis of demonstrated academic achievement and scholarly competence. Seventy-two semester hours of relevant graduate work, excluding dissertation credit, but including credits of relevant graduate work completed at the master’s degree level, constitutes the minimum course work acceptable. The doctoral program must include course work in three areas: major, minor, and foundations, and the program requirements in each area must be met.

Candidacy The student and the committee at the time of program planning will identify competencies to be developed and how they will be assessed. These will be stated in the student’s individual program. The doctoral student and his or her doctoral committee will determine when the student is ready for assessment of competencies. The examination will be prepared and assessed by the student’s doctoral committee and will address all work in the doctoral program plan of the student. The chairperson will notify the student and the student records office, who will notify all appropriate University and college offices of the outcome. Upon successful completion of the examination, the student will formally propose the dissertation prospectus to the committee.
Prospectus The candidate must submit and justify a prospectus for a doctoral dissertation. The doctoral committee must review and approve, approve with change, or reject the outline or prospectus. The student must consult with all members of the doctoral committee and with other appropriate members of the University faculty during the dissertation phase of the program.

Final Oral Examinations The student will be admitted to the final oral examination upon completion of the dissertation and after fulfilling all other requirements set by the committee. The examination will be conducted by the student’s doctoral committee and the publicized meeting will be open to all members of the University faculty. If the student receives more than one unfavorable vote from the doctoral committee, the candidate will not be recommended for the doctoral degree.

Time Limit Because the qualifying examination attests to the academic competence of the student who is about to become an independent researcher or practitioner, the examination cannot precede the degree by too long a period of time. Consequently, doctoral candidates are allowed no more than five years after the qualifying examination in which to complete remaining degree requirements. If the student should fail to complete an approved dissertation within five years, he/she must repeat the admission to candidacy examination and any other requirements specified by the student’s doctoral committee.

Residency A student must satisfactorily complete a minimum of nine semester hours of approved graduate credit in each of two consecutive terms in residence.

Masters Degree Programs Three options are generally available in HR&E’s master’s programs; the student should refer to the specific program to determine the option that applies.

- Master’s degree programs are offered in counseling, rehabilitation counseling, speech pathology and audiology, educational leadership studies, educational psychology, elementary education, reading, secondary education, special education, and technology education.

A. At least 30 semester hours of course work, including six semester hours of research.

B. At least 30 semester hours of course work, including three semester hours of research, selected in conference with the candidate’s committee, directed by the advisor, with final approval by the committee, and 27 semester hours of course work.

C. At least 36 semester hours of approved course work.

- The student must comply with specific graduate requirements of the University, the College of Human Resources and Education, and the program.
- All students will be assigned an advisor. Two additional faculty members will be assigned to serve as the remainder of the three-member master’s committee.
- No student may be awarded a master’s degree unless the student has a minimum grade-point average of 3.0 on all work taken for the graduate degree. (A grade of less than C does not carry credit toward a graduate degree, but counts in determining the grade-point average.)
- No student will be permitted to repeat a required graduate course more than once.
• Some programs require the comprehensive examination in options A, B, and C above. The candidate’s committee will determine whether the examination will be oral or written or both. Within the first two weeks of the semester in which the student intends to take the final master’s degree examination, he or she must submit to the appropriate department chair an application to take the examination. A student must have completed a minimum of 27 semester hours of approved course work before taking the comprehensive examination. In addition, a student must have achieved a 3.0 grade-point average of all work taken for graduate credit before applying to take the comprehensive examination.

Second Examinations  A candidate who fails the final master’s degree examination may, upon written consent of the student’s advisory committee, be given a second examination not earlier than the following session or semester. A candidate who fails the second examination and desires a third opportunity to complete program requirements may meet, at the committee’s discretion, to determine remediation recommendation before the third and final attempt at the examination. The third examination may be given no earlier than one calendar year from the second examination. If the student fails the third comprehensive examination, the student will be removed from the degree program.

Time Limit  All requirements must be completed within eight years immediately preceding the awarding of the degree.

Non-Degree Status  Students who fail to meet the specific requirements of the sections dealing with admission, grade-point average, course repeats, transfer credits, comprehensive examinations, or special written requirements specified by the program will not be admitted to or will be terminated from the degree program. Students not admitted to or terminated from a degree program may apply in writing for classification as a non-degree graduate student to the appropriate department chair or the Office of Student Advising and Records of the College of Human Resources and Education, (P.O. Box 6122, Morgantown, WV 26506-6122.) Non-degree classification would allow the student to take course work for certificate renewal, certification, or personal interest. A non-degree graduate student may accumulate unlimited graduate credit hours, but if the student is later admitted to a degree program, the faculty of that program will decide whether or not any credit earned as a non-degree student may be applied to the degree. Under no circumstances may a non-degree student apply more than 12 hours of previously earned credit toward a degree.

Students may obtain additional information about a particular graduate program by writing to the coordinator of that program or by writing the Dean, College of Human Resources and Education, West Virginia University, P.O. Box 6122, Morgantown, WV 26506-6122.
Graduate Faculty
† Indicates regular member of graduate faculty.
* Indicates associate member of graduate faculty.

Counseling, Rehabilitation Counseling, and Counseling Psychology
Professors
†L. Sherilyn Cormier, Ph.D. (Purdue U.). Counseling psychology. Counseling psychology training and clinical supervision models, Advanced psychotherapeutic techniques.
*James DeLo, Ph.D. (U. Pitt.). Counseling, Coordinator of off-campus counseling programs. Field work coordinator, Adult development.
†Ranjit K. Majumder, Ph.D. (U. Okla.). Rehabilitation psychology, Rehabilitation counseling.
†Robert P. Marinelli, Ed.D. (Penn. St. U.). Rehabilitation counseling and psychology, Vocational counseling and psychology, Ethical issues in counseling psychology and rehabilitation.
†Jeffrey K. Messing, Ed.D. (Syracuse U.). Counseling, Rehabilitation and counseling psychology Chairperson. Counseling psychology, Vocational psychology, Consulting models, Program design, Conflict resolution and mediation.

Associate Professors

Assistant Professor

Visiting Assistant Professors
Ida F. Baty, Ed.D. (U. of N. Colo.). Coordinator, Master’s degree program in rehabilitation counseling. Rehabilitation counseling, Interactive guided imagery™, Cutting edge therapeutic techniques, Staff development training, Facilitator of group process.

Educational Theory and Practice
Professors
Layle D. Lawrence, Ph.D. (LSU). Adjunct. Secondary agricultural education, Youth organization, Extension education.
† Roy A. Moxley, Ph.D. (U. Mich.). Early childhood education, Early literacy, Educational technology.
Gabriel A. Nardi, Ph.D. (U. Wisc.). Behavior disorders, Mental retardation.
† Charles Wales, Ph.D. (Purdue U.). Emeritus.

Associate Professors
* W. Scott Bower, Ph.D. (Ohio St. U.). Teaching strategies, Curriculum development, Teacher effectiveness.
† Gretchen Butera, Ph.D. (U.C. at Santa Barbara). Early intervention, Clinical supervision.

Assistant Professors
Katherine Mitchem, Ph.D. (Utah St. U.).
Elizabeth Poe, Ph.D. (U. of Colo.). English education, Reader response, Children’s literature, Teaching of writing, Literature across the curriculum, Multicultural literature for children and young adults, Scottish literature for children and young adults, Historical fiction, and Nonfiction for children and young adults composition.

Lecturer
* Judy Werner, M.A. (Newark). Gifted, Technology in special education.

Educational Psychology

Professors
† Daniel E. Hursh, Ph.D. (U. Kans.). Developmental and child psychology, Instructional and environmental design. Language development.
† Anne H. Nardi, Ph.D. (WVU). Developmental psychology, Problem solving, Adult learning.
† Julie S. Vargas, Ph.D. (U. Pitt.). Instructional design, Behavior analysis, Verbal behavior.

College of Human Resources and Education
Associate Professor

Assistant Professors
Andrew D. Katayama, Ph.D. (Miss. St. U.). Educational psychology, Learning, Meta-cognition, Study skills.
Carol S. Parke, Ph.D. (U. of Pitt.). Applied statistics, Research methods, Measurement.

Educational Leadership Studies
Professors
† Ronald Childress, Ed.D. (U. Tenn.). (MU Graduate College). Instructional management.
Helen M. Hazi, Ph.D. (U. Pitt.). Legal issues affecting instructional supervision.
† Paul A. Leary, Ph.D. (U. Mass.). (MU Graduate College). Public school administration/research.
† Barbara Nicholson, (MU Graduate College). Supervision.
Dennis Prisk, MU Graduate College.
† Powell Toth, Ph.D. (Ohio St.) MU Graduate College. Public school administration.
† Ken M. Young, Ed.D. (VPI & SU). MU Graduate College. School principalship, Public school administration.

Assistant Professors
† Michael Cunningham, Ed.D. (WVU). MU Graduate College.

Adjunct Teaching and Field Practice Resource Personnel
D. Lyn Dotson, J.D. (WVU). Adjunct. Vice president for development, WVU Foundation Inc.
William Hutchens, J.D., (WVU). Adjunct. President’s office, Associate general counsel.
Jon Reed, J.D. (WVU). Adjunct. President’s office, General counsel.
Douglas C. Smith, Ph.D. (Penn. St. U.). Adjunct. Program coordinator, Off-campus credit, Shepherdstown, WV.

Social and Cultural Foundations

Professors

Associate Professors
Esther E. Gottlieb, Ph.D. (U. Pitt.). Adjunct. Comparative and international education, Qualitative research methodology, Teacher education.

Assistant Professors

Speech Pathology and Audiology

Professors
† Mary Ellen Tekieli Koay, Ph.D. (U. Okla.). Speech pathology. Cleft palate, Neuropsychology, Neuropathologies, Clinical supervision.
† Dennis M. Ruscello, Ph.D. (U. Ariz.). Speech pathology. Phonology, Craniofacial anomalies, Clinical supervision.
† Kenneth O. St. Louis, Ph.D. (U. Minn.). Speech pathology. Fluency, Voice, Clinical supervision.

Associate Professors

Assistant Professors

Clinical Instructor
Technology Education

Professors

Associate Professors

Assistant Professor

Counseling

Jeffrey K. Messing, Department Chairperson
502 Allen Hall
P.O. Box 6122
www.wvu.edu/~crc

Degree Offered: Master of Arts; Area of Emphasis for Doctorate of Philosophy is Counseling Psychology

Master of Arts in Counseling
The Department of Counseling, Rehabilitation Counseling, and Counseling Psychology of the College of Human Resources and Education offers a master’s program in counseling. The counseling M.A. program is fully accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). Variations in the curriculum allow emphasis in school counseling and community agency/mental health counseling. All candidates for the master of arts in counseling enroll for a common departmental core during the first semester of study. Selection of an area for concentration is made at the beginning of the second semester; this area governs the choice of courses for the balance of the graduate program. All applicants must comply with University requirements, the College of Human Resources and Education requirements, and departmental requirements.

Students are encouraged to pursue their studies on a full-time basis; however, part-time students are accepted. Counseling programs are available for both full-time and part-time students. An active summer program is available for part-time students. There are no summer practicum or internship placements.

Required Courses All students who are candidates for a master’s in counseling are required to take the following core courses:

- COUN 301 Counseling Techniques
- COUN 305 Theory and Practice of Human Appraisal
- ED P 320 Introduction to Educational Research
- COUN 306 Counseling Theories
- COUN 308 Organization of School Guidance Services*
- COUN 309 Group Counseling Theory and Techniques
- COUN 320 Lifespan Career Counseling
- COUN 322 Community Counseling
- COUN 330 Counseling Children
- COUN 332 Counseling Adolescents and Adults
- COUN 334 Cultural Issues
COUN 340 Addictions Counseling  
COUN 345 Couples and Family Counseling  
COUN 385 Practicum  
COUN 386 Counseling Internship  

* Courses required for school counselor certification only. A special school counselor certificate is available for individuals without a teaching background. The program includes an additional nine hours of course work. Please note: Doctoral level courses in counseling have the prefix CPSY.

**Application** Applications for admission to the counseling program should be made to West Virginia University, Office of Admissions and Records. In addition to the admission requirements of the University and the College of Human Resources and Education, the Department of Counseling, Rehabilitation Counseling, and Counseling Psychology has the following admission requirements.

- A baccalaureate degree with course work in appropriate areas.
- A minimum undergraduate grade-point average of 2.8, based on a 4.0 system.
- GRE scores.
- Some experimental distance learning/off-campus programs may use the Miller Analogies Test.
- Three letters of reference.
- Completion of the application to the counseling program.

The initial screening decision is based upon this information. Successful applicants are then interviewed by program faculty. Final decisions about admission are based on both the requirements and the interview process. Of the two steps in the process, the grade-point average and interpersonal skills demonstrated during the interview have the greatest input into the admission decision process.

**Admission** The West Virginia University Counseling Department's admission process is a two-step procedure. Step 1 is a review of paper credentials including references, department application (relevant major, general quality of application), work experience, GRE scores, and GPA.

Step 2 is the department interview, which considers interpersonal style relevant to working as a counselor, communication skills, capacity for empathic understanding and communication, ability to articulate professional goals, goals congruent with department focus, knowledge, and understanding of counseling, and assessment of applicants’ capacity to complete the counseling curriculum successfully.

Application deadline for summer and fall admission is March 1 with review of completed applications beginning February 15; deadline for spring admission is October 15.

Counseling provides a broad opportunity to work with children at the elementary-school level, adolescents at the secondary-school level, and adults in community agencies. The school counselor is involved in personal counseling, career guidance, vocational and educational counseling, family counseling, and consultation on classroom problems with teachers and administrators. Counselors must be equipped to work with both individuals and groups. Much of the school counselor’s work is carried out in classrooms with teachers and students. The school counselor also is active in working with community agencies.

**Degree Requirements** Degree requirements include completion of the required counseling course work, including practicum and internship. A minimum of 48 hours of course work with a 3.0 grade-point average is required.

In addition to completing all course work and the practicum and internship satisfactorily, the candidate must demonstrate the ability to assume the responsibility required of a professional counselor and the personal characteristics and ethical standards essential to effective working relationships with others.
These personal characteristics are assessed during the clinical course work components of the program and during the field experience. Students who do not meet professional and clinical standards in these areas are provided feedback, and resources for remediation are recommended. In these cases, successful remediation is required as a prerequisite for successful program completion. Students who violate ACA ethical standards will be evaluated for possible dismissal from the program.

In reviewing the curriculum available in counseling, the applicant will note that much of the course work provides the background applicable for employment in general community agency work. Some graduates who do not take employment directly in school settings find opportunities as counselors in the fields of public welfare, mental health, drug and alcohol counseling, and corrections.

Seminars All students enrolled in the master of arts in counseling program are expected to attend continuing education/professional development training seminars. These seminars or workshops must be related to counseling. The counseling program will provide many of these activities. Students should check with their assigned advisor for seminar information.

Certification

Certification requirements in school counseling are the same as for the masters of arts in counseling, except as noted below.

- A minimum grade-point average of 3.0.
- Recommendation of the faculty.
- A valid professional teaching certificate at the level for which counseling and guidance endorsement is desired, or the completion of a nine-hour block of professional education course work and competency assessment in addition to the 48-hour master's degree program.
- Completion of the required pattern of certification courses. (Contact the department for this list.)
- Specialization area examination. Satisfactory performance is required for certification eligibility. This examination is administered under the auspices of the State Department of Education.

Doctor of Philosophy

All applicants must comply with the graduate requirements of the College of Human Resources and Education and the program of counseling psychology. The program includes course work hours in addition to the College of Human Resources and Education requirements for the Ph.D. degree.

The area of specialization for the doctoral degree is oriented primarily toward training practitioners/scientists who have a substantial background in the philosophy and methods of psychology as a comprehensive science. Students are expected to work closely with faculty in doing research and in supervised therapy practice. Successful completion of the program requires core coursework in counseling psychology, as well as in foundations of psychology, statistics and research, and supervised practice. The program is fully accredited by the American Psychological Association (APA).

Admission  The admission process is a two-stage procedure. Each spring, applications received by January 15th are reviewed for admission to the next academic year. Applicants are screened based on written information and credentials provided to the admissions committee, including the following.

- Completion of a master's degree in an area related to counseling psychology.
- Graduate grade-point average of 3.5, verified by official transcripts of graduate course work.
• Three letters of recommendation to support applicant’s competency in counseling, testing, research, and personal qualities of readiness for completion of a doctoral degree.
• A recommended total combined score of at least 1,000 on the verbal and quantitative sections of the Graduate Record Examination.
• Two years of relevant work experience is desirable.

Those persons who are successful in the Stage I process are invited to campus for a personal interview with the program faculty. The personal interview is required for a final admission decision. The interview helps to determine the applicant’s interpersonal and clinical skills, which are predictive of success in graduate study, internship, and post-degree placement.

Announcements regarding admission are made before April 15. Materials received after January 15th are not reviewed until the following year, unless space is available.

**Candidacy**  Students are accepted for study toward the Ph.D. degree upon admission into the programs. Requirements for doctoral candidacy are the following.
• Completion of prerequisite doctoral coursework with a 3.25 grade-point average.
• A written comprehensive examination of major areas in counseling psychology and research.
• Completion of an approved research prospectus.

**Internship**  After admission to candidacy, students are eligible to enroll in internship. The internship is a full-time calendar year in an off-campus APA accredited training site approved by the director of training. After successful completion of the internship and the research dissertation, students take a final oral examination regarding their dissertation research.

**Counseling (COUN)**

203. *Introduction to Helping Professions.* I, II, S. 3 Hr. To assist in evaluating their potential for a career in the helping professions. Exposure is provided of client populations served by helping professionals, along with a selection of intervention strategies used in those professions.

216. *Behavior Problems and the School.* II. 3 Hr. A course primarily oriented toward assisting educators utilize current psychological principles related to classroom discipline, as well as academic and social adjustment.

283 A-Z. *Workshop in Counseling and Guidance.* I, II, S. 1-12 Hr. PR: Consent. To take care of credits for special workshops and short intensive limit courses on methods, supervision, and other special topics.

301. *Counseling Techniques.* I, II, S. 3 Hr. PR: Consent. Development and application of basic counseling skills including interviewing, clinical observations, and a general orientation to counseling settings. Evaluation will be based on strengths and deficits in intra-and interpersonal skills and on demonstration of counseling skills in checkout situations. In-setting laboratory experience required.

305. *Theory and Practice of Human Appraisal.* I, II, S. 3 Hr. An overview of standardized evaluation methods commonly utilized in educational and rehabilitation settings. Experience is provided in selection, administration, and interpretation of selected instruments.


322. *Community Counseling.* II, S. 3 Hr. PR: (COUN 301 and COUN 320 and PR or CONC: COUN 306) or consent. Roles and functions of the community agency counselor; cognitive skills and practical experience necessary to understand client populations served by community agencies.

330. *Counseling Children.* I, S. 3 Hr. PR: COUN 301 and PR or CONC: COUN 306 and Consent. Practical application of the principles of guidance to the elementary school.

331. *Consultation Theory and Techniques.* 3 Hr.

332. *Counseling Adolescents and Adults.* II, S. 3 Hr. PR: (COUN 301 and PR or CONC: COUN 306) or consent. Techniques and models that apply to the counseling of adolescents and adults will be explored. Emphasis will be given to stages of adolescents and adult development and implications for behavior. Demonstration of counseling with adolescents and adults is required.

334. *Cultural Issues.* II, S. 3 Hr. PR: (COUN 301 and PR or CONC: COUN 306) or consent. Impact of cultural differences on the counseling process; gender, race, ethnicity, socioeconomic status, counseling styles, and cross cultural counseling methods; group and experimental activities are required.

340. *Addictions Counseling.* II, S. 3 Hr. PR: (COUN 301 and PR or CONC: COUN 306) or consent. Specific techniques and models that apply to counseling the addicted client will be explored. Chemical addictions, food addictions, relationship addictions, and sexual addictions will be addressed. Demonstration of counseling clients with various addictions is required.

345. *Couples and Family Counseling.* I, S. 3 Hr. PR: COUN 301, 306 or consent. Techniques and methods of couples and family counseling will be covered. Emphasis will be on both the theories and practice of couples and family counseling. Demonstration of counseling skills for couples and families is required.

360. *Field Experience in School Counseling.* I, II, S. 3 Hr. PR: (COUN 306 and COUN 330 and COUN 332) and PR or CONC: COUN 385 and Consent and course enrollment in the Alternate School Counseling Program. Classroom-based field experience for school counseling majors enrolled in alternative certification programs. A review of classroom curriculum for elementary and secondary grades. Course will be graded on a satisfactory/unsatisfactory basis.

361. *Conflict Resolution/Mediation.* I, S. 1 Hr. PR: Graduate standing. An overview of conflict management and mediation theory. Techniques of negotiation and mediation will also be presented and practiced. Case studies and training exercises will focus on sources of conflict and styles of conflict resolution. Course will be graded on a satisfactory/unsatisfactory basis.

362. *Grief Counseling.* I, S. 1 Hr. PR: Graduate standing. An overview of grief counseling. Stages and kinds of grief will be discussed. Techniques for counseling with adults and kids will be shown, practiced, and discussed. Videos of actual grief counseling sessions will be presented. Course will be graded on a satisfactory/unsatisfactory basis.
363. **Counseling with Sexual Orientation.** I, II, S. 1 Hr. PR: Graduate standing. An overview of psychological, sociological, and political aspects of sexual orientation as they impact counseling. Particular attention will be given to awareness and sensitivity toward gay and lesbian clients and effective intervention and education. Course will be graded on a satisfactory/unsatisfactory basis.

364. **Ethical Issues in Counseling.** I, S. 3 Hr. PR: COUN 301 and COUN 305, and COUN 306. Surveys the legal and ethical issues and professional ethics codes in the counseling profession. Ethical principles applied to schools, agencies, and private practice.

365. **Use of DSM in Counseling.** I, II, S. 3 Hr. PR: COUN 301 and COUN 306. The study of problems in living with special emphasis upon the identification and assessment of the mental disorders included in the Diagnostic and Statistical Manual of Mental Disorders, DSM.

373. **Professional Development.** 1-6 Hr.

382 A-Z. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

385. **Practicum.** I, II, S. 1-12 Hr. PR: Preregistration; liability insurance; cleared for internship at close of semester, or a M.A. degree, and consent of department practicum evaluation committee. An intensive supervised practical experience in public schools or agencies, in counseling with individual critique and appropriate small-group experiences. Demonstration of high professional standards, counseling skills, and personal characteristics appropriate to the counseling relationship are essential. (Due to the limited number of summer sites, there can be no guarantee of summer practicum placement.) (Practicum is a prerequisite for internship placement. Internship is a one-semester, minimum four-day per week field experience following practicum. This two-semester sequence replaces the previous one-semester practicum.)

386. **Counseling Internship.** I, II. 1-12 Hr. PR: Preregistration, completion of COUN 385 (Practicum) and consent of department field work coordinator. A full-time supervised field experience. Demonstration of counseling program management skills and ethical conduct is required—ACA Ethical behavior standards will be used to determine appropriate professional conduct.

391. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

395. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

930. **Professional Development.** 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

**Counseling Psychology (CPSY)**

401. **Advanced Counseling Psychology Techniques.** I. 3 hr PR: Advanced standing and COUN 301 and COUN 306 and COUN 385 or equiv. and consent. Comprehensive development of counseling psychology techniques related to generic and specific theoretical models. In-setting laboratory experience and demonstration of therapy techniques required.

409. **Advanced Group Counseling/Therapeutic Techniques.** 3 Hr. PR: COUN 309 or equiv. and consent. An overview of the formation, leadership techniques, research, and ethical issues associated with group counseling and psycho-therapy in general and for specific populations. (Lec.)
431. Advanced Consultation Techniques. I. 3 Hr. PR: COUN 331 or equivalent, or consent. Multiple training and experiences in theories and techniques of consultation and delivery of human services to educational and community personnel. Simulated classroom and laboratory experiences.

434. Multicultural Theory/Research. II. (Alternate years.) 3 Hr. PR: CPSY Advanced standing and CPSY 401. Interactive effects of cultural factors (race, ethnicity, gender, sexual orientation, social status, religious affiliation) as they relate to counseling psychology practice and qualitative research.

460. Introduction to Counseling Psychology. 3 Hr. PR: Consent. Overview of history, current status, and future trends associated with counseling psychology as a specialty area. Includes an introduction to counseling psychology research topics and practices.

463. Advanced Theories of Counseling Psychology. II. S. 3 Hr. PR: COUN 306 and 385, or equiv., admission to post-master’s graduate study; and consent. A comprehensive study of the theoretical issues in contemporary counseling

464. Intellectual Assessment. II. 4 Hr. PR: Advanced standing, COUN 305 and pre-registration with instructor. Administering, scoring, and interpreting individual intelligence tests.

466. Vocational Psychology. II. 3 Hr. PR: COUN 320 or equivalent, advanced standing or consent. Advanced study of theory development and research in vocational psychology and counseling; emphasis on counseling psychology, women’s issues, and cross-cultural counseling.

469. Personality Testing and Interpretation. I. 3 Hr. PR: COUN 305 and consent. Advanced study in the application of personality assessment procedures and consideration of alternative methods for measuring human behavior.

470. Doctoral Practicum in Counseling Psychology. 1-9 Hr. PR: CPSY 401 and CPSY 469 and CPSY 480 or equiv. and completed doctoral practicum application (due by March 1 of semester year preceding initial semester), and consent. Intensive clinical experience in which students, under supervision, see clients for individual and group counseling and psychotherapy. Offered at a variety of approved field-based sites. (Practicum)

472. Internship. I, II, S. 1-12 Hr. PR: Written approval from the department internship committee, satisfactory completion of written doctoral comprehensive exams, and approval of research prospectus. Full-time supervised practice in an approved counseling psychology internship training program; minimum duration one academic year.

480. Professional and Ethical Issues in Counseling Psychology. II. 3 Hr. PR: Advanced standing and consent. Overview of current ethical, legal, and professional issues in counseling psychology. Readings, discussion, and a written literature review of a topic related to the practice of counseling psychology.

482. Research Practicum in Counseling Psychology. 1-6 Hr. PR: Consent. The conduct of a descriptive or an experimental study. An overview of research design, statistical procedures, potential violations of ethical principles in the conduct of research. (1-6 hr. practicum.)

483. Counseling Psychology Supervision Model. I. 3 Hr. PR CPSY 401 and CPSY 480 and at least one semester of CPSY 470 or equiv., and consent. Overview of major assumptions and techniques of major counseling supervision models. Training activities include simulated and actual demonstrations of each of the supervision models and critique of their assumptions, advantages, and constraints.

490. Teaching Practicum. I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of counseling psychology. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

A-Z. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

Educational Leadership Studies
David L. McCrory, Professor
509 Allen Hall
www.wvu.edu/~edulead

Degrees Offered: Master of Arts
Area of emphasis for Doctor of Education

The Educational Leadership Studies program at West Virginia University prepares individuals for leadership positions in elementary, secondary, and post-secondary educational institutions. While most EDLS students pursue administrative careers, some prepare for college or university research, teaching and/or staff positions. The EDLS program unit offers graduate programs leading to the master of arts degree and the doctorate degree in education with emphasis in public school or higher education leadership. In addition, programs leading to certification for elementary and secondary principals, instructional supervisors, and superintendents are provided.

Admission
Students who possess a baccalaureate degree from a college or university, have earned at least a grade-point average of 2.75 on a scale of 4.0, and have met all the criteria established by the program emphasis area may apply for regular admission to graduate study in the educational leadership program. To apply, students submit an application for admission, all college transcripts, and a nonrefundable service fee to the Office of Admissions.
and Records, West Virginia University, PO Box 6009, Morgantown, WV 26506-6009. Phone: (304) 293-2121, Fax: (304) 293-3080. The Office of Admissions and Records verifies information and forwards applications to the academic unit. Admissions decisions are made at least two times during the academic year, once each semester. Please contact the EDLS program secretary for specific admissions dates.

Students not wishing to pursue an advanced degree may apply for admission as non-degree graduate students. Applicants must complete the standard application form, pay the nonrefundable special service fee, state the area of intended study, and present evidence of a baccalaureate degree. No one, however, can pursue an advanced degree at WVU unless admitted to the regular degree program. Under no circumstances may a non-degree student apply more that 12 hours of credit earned while he or she was classified as a non-degree student toward a degree.

These minimum standards for admission to graduate study are set by the University Graduate Council. Beyond this point, however, faculty members in the graduate program have control over who is admitted to undertake graduate study under their supervision; and ultimately it is they who certify which students have demonstrated sufficient mastery of the discipline to qualify for a graduate degree. While a student may be admitted for the purpose of enrolling in advanced course work, only the program faculty may grant permission for the pursuit of a degree. Likewise, a student will not be recommended for a degree until the graduate faculty of a program has indicated in writing that the student has gained the desired knowledge.

The course of study for the doctoral degree may be completed through regular on-campus classes, as members of a cohort (when offered), or within the cooperative doctoral program classes offered jointly by WVU faculty and faculty at Marshall University Graduate College. Students selecting the regular on-campus program design their individual courses of study conjointly with their advisors and their dissertation committees. Students selecting the Cohort Program must complete their programs of study as members of the cohort group to which they are admitted. Students selecting the Cooperative Doctoral Program complete the major portion of their coursework at off-site locations in Charleston and Huntington. Information about each of these program options is available from the EDLS program coordinator, the program secretary, or from individual EDLS faculty members.

Programs

Optional programs are available in public school administration and supervision, higher education leadership, and adult and continuing education. A one-semester, internship experience is required before permanent professional certification can be acquired in public school leadership. In order to graduate, the student must earn at least a 3.25 grade-point average on all program work attempted. Students seeking West Virginia certification must pass a West Virginia Department of Education content specialization examination upon completion of their academic program.

Doctor of Education Degree

The doctor of education degree is offered with tracks in public school administration, higher education, and related educational organizations (such as state departments of education). Consistent with the regulations of the University, the College of Human Resources and Education, and the program of educational leadership, each track is individually designed by the doctoral student, the student’s advisor, and the doctoral committee.
Educational Leadership Studies (ED A)

300. Public School Organization and Administration. 3 Hr. Basic concepts through which administrators, supervisors, and teachers gain understanding of general problems related to operation of schools and school systems.

318. School Business Administration. 3 Hr. PR: Consent. Sound business administration for central office school administrators. Microcomputer competency in IBM compatible word processing, data base, and spreadsheet applications required prior to course completion.

320. Human Resources Management. 3 Hr. PR: Consent. The determination of student, employee, and organizational personnel needs and the development of plans and programs to meet these needs.

330. Principles of Educational Leadership. 3 Hr. PR: Consent. Problems of school leaders in the areas of administration, supervision, and instruction.

331. Principles of Supervision. 3 Hr. PR: Consent. Elementary, junior high, and senior high supervision

333. School Law. 3 Hr. PR: Consent. Overview of the generally accepted legal principles which affect the student, teacher, and principal in a public school setting.

334. College Student and the Courts. 3 Hr. PR: Consent. A study of the major areas of higher education law from the perspective of the college student. A case study approach.

335. Introduction to College Student Personnel. 3 Hr. PR: Consent. A study of the organization and administrative functioning components, concepts, and models of student personnel administration systems using a historical and topical approach. Conceptual approach based upon the student development model.

336. Fund-raising and Foundation Management. 3-6 Hr. PR: Consent. (Fall, even years) Studies in fund raising, alumni relations, and foundation management. (Also listed as JRL 312.)

337. College Business Management. 3 Hr. Covers knowledge of such areas as budgeting, budget preparation and administration, resource reduction and reallocation, and grants/contracts preparation and administration.

338. Higher Education Administration. 3 Hr. Key concepts of organization and administration within higher education institutions, concentrating primarily on the nonacademic components of the institutions, from the president to first-level supervisor.

339. The College Student. 3 Hr. Review of research and literature on college students from freshman through graduate school. Emphasis on student subcultural patterns.

350. Community College Administration. 3 Hr. An analysis of the historical/philosophical development of the community colleges movement in the U.S. A specific focus on developing an awareness and critical understanding of the administrative characteristics of the internal organizational components.

351. Administrative Procedures in Adult Education. 3 Hr. PR: Consent. (Offered off-campus only.) Theories and principles of administering adult education organizations as they relate to planning, organizing, staffing, initiating, delegating, integrating, motivating, decision making, communicating, establishing standards, financing, budget defense and control, and measuring results.

352. Professionalism in Extension Service. 3 Hr. PR: Consent. (Offered off-campus only.) Role of Extension Service professionals in social change; study of community systems, professional relationships, accountability, ethics, and obligations to clientele.

353. Community Education: Administration and Organization. 3 Hr. PR: Consent. Study of the rationale, methods, and procedures in administering and programming community education. Experiences in planning, adapting, and evaluating programs independently and in consort with school and community plans.

373. Professional Development. 1-6 Hr. (May be repeated for credit.) PR: Department consent. Specially designed experiences for those interested in advancing professional skills in a particular specialty. (Not for degree credit in programs in the College of Human Resources and Education.)
380. **Topics in Supervision.** 3 Hr. Special knowledge and skills for supervisors K-12 including media, computers, reading, multicultural education, testing, and special education.

385. **Practicum.** 1-12 Hr. PR: Consent.

388. **Research-Evaluation-Assessment.** 3 Hr. PR: Consent. Research, evaluation, and assessment procedures related to administrative decision making and problem solving to increase the general effectiveness of educational institutions.

389. **School-Community Relations.** 3 Hr. PR: Consent. A study of the systems through which the school can be interpreted to its community.

391. **Advanced Topics.** 1-6 Hr.

395. **Site-Based Administration.** 3 Hr. A study of the active role of principals in early, middle, and adolescent schools. Specific emphasis is placed upon the areas of effective schools, instructional leadership, special services, and facilities management.

397. **Master’s Degree Research or Theory.** 1-15 Hr.

402. **Central Office Leadership.** 3 Hr. PR: M.A. in education administration, or equiv., or consent. Roles, relationships, behaviors, and competencies which characterize the school superintendent and staff. (Offered in fall and summer of even years.)

403. **Education Administration Theory.** 3 Hr. PR: M.A. in education administration, or equiv., or consent. Interdisciplinary study of the major concepts of education administration theory and the application to educational settings.

404. **Public Education Finance.** 3 Hr. PR: M.A. in education administration, or equiv., or consent. Basic concepts. (Offered in spring of even years.)

405. **Administration of Educational Facilities.** 3 Hr. PR: M.A. in education administration, or equiv., or consent. The planning, evaluation, and management of current and future school facilities.

406. **Public Education and the Law.** 3 Hr. PR: M.A. in education administration or equiv., or consent. Legal permissives and limitations involved in setting policy for organization of and administration of public schools.

407. **Collective Bargaining in Public Education.** 3 Hr. PR: M.A. in education administration, or equiv., or consent. This course is designed to inform school administrators about the concepts and principles of negotiating and implementing collective bargaining agreements.

408. **Organizational Analysis.** 3 Hr. PR: M.A. in education administration, or equiv., or consent. An examination of alternative means for the analysis of organizational structures, interrelationships, and functions. A field analysis is required.

409. **Politics of Education.** 3 Hr. PR: M.A. in education administration, or equiv., or consent. An examination of the internal political nature of school systems, and of the external influence of legislative, judicial, and administrative bodies and interest groups.

410. **Advanced Supervision.** 3 Hr. PR: Consent. Exploring theories, research, and practice of pre-service and in-service instructional supervision in the classrooms of novice and mature teachers. (Also listed as C&I 410.)

456. **Administration of Academic Affairs.** 3 Hr. PR: Consent. Management, leadership, and administrative roles of academic affairs offices in colleges and universities including academic personnel, program definition, research and teaching issues, and other functions of academic oversight.

457. **Governance of Higher Education.** 3 Hr. PR: Consent. Formulation and implementation of state master plans and the roles of state governing bodies in public and private institutions.

Development of Administration in American Higher Education. 3 Hr. The administrative development of American higher education from 1636 to the present, including internal trends and external forces.

Higher Education Law. 3 Hr. Critical legal issues of higher education—public and private—using a case study approach.

Higher Education Finance. 3 Hr. Financial concerns in higher education with emphasis on taxation and legislative actions, sources of income, budgeting, and cost analysis.

Institutional Research and Planning. 3 Hr. Accumulation, analysis, and interpretation of data relevant to decision making and the allocation of institutional resources. (Offered in spring of even years.)

Higher Education Collective Bargaining. 3 Hr. The process and content of collective bargaining in higher education and its impact on institutional governance and academic jurisdictions.

Education Administration Internship. 3-6 Hr. (May be repeated for credit.) PR: Consent. Practical experiences in the administration of an organizational unit under the supervision of an administrator within the unit.

Principal's Planned Field-Based Experience. 3 Hr. PR: Three years of successful experience as a teacher and have a position as principal or assistant principal. Consists of problem-solving techniques and seminar activities as applied to explicit problems in the professional environment. (Required for permanent certification as a principal.)

Supervisor's Planned Field-Based Experience. 3 Hr. PR: Three years of teaching experience, 15 hours completed in a master’s degree program, and be employed full-time as a supervisor. Consists of problem-solving techniques and seminar activities as applied to explicit problems in the professional environment. (Required for permanent certification as a supervisor.)

Superintendent's Planned Field-Based Experience. 3 Hr. PR: Five years of successful experience as a teacher or supervisor, and employed as a superintendent or assistant superintendent. Consists of problem-solving techniques and seminar activities as applied to explicit problems in the professional environment. (Required for permanent certification as a superintendent.)

Seminar. 1-6 Hr. PR: Consent.

Special Topics. 1-6 Hr. PR: Consent.

Advanced Study. 1-6 Hr. PR: Consent. Advanced subjects which are not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

Doctoral Orientation Seminar. I, 1-6 Hr. Required for all new doctoral students.

Research. 1-15 Hr. PR: Consent.

Educational Psychology
Daniel E. Hursh, Professor
504 Allen Hall
Degree Offered: Master of Arts, Area of emphasis for Doctor of Education

Master of Arts
The educational psychology program in the College of Human Resources and Education offers opportunities for graduate study and research leading to the master of arts. Professional preparation focuses on learning and development, instruction and research. Accordingly, students are expected to achieve competencies in these areas.

Programs are planned jointly by the student and the student’s advisor to meet particular career needs. Minor fields of study are also planned for each student as appropriate. In addition to the general requirements of the University and the College of Human Resources and Education, the department requires a core of courses and supporting competencies of all graduate students.
Educational psychologists function in a variety of settings. The program prepares and places competent educational psychologists in educational settings at all levels, such as educational agencies at local, state, and federal levels; public and private human service centers; medical centers; and business and industrial settings.

All applicants must comply with the general requirements of the University and the College of Human Resources and Education. The applicant must have an undergraduate degree from an accredited institution and must submit official transcripts of the undergraduate work, the official scores for either the Graduate Record Examination (GRE) or the Miller Analogies Test (MAT), a 500-word, written goal statement, a personal vita, and three letters of reference.

**Core**  Each student is expected to complete the following core of courses as part of the master’s plan of studies:

- ED P 300 *Advanced Educational Psychology*
- ED P 311 *Statistical Methods 1*
- ED P 330 *Foundations of Educational Measurement*
- ED P 350 *Applied Behavior Analysis*

The master’s requires a minimum of 30 hours of course work including the completion and successful defense of a thesis or the completion of 30 hours of course work including the completion of a problem. Those students who plan to pursue a doctorate are required to take the thesis option.

**Application Criteria**  The credentials for all applicants are screened by a three-member admissions committee of the department. The criteria used as guidelines for evaluating applicants are:

- Total GRE scores of 1,100 or higher or MAT score of 55 or higher; international students from a country in which English is not the native language must have a TOEFL score of at least 550 and a combined total score of at least 1000 on the GRE verbal and the TOEFL.
- An undergraduate GPA of at least 3.0.
- A graduate GPA of 3.25 or higher for graduate work completed to date.
- The extent to which the applicant’s goals and objectives may be accomplished if admitted to the program.
- Favorable recommendations and appropriate background experiences.

**Good Standing**  To remain in good standing, a student must have an average grade of B or better for all courses in the program and make satisfactory progress toward the completion of the program competencies (as described in the following section).

**Doctor of Education**  The doctor of education requires a minimum of 72 hours of graduate credit beyond a bachelor’s degree or 42 hours beyond a master’s degree. In addition, completion of a core of required courses, fulfillment of competency requirements, and an approved dissertation are mandatory.

Each student is expected to complete the following core courses as part of the doctoral plan of studies:

4. A selection of two of the following courses in the area of learning and development.
Competency Areas There are three competency areas in the program: learning and development, instruction, and research. Students are expected to fulfill the program competency requirements by meeting the goals and objectives specified for the program. The learning and development competency product will take the form of a theoretical paper; the instruction competency product will be a course or other type of instructional sequence of comparable magnitude. The research competency product will be a data-based research paper of publishable quality.

Inquiries should be addressed to the Coordinator of Educational Psychology, Allen Hall, College of Human Resources and Education, West Virginia University, P.O. Box 6122, Morgantown, WV 26506-6122.

Educational Psychology (ED P)

300. Educational Psychology. I, II, S. 3 Hr. Designed for beginning graduate students. Psychological principles of learning and development as they relate to processes of instruction.


311. Statistical Methods 1. I, S. 3 Hr. PR: MATH 3. Basic concepts of statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regressions, correlation, transformation, F and chi-square distributions, analysis of variance and sample size.

312. Statistical Methods 2. II. 3 Hr. PR: STAT 311. Extension of basic concepts of statistical models, design of experiments, multiway classification models, factorials, split plot design, simple covariance, orthogonal comparisons, multiple linear and nonlinear regression and correlation analysis, chi-square and nonparametric statistics.

314. Measurement/Evaluation in Educational Psychology. 3 Hr. An Introductory course in measurement and evaluation in educational psychology with an emphasis on the principles and procedures in conducting and analyzing educational measurement.

317. Program Evaluation. 3 Hr. An awareness of the purposes, ethics, issues of design, methods, and models of program evaluation.

320. Introduction to Research. I, II, S. 3 Hr. Basic concepts, strategies, methodologies, designs, and procedures of research in education. Major emphasis on integrating research designs, measurements, and statistics for initiating research projects, collecting and analyzing data, and interpreting and reporting findings.


333. Non-parametric Statistics. 3 HR.
341. Multivariate Methods 1. (Alternate years.) 3 Hr. PR: STAT 311 or equivalent. Basic matrix operations, multiple regression analysis, discriminant analysis for two groups, multivariate analysis if variance for one-and two-way designs, and analysis of covariance involving multiple covariates. Applying SAS procedure matrix for data analyses.

342. Multivariate Methods 2. (Alternate years.) 3 Hr. PR: STAT 311 or equivalent. Matrix operations, multivariate multiple regression analysis, canonical correlation analysis, discriminant analysis for multiple groups, qualitative discriminant analysis applying Bayes’ theorem, principle component analysis, and fundamentals of common factor analysis. Data analyses with SAS procedure matrix.

350. Applied Behavior Analysis. I. 3 Hr. PR: ED P 301 or equivalent. Application of reinforcement theory as an instructional technique in changing human behavior. Analysis of problems in terms of behavior and the design of instruction and treatment programs to produce desired change.

351. Instructional Design. I. 3 Hr. PR: Graduate standing. Introduces the major components of the instructional design process, from needs analysis through evaluation and implementation. Students will demonstrate the elements of the process with a design plan for an instructional project.

355. Cognition and Strategic Learning. II. 3 Hr. Theories of knowledge representation including information processing models, learning strategies across content areas and transfer of learning strategies; additional focus on problem-solving, expertise, strategic reading, and strategy instruction.

359. Conceptual Foundations of Behavior Analysis. 3 Hr. Comprehensive introduction to the basic science of human behavior and its philosophy. Provides a conceptual frame-work for a variety of applied fields.


397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

400. Verbal Behavior 1. (Alternate years.) 3 Hr. PR: ED P 350 or consent. Behavioral analysis of complex verbal behavior in person-to-person contacts in text materials and in instructional systems.

403. The Adult Learner. 3 Hr. Analysis of significant characteristics of adult behavior to be considered in planning for adult learning. Contemporary theories are analyzed with emphasis on their implications for the educational process.

420. Seminar: Educational Research. I, II. 3 Hr. PR: ED P 311 and consent. Identification of research problems in education, consideration of alternative designs and methods of investigation, and development of a research proposal at the advanced graduate level.

423. Designing Single Case Research. I. 3 Hr. Measurement and design tactics for research with one or a small number of participants allowing the researcher to identify effective practices for individual students or clients.

440. Human Development and Behavior. I. 3 Hr. Contemporary psychological literature on human development examined and analyzed. Research and theory are examined with emphasis on the implications for classroom behavior and the educational process.

451. Principles of Instruction. II. 3 Hr. PR: Consent. Basic principles of teaching-learning process implied in major learning theories; study of factors in learning, variables in instructional program, and principles of instructional design.

454. Memory. II. 3 Hr. Short-term memory, long-term memory, memory networks, and memory problems as they relate to school learning, strategies for instruction, and lifelong adaptation in a dynamic society.


456. Interactive Technologies in Education. I. (Alternate years.) 3 Hr. PR: Consent. Principles of human cognition a basis for electronic tools; problem solving software, multimedia, intelligent tutoring systems, distance learning; active/generative learning, knowledge construction, interdisciplinary learning, multiple knowledge representations, and educational reform.


481 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of education psychology. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492 A-Z. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her choice.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her departments 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.
Elementary Education

Elizabeth A. Dooley, Department Chairperson, Educational Theory and Practice
602 Allen Hall
www.wvu.edu/~hre/departments/etp/etpindex.htm

Degree Offered: Master of Arts

Master of Arts

The Department of Educational Theory and Practice provides opportunities for graduate study and research leading to the degree of master of arts (M.A.) for educators and other professionals with educational responsibilities. The primary purpose of the masters program in elementary (early/middle) education is to provide increased knowledge, skill, and competence for licensed teachers working with children in the elementary (early/middle) school setting. The graduate elementary (early/middle) teacher education program has three major areas of emphasis: general education, subject area/grade level, curriculum and methods, and electives.

These emphases are planned jointly by the student, the student's advisor, and the student's committee to meet the career needs of the student. In addition to the general requirements of the University and the College of Human Resources and Education, there is a core of courses or course areas and supporting competencies required of all graduate students in the department.

The purpose of the program is to prepare master teachers who work with children from nursery through elementary school. The program provides the opportunity to specialize in early childhood, middle childhood, or a subject area. With advisor approval, electives may be selected that enhance the student's personal goals.

For further information on admission and program requirements, write Chairperson of Educational Theory and Practice, College of Human Resources and Education, 602 Allen Hall, P.O. Box 6122, Morgantown, WV 26506-6122.

Requirements

All applicants must comply with the general requirements of the University and the College of Human Resources and Education.

Required Courses

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<th>B**</th>
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General Education Electives | 0 | 3 | 12 |

(All elective courses must be approved by the advisor before enrollment.)

Total for master’s degree | 30 | 30 | 36
### Emphasis: Early Childhood Education (Pre K-4)

#### Required Courses

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<tr>
<th>Course</th>
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<td>ED P 330</td>
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<tr>
<td><strong>Total required courses</strong></td>
<td><strong>27</strong></td>
<td><strong>24</strong></td>
<td><strong>18</strong></td>
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</tbody>
</table>

#### Approved electives

- **Restricted electives in Early Childhood Education**
  - 3

- **Supportive electives in education**
  - 0

(All elective courses must be approved by the advisor before enrollment.)

**Total for master’s degree**

- **30**

*Program A—Thesis required.

**Program B—Research problem required.

***Program C—36-semester hour course work program.

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Note: New requirements for the master’s degree in elementary education are now being developed. Information concerning any new degree requirements will be available from the Department of Educational Theory and Practice.

### Curriculum and Instruction (C&I)

300. *U.S. Education for International Students.* I. 3 Hr. PR: International students with graduate status and developing oral and written English skills. To assist international students in understanding the U.S. system of education. Included: dominant U.S. values related to education; structure of U.S. education at all levels; models and strategies; field trips; international comparisons.

301. *The Elementary-School Curriculum.* I, II, S. 3 Hr. PR: 20 hours of undergraduate credit in elementary education, or consent. Analysis of curriculum designs in elementary education with emphasis on methods and techniques of development.

304. *The Secondary School Curriculum.* I, II, S. 3 Hr. PR: High-school teaching experience or consent. Emphasizes socioeconomic and cultural influences on the curriculum; principles of curriculum development; curriculum building in the various teaching fields; techniques of experimentation and evaluation; and practice in curriculum building with special emphasis on unit construction.

306. *Curriculum for Middle Childhood.* I, S. 3 Hr. Survey course which includes: historical, social, and cultural influences on the curriculum; the learner characteristics; curriculum and instructional organization and their relationship to facilities available; evaluation and implementation of middle childhood curriculum.

308. *Introduction to Alternative Learning Environments.* I. 3 Hr. This course will provide opportunities for educators to explore and analyze the trends and issues in alternative learning environments in public education.

309. *Experiences in Alternative Learning Environments.* I. (Alternate years.) 6 Hr. PR: C&I 308, EDF 320, and consent. This course helps teachers to learn and practice skills that are needed to be an effective teacher in an alternative teaching environment.
312. Early Childhood Curriculum. I. 3 Hr. PR: (C&I 210 and C&I 211) or consent. Curriculum development for early childhood education pre-K to 4th grade, including social, creative, cognitive, physical, and academic goals. Societal, historical, and theoretical influences on early childhood curriculum are examined.

314. Early Childhood Instruction. I, II. 3 Hr. PR: (C&I 210 and C&I 211) or consent. Design of instruction for continuous improvement toward mastery of curriculum goals for early childhood education pre-K to 4th grade.

316. Early Childhood Program Development and Evaluation. I. 3 Hr. PR: (C&I 210 and C&I 211) or consent. Development, administration, and evaluation of facilities, programs, and support systems for early childhood education Pre-K to 4th grade. Includes a focus on family connections and support systems related to early childhood classrooms.

317. Language Arts in Early Childhood. I, II. 3 Hr. PR: None. Designing instruction for an integrated development of writing, reading, speaking, and listening with an emphasis on literacy acquisition in early childhood education pre-K to 4th grade.

318. Storytelling in Early Childhood. I, II. 3 Hr. This course will assist students in telling, reading, and creating stories for children. Techniques, methods, and research effective in the art of storytelling will be examined and applied as they relate to total child development.


323. Contemporary Issues in English Education. I. 3 Hr. PR: Graduate standing. Provides the student with a knowledge of several contemporary issues in English teaching which have immediate and long-range ramifications for secondary-school English instruction. (1 hr. lec., 2 hr. sem.)

324. Advanced Methods in English Education. II. 3 Hr. PR: Graduate standing. (For classroom teachers of English). Will involve an analysis of recent trends and innovations in methodology. Readings and discussions will lead to the development of instructional strategies and units for secondary English classrooms. (1 hr. lec., 1 hr. lab., 1 hr. seminar.)


337. Mathematics in the Junior High School and Middle School. II. 3 Hr. PR: 6 Hr. college mathematics or consent. Study of teaching of mathematics in the junior high school and/or middle school; application of mathematics content to teaching; instructional techniques, and materials.


344. Science in the Secondary School. 3 Hr. PR: Consent. Nature and function of science in secondary schools supported by current research and development; includes analysis of structure and practice of science curriculum and instruction issues. (3 hr. lec.)
350. Social Studies in the Elementary School. I, II, S. 3 Hr. PR: 20 Hr. of undergraduate credit in elementary education, or consent. Comprehensive consideration of objectives, content, methods, including unit procedures; materials including objects, models, exhibits, and museum items, as well as textbooks, collateral reading, maps, and graphs; means of evaluating social growth and development.

354. Social Studies in the Secondary School. S. 3 Hr. PR: Consent. Nature and function of social studies in the secondary school; utilization of community, state, national, and world resources in teaching; selection of content for teaching purposes; curriculum construction with emphasis on resource and teaching units.

357. Principles of Economic Education. S. 3 Hr. Workshop for principals, teachers, and supervisors with emphasis on the economic structure of our society and methods of integrating economics into the school program. (Sponsored jointly by College of Human Resources and Education and College of Business and Economics.)

359. Classroom Simulation Techniques. II, S. (Alternate years.) 3 Hr. To provide experience in the use of learning games and simulations as an instructional technique and the opportunity to develop-under supervision-simulated activities and games to be used in a variety of learning environments.

361. Computers in the Content Areas. I. 3 Hr. Development of extensive curriculum units on the use of computers and other technologies in teaching and learning. Students will inform one another of various uses of computers in learning.


363. Software Development. II. 3 Hr. Principles and models of software design and the authoring language HyperCard.

377. Children's Television: Problems and Potentials. S. 4 Hr. PR: Consent. Provides parents and teachers with strategies for monitoring, evaluating, and directing television viewing habits of youth; pertinent research studies, school and community action programs, and home and school education programs are discussed and practiced.

380 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.


385. Supervision of Student Teachers. I, II, S. 3 Hr. PR: Consent. For persons working or intending to work with education students in field experiences. Course focuses on the development and application of supervisory skills in effective guidance of student teachers and education students.

386. Teaching Strategies for Middle Childhood. II, S. 3 Hr. Surveys instructional strategies appropriate for facilitating preadolescent learning. Includes the role of the teacher; how the teacher uses resources within and outside the classroom as they relate to instruction of the learner, age 10-14 years.

387. Advanced Teaching Strategies. I, II, S. 3 Hr. PR: Graduate standing. Deals with methods as one critical variable in teaching. Examines ways and means to describe, plan the use of, implement, and evaluate teaching methods. Analysis and implementation of teaching methods and component skills of teaching.

388. Classroom Organization and Management. I, S. 3 Hr. Discusses research identifying components of classroom organization and environment which influence learning; reviews teacher behaviors and learning activities which research indicates lead to more effective teaching. Stresses implementation strategies relevant to classroom settings.
389. Cultural Diversity in the Classroom. I, S. 3 Hr. PR: Graduate standing or consent. Provides opportunities for educators to increase awareness of their own ethnic backgrounds, foster understandings of the interactive effects of gender, race, ethnicity and socio-economic status, and develop appropriate teaching materials and methods.


395. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)


407. Theories, Models and Research of Teaching. II. 3 Hr. PR: EDF 320 or consent. The theories behind selected models of teaching as well as research in teaching and best practices.

408. Contemporary Determinants of Curriculum. II, S. 3 Hr. PR: C&I 401 and EDF 340 or consent. Contemporary determinants of curriculum development.

409. Curriculum Theories. I, II, S. 3 Hr. PR: C&I 408 or consent. Theories underlying curriculum from the past to the present and projected to the future.

410. Advanced Supervision. 3 Hr. PR: Consent. Exploring theories, research, and practices of pre-service and in-service instructional supervision in the classrooms of novice and mature teachers. (Also listed as EDA 410.)

438. Survey of Major Issues in Mathematics Education. II, S. 3 Hr. PR: Consent. Individual and group research on selected topics in mathematics education.

457. Social Studies Curriculum Development, K-12. I. 3 Hr. PR: (C&I 301 or C&I 304) and (C&I 350 or C&I 354). Stresses the application of principles and procedures pertinent to the development of social studies programs in elementary and secondary schools. Strong emphasis will be placed on the analysis of current social studies curriculum materials.

460. Planning Programs and Courses for Vocational Agriculture Department. I, S. 2 Hr. PR: C&I 188. Gathering data, studying the farming problems of all-day students, young farmers, and adult farmers, and planning the total program for the department.

471. Assessing the Impact of Computer-Based Learning. I. 3 Hr. Survey of the current findings in computer-based learning; couples statistical features and design scenarios.

487. Teaching Effectiveness. 3 Hr. PR: Advanced graduate standing or consent. Explores twentieth century attitudes toward effective teaching from a variety of perspectives; instigates teacher, learner, content and environment; examines how questions asked reveal thinking regarding interaction of elements of teaching/learning situation.

488. Higher Education Curriculum. II. 3 Hr. Analysis and evaluation of post-secondary curriculum with emphasis on organizing, translating, and applying findings. Topics include curriculum shaping forces; institutional patterns; policy, components and change; and principles and techniques of development, experimentation, and evaluation.

489. Teaching in Higher Education. I. 3 Hr. PR: Graduate standing. A general methods course involving instructional concepts and strategies for present/prospective faculty in higher education. Comprehensive consideration of objectives, planning criteria and methods, teaching strategies, and evaluation in meeting the needs of adult learners.
Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of curriculum and instruction. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Reading

Elizabeth A. Dooley, Department Chairperson, Educational Theory and Practice
602 Allen Hall
www.wvu.edu/~hre/departments/etp/etpindex.htm

Degree Offered: Master of Arts

The Department of Educational Theory and Practice provides opportunities for graduate study and research leading to the master of arts for educators and other professionals with educational responsibilities. The primary purpose of the master's program in reading is to provide increased knowledge, skill, and competence for teachers or those who work in the field. The program contains a number of related options for emphasis within its framework, making it flexible enough to meet a wide variety of needs.
Options are planned by the student, the student’s advisor, and the student’s graduate committee to fit the student’s career plans. In addition to the general requirements of the University and the College of Human Resources and Education, the department requires a core of courses or course areas and supporting competencies.

Requirements

All applicants must comply with the general WVU requirements, and requirements of the College of Human Resources and Education and the reading program.

Professionals with successful teaching experience at the elementary, secondary, or college level may elect to enroll in these courses to increase their competencies as reading teachers, to keep themselves informed of latest trends and developments in reading education, or to prepare for positions of greater responsibility. Students who plan to enter the teaching field may also wish to enroll in these courses to increase their overall skills and knowledge.

Courses

Course offerings provide opportunities to become familiar with the organization, implementation, and administration of developmental and remedial reading programs at the elementary, secondary, and college levels. Advanced students of superior academic and professional background have opportunities to participate in clinical work and to become involved in research.

Programs of study for the doctor of education degree are worked out individually with each student. Course requirements depend upon previous academic background and experience and the position for which the student wishes to prepare. Practical training for teachers and specialists-in-training is provided by the Reading Clinic.

For further information on admission and program requirements, write Chairperson, Department of Educational Theory and Practice, College of Human Resources and Education, 602 Allen Hall, P.O. Box 6122, Morgantown, WV 26506-6122.

• Students must complete six or more hours in reading within two years after admission (probationary or regular) or admission will be invalidated and the student will be required to reapply.

• Program A—Completion of a minimum of 36 hours including the completion of a problem or thesis.

• Program B—Completion of a minimum of 36 hours of course work.

• Successful completion of a written final examination.

The course requirements in Programs A and B lead to reading specialist certification. Electives should be decided in conference with advisor.

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Subtotal ........................................................................... 36 ....................... 33  
Electives ........................................................................... 0 ......................... 3  
Total ................................................................................. 36 ....................... 36

Reading (RDNG)

321. Reading and Writing Instruction in Elementary Schools. 3 Hr. Examines processes of reading and writing at the elementary school level. Explores instructional practices associated with those processes.

322. Content Area Literacy Instruction. 3 Hr. Presents essential content area literacy skills and examines ways in which they may be developed in various subject-matter areas.

323. Literacy and the Young Child. 3 Hr. Focus is on perspectives of young children's reading and writing development and approaches for fostering this development in school and home settings.

324. Foundations of Literacy. 3 Hr. Inquiry into the historical, psychological, and linguistic foundations underpinning literacy instruction. Students will also consider the interdisciplinary nature of the study of literacy.

325. Survey of Reading Research. 3 Hr. A research course in which each student will complete an individual problem in an area of special interest.

326. Literacy Leadership. 3 Hr. PR: 18 Hr. of M.A. requirements. Roles, responsibilities, and practices of reading specialists, administrators, and classroom teachers in organizing literacy programs from early childhood through college.

327. Developing Reading Interests. I, II, S. 3 Hr. Emphasis on methods and techniques for developing reading habits, interests, and tastes and on motivating individuals to read. Special attention is given to instructional practices which support the pursuit of independent reading.

330. Teaching the Language Arts. 3 Hr. Explores the interrelationship of the language arts—writing, reading, speaking, and listening. Special attention is given to understanding instructional practices, organizing language arts programs, and selecting materials.

331. Selection and Evaluation of Reading Materials. I, S. 3 Hr. PR: RDNG 321. Survey of critical reading skills, techniques, and procedures with emphasis on the selection of supplementary materials needed for effective development and remedial reading programs.

332. Survey of Major Problems in the Language Arts. II, S. 3 Hr. PR: RDNG 330 or consent. An advanced course covering major problems of the teacher or supervisor of language arts instruction. A research course in which the student completes an individual problem.

340. Instructing Students Who Have Reading Difficulties. II, S. 3 Hr. PR: 6 Hr. of RDNG 321 and RDNG 324 or RDNG 322. A methods course that emphasizes ways to intervene when students face reading difficulties. Course focuses on methods that can be used by classroom teachers, reading specialists, and other special teachers of reading and language arts.

341. Problems in Reading. II, S. 3 Hr. PR: RDNG 340. A laboratory course in the University Reading Clinic. Major emphasis on tutoring children who have reading problems.

342. Teaching Reading to Children Who Have Profound Reading Problems. 3 Hr. Basic course on reading intervention methods. Intended for learning disabilities majors. Emphasis on practicum experience.
373. **Professional Development.** 1-6 Hr.

380. **Seminar.** I, II, S. 1-6 Hr. PR: Consent. Seminar for master’s degree students stressing special topics concerned with the education and sociological and psychological aspects of language arts instruction.

381. **Special Topics.** I, II, S. 1-6 Hr. PR: Consent. Special topics or research in reading and language arts for master’s degree students in reading.

385. **Practicum.** I, II, S. 1-12 Hr. PR: Consent. Practicum type course for master’s degree student teaching, and reading administration and supervision practicum experience can be pursued.

391. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

443. **Instructional Intervention for Reading Difficulties.** 3 Hr. PR: Consent. Advanced course focusing on ways to assess and instruct students who have reading difficulties. Explores theories, issues, and methodology.


480. **Seminar.** I, II, S. 1-6 Hr. PR: Consent. The interrelationships among the language arts: mental, physical, and psychological deterrents to language arts; and similar topics.

481. **Special Topics.** I, II, S. 1-6 Hr. PR: Admission to doctoral program in reading and consent. Advanced seminar. Weaknesses and strengths in current reading programs, needed research in reading, and suggestions for improving reading instruction at elementary, secondary, and college levels.

485. **Practicum.** I, II, S. 1-12 Hr. PR: Consent. Practical application of reading theory to organizing and conducting developmental and remedial reading programs.

490. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of reading. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field

494. **Seminars.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)
498. Thesis. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

900. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). The continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

930. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Rehabilitation Counseling
Ida F. Baty, Program Coordinator
504 Allen Hall, P.O. Box 6122
www.wvu.edu/~crc
Degree Offered: Master of Science

Master of Science in Rehabilitation Counseling

The rehabilitation counseling program in the College of Human Resources and Education offers a curriculum at the master's degree level. All students complete general course work in counseling as well as specific course work in rehabilitation counseling.

This professional counseling specialty provides counseling services, with a focus on career issues, to persons with physical disabilities, learning difficulties, and those who are seeking readjustment from emotional problems. Counselors work for both public and private rehabilitation agencies, centers, workshops, and industry. The program is fully accredited by the Council on Rehabilitation Education (CORE) and is a WVU program of excellence.

The degree requirements include completion of the core courses, required rehabilitation counseling courses, and a 15-hour supervised clinical practice placement (internship) under faculty direction in a rehabilitation setting. The rehabilitation counseling program requires a minimum of 51 semester hours with a 3.0 grade-point average. In addition to completing all course work and the internship satisfactorily, a candidate must demonstrate the ability to assume the responsibility required of a professional rehabilitation counselor and the personal characteristics essential to effective working relationships with others.

The rehabilitation counseling degree program is available for both full-time and part-time students. Contact the program coordinator for information concerning the availability of course work for students interested in an evening part-time program which admits students every three years.
Students may take the professional certification examinations to obtain national certification as a rehabilitation counselor during their internship semester. Graduates with two years or more of supervised experience after completion of their master’s degree are typically eligible for licensure as a counselor in West Virginia following the successful completion of an appropriate counseling certification or licensing examination.

**Required Courses**

All students are required to take the following core courses:

- **COUN 301**  
  Counseling Techniques
- **COUN 305**  
  Theory and Practice of Human Appraisal
- **COUN 306**  
  Counseling Theories
- **COUN 309**  
  Group Counseling Theory and Techniques
- **REHB 300**  
  Introduction to Rehabilitation Services
- **REHB 310**  
  Medical Aspects of Disability
- **REHB 312**  
  Psychological Aspects of Disability
- **REHB 320**  
  Career Development and Job Placement
- **REHB 324**  
  Rehabilitation Client Services
- **REHB 472**  
  Counseling Practicum
- **REHB 475**  
  Clinical Practice
- **REHB 480**  
  Research Seminar

**Application**

Applications for admission to the rehabilitation counseling program should be made to West Virginia University, Office of Admissions and Records. In addition to the admission requirements of the University and the College of Human Resources and Education, the Rehabilitation Counseling program has the following admission requirements.

- A baccalaureate degree with course work in appropriate areas.
- A minimum undergraduate grade-point average of 2.5 based on a 4.0 system (students with a lower grade-point average and otherwise exceptional credentials may be admitted provisionally).
- GRE scores a recommended combined total score of 900 for the verbal and quantitative sections.
- Three letters of reference.
- Completion of the application to the rehabilitation counseling program.

The initial screening decision is based upon this information as well as considering the applicant’s previous work or related experiences related to persons with disabilities. Successful applications are then interviewed by program faculty. Final decisions about admission are based on both the requirements and the interview process.

**Admission**

The West Virginia University Rehabilitation Counseling program’s admission process is a two-step procedure. Step 1 is a review of paper credentials including references, department application (relevant major, general quality of application), work experiences, GPA, and GRE (verbal and quantitative) scores.

Step 2 is the department interview, which considers interpersonal style relevant to working as a counselor, communication skills, capacity for empathic understanding and communication, ability to articulate professional goals, goals congruent with department focus, knowledge, and understanding of rehabilitation counseling and assessment of applicants’ capacity to complete the rehabilitation counseling curriculum successfully.
The preferred application deadline for receiving the completed application materials is February 1, however, applications will be accepted until April 1 for Fall full-time and regular part-time admission. The deadline for the next evening part-time program, which will begin in January 2001, is October 15, 2000.

Counseling (COUN)
301. Counseling Techniques. I, II, S. 3 HR. PR: Consent. Development and application of basic counseling skills including interviewing, clinical observation, and a general orientation to counseling settings. Evaluation will be based on strengths and deficits in intra- and interpersonal skills and on demonstration of counseling skills in checkout situations. In setting laboratory experience required.

305. Theory and Practice of Human Appraisal. I, II, S. 3 HR. An overview of standardized evaluation methods commonly utilized in educational and rehabilitation settings. Experience is provided in selection, administration, and interpretation of selected instruments.


Rehabilitation Counseling (REHB)
300. Introduction to Rehabilitation Services. I. 3 Hr. PR: Consent. Introduction to comprehensive rehabilitation, its history and development as a philosophy process, and professional area. Professional and ethical issues in rehabilitation counseling. Other services involved in various rehabilitation settings.

310. Medical Aspects of Rehabilitation. II. 3 Hr. PR: Consent. An overview of medical aspects and implications of disability for the handicapped person in the rehabilitation process. Studies of the more common severe disabilities and their remediation also will be included.

312. Psychological Aspects of Disability. II, S. 1-3 Hr. PR: REHB 310; graduate standing and consent. The impact of disability considering cultural, intrapersonal, and intrapersonal factors. Methods of assisting persons to adjust to problems of disability.

314. Special Problems in Rehabilitation. I, II. 3 Hr. PR: Graduate standing and consent. Rehabilitation theory and techniques in problems such as blindness, epilepsy, and mental retardation. Concentrated study in special institutes.

320. Career Development and Job Placement. II. 3 Hr. PR: Consent and graduate standing in social sciences or education. Principles and methods involved in the vocational counseling and placement of disabled persons. The use of occupational and educational information. Theories of career development, occupational analysis, and job placement in rehabilitation.

321. Vocational Evaluation Systems and Techniques. II. 3 Hr. PR: REHB 300. An introduction to vocational evaluation. Formal and informal vocational evaluation systems and procedures will be explored with the goal of preliminary development of individualized evaluation plans.

322. Advanced Vocational Evaluation Techniques. S. 3 Hr. PR: REHB 321. Advanced vocational evaluation systems including empirically based and informal systems will be studied. Emphasis will be on administration, scoring, and interpretation, particularly as it relates to handicapped populations with specific evaluation problems.

323. Seminar in Vocational Evaluation Services. S. 3 Hr. PR: REHB 321 and consent. Supervisory and professional issues in vocational evaluation services with an emphasis on standards, methods, procedures, and resources for developing and maintaining vocational evaluation services.

324. Rehabilitation Client Services. 3 Hr. PR: REHB 320. The planning and management of client services focusing upon serving the public and private sectors. The human service and rehabilitation service systems will be explored considering both career and independent living issues.
374. *Field Work in Rehabilitation.* I, II, S. 1-6 Hr. PR: Consent. Supervised field work experience in rehabilitation settings to provide rehabilitation counseling students with a more adequate orientation to their profession.


472. *Counseling Practicum.* I, II, S. 1-4 Hr. PR: Graduate standing, liability insurance, and consent. Supervised experience in the application of counseling techniques in the rehabilitation process. Demonstration of high professional standards, counseling skills, and personal characteristics appropriate to the counseling relationship are essential.

475. *Clinical Practice.* 1-15 Hr. PR: Consent, following at least one academic semester in the classroom. Clinical practice (internship) in selected agencies, rehabilitation centers, clinics, or hospitals conducting an organized program of services for the physically, mentally, emotionally, or socially handicapped. Practice will be under direct supervision of faculty and agency personnel.

480. *Seminar.* I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

481 A-Z. *Special Topics.* I, II, S. 1-6 Hr. PR: Consent. A study of contemporary topics selected from recent developments in the field.

482. *Workshop in Rehabilitation.* I, II, S. 1-12 Hr. PR: Consent. Supervision in the counseling process; vocational evaluation in rehabilitation; utilization of rehabilitation research; contemporary issues in rehabilitation.

490. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Human Resources and Education. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492. *Directed Study.* I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. *Special Topics.* I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. *Seminar.* I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. *Graduate Seminar.* I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

498. *Thesis or Dissertation*. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. *Graduate Colloquium*. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s 799 or 899 *Graduate Colloquium*, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s program.

### Secondary Education

*Elizabeth A. Dooley, Department Chairperson, Educational Theory and Practice*

602 Allen Hall

**Degree Offered: Master of Arts**

**Program**

The Department of Educational Theory and Practice opportunities for graduate study and research leading to the degree of master of arts, for educators and other professionals with educational responsibilities. The primary purpose of the master’s program in secondary education is to provide increased knowledge, skill, and competence for licenses teachers working with students in a secondary school setting.

The graduate program in secondary education emphasizes both pedagogical and content knowledge.

**Master of Arts in Secondary Education**

The College of Human Resources and Education offers a master of arts program in secondary education for persons who teach or work in teaching-related situations with adolescents and adults. The purpose of the program is to provide academic experiences to increase skills in teaching and curriculum development and knowledge of a teaching specialization. The program provides the opportunity to specialize in working with students in junior, middle, and high schools. Electives are used to provide a solid basis in the subject area that the student teaches.

For further information on admission and program requirements, write Chairperson, Educational Theory and Practice, WVU College of Human Resources and Education, 602 Allen Hall, P.O. Box 6122, Morgantown, WV 26506-6122. All applicants must comply with the requirements of the College of Human Resources and Education.

### Secondary Education

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<tr>
<th>Hours</th>
<th>A*</th>
<th>B**</th>
<th>C***</th>
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<tbody>
<tr>
<td>C&amp;I 304</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>ED F 320 or 340</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Approved course in curriculum/instruction in student’s content field</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Approved course in general teaching strategies or General curriculum development</td>
<td>3</td>
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<td>ED P 320</td>
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<td>C&amp;I 391</td>
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<td>C&amp;I 497</td>
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</tbody>
</table>
Approved Education Electives .................................................. 0 ..... 3 .. 6-12
Approved Graduate Courses Outside of Education .................................................. 9 ..... 9 . 12-18

30 .... 30 ..... 36

* Thesis required.
** Problem required.
*** 36 semester hour course work program.

Note: New requirements for the master’s degree in secondary education are now being developed. Information concerning any new degree requirements will be available from the Department of Educational Theory and Practice.

An advisor will provide lists of courses which may be selected, usually courses in the student’s content speciality.

**Higher Education Curriculum and Teaching**

<table>
<thead>
<tr>
<th></th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Graduate courses in education</td>
<td>18-24</td>
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<tr>
<td>Required courses in education</td>
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<tr>
<td>ED F 320 or ED F 340</td>
<td>3</td>
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<tr>
<td>C&amp;I 307</td>
<td>3</td>
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<tr>
<td>C&amp;I 387</td>
<td>3</td>
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<tr>
<td>C&amp;I 489</td>
<td>3</td>
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<tr>
<td>ED P 300</td>
<td>3</td>
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<tr>
<td>Approved education electives</td>
<td>3-9</td>
</tr>
<tr>
<td>Graduate courses in an academic area</td>
<td>12-18</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
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</tbody>
</table>

A combination of undergraduate courses and courses in the graduate program is necessary to meet certification requirements.

**Curriculum and Instruction (C&I)**

300. *U.S. Education for International Students.* I. 3 Hr. PR: International students with graduate status and developing oral and written English skills. To assist international students in understanding the U.S. system of education. Included: dominant U.S. values related to education; structure of U.S. education at all levels; models and strategies; field trips; international comparisons.

301. *The Elementary-School Curriculum.* I, II, S. 3 Hr. PR: 20 hours of undergraduate credit in elementary education, or consent. Analysis of curriculum designs in elementary education with emphasis on methods and techniques of development.

304. *The Secondary School Curriculum.* I, II, S. 3 Hr. PR: High-school teaching experience or consent. Emphasizes socioeconomic and cultural influences on the curriculum; principles of curriculum development; curriculum building in the various teaching fields; techniques of experimentation and evaluation; and practice in curriculum building with special emphasis on unit construction.

306. *Curriculum for Middle Childhood.* I, S. 3 Hr. Survey course which includes: historical, social, and cultural influences on the curriculum; the learner characteristics; curriculum and instructional organization and their relationship to facilities available; evaluation and implementation of middle childhood curriculum.

308. *Introduction to Alternative Learning Environments.* I. 3 Hr. This course will provide opportunities for educators to explore and analyze the trends and issues in alternative learning environments in public education.

309. *Experiences in Alternative Learning Environments.* I. (Alternate years.) 6 Hr. PR: C&I 308, EDF 320, and consent. This course helps teachers to learn and practice skills that are needed to be an effective teacher in an alternative teaching environment.
312. *Early Childhood Curriculum.* I. 3 Hr. PR: (C&I 210 and C&I 211) or consent. Curriculum development for early childhood education pre-k to 4th grade, including social, creative, cognitive, physical, and academic goals. Societal, historical, and theoretical influences on early childhood curriculum are examined.

314. *Early Childhood Instruction.* I, II. 3 Hr. PR: (C&I 210 and C&I 211) or consent. Design of instruction for continuous improvement toward mastery of curriculum goals for early childhood education pre-k to 4th grade.

316. *Early Childhood Program Development and Evaluation.* I. 3 Hr. PR: (C&I 210 and C&I 211) or consent. Development, administration, and evaluation of facilities, programs, and support systems for early childhood education pre-k to 4th grade. Includes a focus on family connections and support systems related to early childhood classrooms.

317. *Language Arts in Early Childhood.* I, II. 3 Hr. PR: None. Designing instruction for an integrated development of writing, reading, speaking, and listening with an emphasis on literacy acquisition in early childhood education pre-k to 4th grade.

318. *Storytelling in Early Childhood.* I, II. 3 Hr. This course will assist students in telling, reading, and creating stories for children. Techniques, methods, and research effective in the art of storytelling will be examined and applied as they relate to total child development.

319. *Behavior Modification in Early Childhood Education.* I, II. 3 Hr. PR: None. Application of behavior modification principles to classroom management in early childhood education pre-k to 4th grade.

323. *Contemporary Issues in English Education.* I. 3 Hr. PR: Graduate standing. Provides the student with a knowledge of several contemporary issues in English teaching which have immediate and long-range ramifications for secondary-school English instruction. (1 hr. lec., 2 hr. sem.)

324. *Advanced Methods in English Education.* II. 3 Hr. PR: Graduate standing. (For classroom teachers of English). Will involve an analysis of recent trends and innovations in methodology. Readings and discussions will lead to the development of instructional strategies and units for secondary English classrooms. (1 hr. lec., 1 hr. lab., 1 hr. sem.)


337. *Mathematics in the Junior High School and Middle School.* II. 3 Hr. PR: 6 Hr. college mathematics or consent. Study of teaching of mathematics in the junior high school and/or middle school; application of mathematics content to teaching; instructional techniques and materials.


344. *Science in the Secondary School.* 3 Hr. PR: Consent. Nature and function of science in secondary schools supported by current research and development; includes analysis of structure and practice of science curriculum and instruction issues. (3 hr. lec.)
350. **Social Studies in the Elementary School.** I, II, S. 3 Hr. PR: 20 Hr. of undergraduate credit in elementary education, or consent. Comprehensive consideration of objectives, content, methods, including unit procedures; materials including objects, models, exhibits, and museum items, as well as textbooks, collateral reading, maps, and graphs; means of evaluating social growth and development.

354. **Social Studies in the Secondary School.** S. 3 Hr. PR: Consent. Nature and function of social studies in the secondary school; utilization of community, state, national, and world resources in teaching; selection of content for teaching purposes; curriculum construction with emphasis on resource and teaching units.

357. **Principles of Economic Education.** S. 3 Hr. Workshop for principals, teachers, and supervisors with emphasis on the economic structure of our society and methods of integrating economics into the school program. (Sponsored jointly by College of Human Resources and Education and College of Business and Economics.)

359. **Classroom Simulation Techniques.** II, S. (Alternate years.) 3 Hr. To provide experience in the use of learning games and simulations as an instructional technique and the opportunity to develop-under supervision-simulated activities and games to be used in a variety of learning environments.

361. **Computers in the Content Areas.** I. 3 Hr. Development of extensive curriculum units on the use of computers and other technologies in teaching and learning. Students will inform one another of various uses of computers in learning.

362. **Hypermedia in Learning.** I, II. 3 Hr. Survey of theory, research, and application of hypermedia and the authoring language Authorware.

363. **Software Development.** II. 3 Hr. Principles and models of software design and the authoring language HyperCard.

377. **Children’s Television: Problems and Potentials.** S. 4 Hr. PR: Consent. Provides parents and teachers with strategies for monitoring, evaluating, and directing television viewing habits of youth; pertinent research studies, school and community action programs, and home and school education programs are discussed and practiced.

380 A-Z. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

383 A-Z. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

385. **Supervision of Student Teachers.** I, II, S. 3 Hr. PR: Consent. For persons working or intending to work with education students in field experiences. Course focuses on the development and application of supervisory skills in effective guidance of student teachers and education students.

386. **Teaching Strategies for Middle Childhood.** II, S. 3 Hr. Surveys instructional strategies appropriate for facilitating preadolescent learning. Includes the role of the teacher; how the teacher uses resources within and outside the classroom as they relate to instruction of the learner, age 10-14 years.

387. **Advanced Teaching Strategies.** I, II, S. 3 Hr. PR: Graduate standing. Deals with methods as one critical variable in teaching. Examines ways and means to describe, plan the use of, implement, and evaluate teaching methods. Analysis and implementation of teaching methods and component skills of teaching.

388. **Classroom Organization and Management.** I, S. 3 Hr. Discusses research identifying components of classroom organization and environment which influence learning; reviews teacher behaviors and learning activities which research indicates lead to more effective teaching. Stresses implementation strategies relevant to classroom settings.
389. **Cultural Diversity in the Classroom.** I, S. 3 Hr. PR: Graduate standing or consent. Provides opportunities for educators to increase awareness of their own ethnic backgrounds, foster understandings of the interactive effects of gender, race, ethnicity and socio-economic status, and develop appropriate teaching materials and methods.

391 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

395. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)


407. **Theories, Models and Research of Teaching.** II. 3 Hr. PR: EDF 320 or consent. The theories behind selected models of teaching as well as research in teaching and best practices.

408. **Contemporary Determinants of Curriculum.** II, S. 3 Hr. PR: C&I 401 and EDF 340 or consent. Contemporary determinants of curriculum development.

409. **Curriculum Theories.** I, II, S. 3 Hr. PR: C&I 408 or consent. Theories underlying curriculum from the past to the present and projected to the future.

410. **Advanced Supervision.** 3 Hr. PR: Consent. Exploring theories, research, and practices of pre-service and in-service instructional supervision in the classrooms of novice and mature teachers. (Also listed as EDA 410.)

438. **Survey of Major Issues in Mathematics Education.** II, S. 3 Hr. PR: Consent. Individual and group research on selected topics in mathematics education.

457. **Social Studies Curriculum Development, K-12.** I. 3 Hr. PR: (C&I 301 or C&I 304) and (C&I 350 or C&I 354). Stresses the application of principles and procedures pertinent to the development of social studies programs in elementary and secondary schools. Strong emphasis will be placed on the analysis of current social studies curriculum materials.

460. **Planning Programs and Courses for Vocational Agriculture Department.** I, S. 2 Hr. PR: C&I 188. Gathering data, studying the farming problems of all-day students, young farmers and adult farmers, and planning the total program for the department.

471. **Assessing the Impact of Computer-Based Learning.** I. 3 Hr. Survey of the current findings in computer-based learning; couples statistical features and design scenarios.

487. **Teaching Effectiveness.** 3 Hr. PR: Advanced graduate standing or consent. Explores twentieth century attitudes toward effective teaching from a variety of perspectives; instigates teacher, learner, content and environment; examines how questions asked reveal thinking regarding interaction of elements of teaching/learning situation.

488. **Higher Education Curriculum.** II. 3 Hr. Analysis and evaluation of post-secondary curriculum with emphasis on organizing, translating, and applying findings. Topics include curriculum shaping forces; institutional patterns; policy, components and change; and principles and techniques of development, experimentation, and evaluation.
489. **Teaching in Higher Education.** I. 3 Hr. PR: Graduate standing. A general methods course involving instructional concepts and strategies for present prospective faculty in higher education. Comprehensive consideration of objectives, planning criteria and methods, teaching strategies, and evaluation in meeting the needs of adult learners.

490. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of curriculum and instruction. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

491 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. **Thesis or Dissertation.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

930. **Professional Development.** 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.
Social and Cultural Foundations
Sam F. Stack, Associate Professor
506 Allen Hall

The social and cultural foundations program in the College of Human Resources and Education offers opportunities for advanced graduate study. While the foundations program does not offer a degree, students are encouraged to minor in the area. The minors might consist of intense study in the areas of history, sociology, philosophy, comparative education, qualitative research, and policy analysis. The minor in foundations offers students the opportunity to tailor, in cooperation with the foundations faculty, a program to meet specific research interests.

Social and Cultural Foundations (SCFD)

300. Sociology of Education. I or II. 3 Hr. Education as a social institution; cultural and class influences on education; social roles and career patterns in the school system; the school and problems of the community. (Also listed as SOCA 232.)

320. Philosphic Systems and Education. I, II, S. 3 Hr. Examines different systems of educational philosophies focusing on aims, values, and criteria of education. Stresses the application of philosophic thinking to educational language, issues, methods, and subject matter.

340. History of American Education. I, II, 3 Hr. Major forces affecting U.S. educational developments at all school levels are examined in political, social, economic, and cultural context. Major historical periods include colonial, early national, pre/post civil war, and late nineteenth to mid-twentieth century.

350. Comparative Education. 3 Hr. PR: Graduate standing. Compares educational systems in selected foreign countries with the United States. Examines formal and informal educational influences in historical and contemporary contexts and in socioeconomic, political, and philosophical perspectives.

380. Special Problems. 1-6 Hr. PR: Consent.

385. Practicum. 1-12 Hr. PR: Consent.

390. Special Topics. 1-6 Hr. PR: Consent.

391. Advanced Topics. 1-6 Hr.

491. Advanced Study. 1-6 Hr. PR: Consent.

Special Education

Elizabeth A. Dooley, Departmental Chairperson, Educational Theory and Practice
602 Allen Hall
www.wvu.edu/~hre/departments/etp/Specialeducation/special_education.htm

Degrees Offered: Master of Arts, Area of Emphasis for Doctor of Education

The program leading to the M.A. in special education is designed to prepare master-clinical teachers of infants, toddlers, children, and adults with special needs and to provide initial training for the preparation of future supervisors and administrators of public-school special education programs. The College of Human Resources and Education awards the doctor of education which may include an emphasis in special education. The Ed.D. with emphasis in special education is an individually prescribed program designed to prepare persons for roles in special education personnel preparation, supervision, administration, and applied research. The program also prepares professionals for emerging roles associated with interdisciplinary services to persons requiring special education, resources, or support for enhanced development.
State certification standards require that students seeking licensure in special education (BD, LD, MI, gifted) hold general or vocational teaching certificates. Certifications in SPMI and preschool special needs do not require a general or vocational certificate.

**Application**

All applicants must comply with University, College, and program requirements. The teacher certification requirements are based on the 1985 Policy 5100 *Standards for Certification*.

**Program Options**

- Behavioral disorders (K-12)*
- Early intervention (pre-school special needs) (Pre K-K)
- Gifted education (K-8; 5-12)
- Learning disabilities (K-12)*
- Mental impairments (mild and moderate) (K-12)*
- Severe/profound handicapped

*Changes in certification requirements mean that K-12 certification will be rare. Consult with your advisor to determine the grade levels of certification for which you will be eligible.

**Admission**

All students seeking certification and/or a degree must be admitted into the special education program. Students are admitted as regular, provisional, or non-degree students as follows:

- **Regular Status** The individual who meets all admission requirements is granted regular status as a certification and degree seeking student.
- **Provisional Status** The individual who has an earned baccalaureate degree from a regionally accredited college or university but who does not meet admission requirements may be granted provisional status in the program. This status allows the student an opportunity to remediate deficiencies in grade-point average or other requirements in order to achieve regular status. Students who do not hold or qualify for a teaching specialization in general or vocational education may be admitted under this status, however the student must be able to demonstrate that he or she is capable of fulfilling the requirements of the degree under the thesis/project option. This decision will be made on an individual basis by program faculty. Contact the department for additional information. Deficiencies must be made up within the first 18 hours of program credit.
- **Non-degree Status** The individual who has an earned baccalaureate degree and teaching certificate from a regionally accredited college or university but who does not seek the master’s degree may be admitted as a non-degree student. This status allows the student to take courses for professional development and for additional professional endorsement.

Regular status admission to the programs occurs when the following admission criteria have been met.

- An earned baccalaureate degree from a regionally accredited college or university.
- A minimum grade-point average of 2.75.
- Teaching certification in general or vocational education (except in severe/multiple disabilities or early intervention).

**Certification**

All applicants for certification must pass the content specialization test in their area of specialization, the PPST basic skills test, the appropriate PLT test and the microcomputer module. Contact your advisor at the Office of Student Advisory to clarify requirements and for timelines you must meet for certification.
All prospective special education teachers, with the exception of severe/profoundly handicapped and pre-school special needs programs, must hold or qualify for a teaching specialization in general or vocational education recognized on the professional teaching certificate.

Students seeking certification must meet the following criteria.

Practicum
To be eligible for practicum, students must meet the following requirements.
- Admission to the special education program and completion of all required course work in the area of specialization with an overall GPA of 3.0.
- Application for practicum submitted prior to midterm of the semester immediately preceding the one for which practicum is planned.
- Applicable criteria for one of the currently available practicum options.

Consult program for a complete list of practicum eligibility requirements.

Performance is assessed during course work and practicum experiences. A student who fails to achieve an acceptable level of performance in practicum will have his or her individual performance deficits reviewed and will be given the opportunity to repeat practicum once; such repetition may occur following completion of an indicated remediation and/or additional instruction. A student who does not meet acceptable levels of performance in the second practicum assignment is asked to withdraw from the program.

Retention in a program requires an overall 3.0 GPA.

Graduation Requirements
To be eligible for graduation, students must meet the following requirements:
- Completion of all required courses in the program of study with an overall GPA of 3.0.
- Passing score on the content specialization test in their area of specialization (except severe/multiple disabilities), the PPST, the PLT, and the microcomputer module.
- Enrollment in course work during the semester in which graduation is planned.
- Application for graduation submitted prior to midterm of the semester for which graduation is planned.

Applicants interested in one of the department program areas should contact the department chairperson for specific information on schedule and location of courses.

Curriculum Core
Master of Arts (36 Semester Hours Minimum)

A. Core Area Requirements (BD, LD, MI) .................................................................. Hrs.

(12 semester hours in all master’s degree programs)

SPED 300 Introduction to Special Education .......................................................... 3
SPED 301 Special Education Curriculum and Methods ...................................... 3
SPED 302 Special Education Assessment ............................................................... 3
SPED 303 Classroom/Behavior Management:

Special Education .............................................................................................. 3

Total .................................................................................................................... 12

B. Teacher Certification Behavior Disorders Area Requirements

SPED 340 Introduction to Behavior Disorders ..................................................... 3
SPED 342 Teaching Strategies: Behavior Disorders ............................................ 3
SPED 487 Practicum: Behavioral Disorders ....................................................... 3-6

Total ................................................................................................................. 9-12
C. Teacher Certification Learning Disabilities Area Requirements
   SPED 330 Introduction to Specific Learning Disabilities ..................................... 3
   SPED 332 Teaching Strategies: Specific Learning Disabilities .............................. 3
   SPED 487 Practicum: Learning Disabilities .......................................................... 3-6
   Total ....................................................................................................................... 9-12

D. Teacher Certification Mental Impairments (Mild to Moderate) Area Requirements
   SPED 360 Introduction to Mental Impairments .................................................... 3
   SPED 362 Teaching Strategies: Mental Impairments ............................................. 3
   SPED 487 Practicum: Mentally Impairments ....................................................... 3-6
   Total ....................................................................................................................... 9-12

E. Teacher Certification Gifted Education Area Requirements
   SPED 300 Introduction to Special Education ........................................................ 3
   SPED 302 Special Education Assessment ............................................................ 3
   SPED 303 Classroom/Behavior Management ..................................................... 3
   *SPED 370 Introduction to Gifted Education ....................................................... 3
   *SPED 372 Teaching Strategies: Gifted Education ............................................. 3
   SPED 487 Practicum: Gifted Education ............................................................... 3-6
   Total ..................................................................................................................... 18-21
*These courses may be offered only in the summer.

F. Additional Requirements for Master’s Degree
   ED P 320 Introduction to Research ..................................................................... 3
   SPED 380 Culminating Project ............................................................................. 3
   SPED 382 Computer Applications in Special Education ................................ ..... 3
   Total ....................................................................................................................... 9
   Planned Electives—(minimum for degree) ............................................................ 3-18

G. Teacher Certification Severe/Profound Handicapped Area Requirements
   SPED 320 Curriculum: Severe Disabilities ............................................................ 3
   SPED 322 Characteristics and Methods: Physical Disabilities ............................. 3
   SPED 323 Family/Professional Collaboration:
   Developmental Disabilities .................................................................................. 3
   SPED 324 Classroom-based Communication Intervention:
   Developmental Disabilities .................................................................................. 3
   SPED 325 Secondary/Adult Programming:
   Severe Disabilities ............................................................................................. 3
   SPED 327 Assessment: Developmental Disabilities ............................................. 3
   SPED 328 Instructional Programming:
   Developmental Disabilities .................................................................................. 3
   SPED 329 Managing Challenging Behaviors: Severe Disabilities ....................... 3
   SPED 487 Practicum: Severe/Multiple Disabilities .............................................. 6
   Total ....................................................................................................................... 30

H. Teacher Certification Early Intervention/Preschool Special Needs
   Area Requirements
   SPED 319 Typical/Atypical Development: Early Intervention ............................. 3
   SPED 321 Curriculum: Early Intervention ........................................................... 3
   SPED 322 Characteristics and Methods: Physical Disabilities ............................ 3
   SPED 323 Family/Professional Consultation: Developmental
Disabilities ........................................................................................................... 3
SPED 324 Classroom-based Communication Intervention: Developmental Disabilities ............................................................ 3
SPED 326 Program Management: Early Intervention .................................................................................................................. 3
SPED 327 Assessment: Developmental Disabilities ........................................................................................................... 3
SPED 328 Instructional Programming: Developmental Disabilities ........................................................................................................... 3
SPED 487 Practicum: Early Intervention .................................................................................................................. 6
Total .................................................................................................................................................................................. 30
Planned Electives (minimum for degree) .................................................................................................................. 6

I. Problem or Thesis Area Requirements
ED P 320 Introduction to Research .................................................................................................................. 3
SPED 395 Problem in Special Education or
SPED 497 Research .......................................................................................................................... 3-6
SPED 391 Advanced Topics .......................................................................................................................... 3
Total .................................................................................................................................................................................. 9-12
Elective Requirements ............................................................................................................................ 12-15

Electives are to be approved by the student’s advisor.

Doctor of Education
All applicants must comply with the requirements the University, the College, and the program. Additional entrance requirements are as follows.
• Completion of a master’s degree and teaching certification in special education or disability services.
• Graduate grade-point average of 3.5.
• Three letters of reference addressing the candidate’s past performance and qualities which would make the person suitable for doctoral-level study.
• Two years of work experience in special education or disability services.
• Submission of Graduate Record Examination or Miller Analogies scores in support of potential for success in doctoral-level study.
• Well defined goal statement.
Admissions are open year round and inquiries should be addressed to Chairperson, Doctoral Admissions Committee, Department of Educational Theory and Practice, College of Human Resources and Education, West Virginia University, P.O. Box 6122, Morgantown, WV 26506-6122.

Program of Study
Programs of study comply with all applicable institutional requirements, but typically they include course work in excess of the minimum college requirements because of the clinical nature of special education. Programs are designed by the doctoral student, the student’s advisor, and the doctoral committee to best meet the student’s career goals.
The leadership training provided through this program of studies draws on the many available strengths and resources of a major university. Development of research skills is a major focus of the program, along with advanced training related to the education, development, and habilitation of persons with exceptional needs. Normally, students take course work in a number of programs and colleges in order to take advantage of available interdisciplinary resources. The program encourages study and involvement with faculty from a broad range of disciplines in order to best prepare doctoral students to meet their individual career aspirations as leaders in special education.
Special Education (SPED)

300. Introduction to Special Education. 3 Hr. Comprehensive overview of exceptionalities which require special education.

301. Special Education Curriculum and Methods. 3 Hr. Educational needs of students with mild/moderate learning problems in the categorical areas of retardation, behavior disorders, and learning disabilities.

302. Special Education Assessment. 3 Hr. Development of expertise in various forms of cognitive and effective assessment techniques, understanding psychoeducational needs of exceptional learners, and designing appropriate educational prescriptions from assessment protocols.

303. Classroom/Behavior Management: SPED. 3 Hr. Theory and classroom application of procedures to implement behavior changes in children with mild/moderate disabilities and/or problems; effective group and individual behavior management.

305. Math Mentally Retarded. 3 Hr.

306. Reading Mentally Retarded. 3 Hr.

319. Typical/Atypical Development: Early Interventions. II. 3 Hr. Characteristics of atypically developing children from birth through age six; causes and correlates of developmental delays and disabilities and at risk conditions during the prenatal, perinatal, and postnatal periods; and strategies for promoting child development in early intervention programs.

320. Curriculum: Severe Disabilities. 3 Hr. PR: Consent focuses on evaluation of curricula and programs for severe and multiple disabilities. Task analysis and programming of longitudinal skill sequences are discussed for the following skill areas: pre-academics, academics, motor, self-help, and social.

321. Curriculum: Early Intervention. II. 3 Hr. Design, implementation and evaluation of curricula and educational programs for young children with developmental delays and disabilities and at-risk conditions; programming of skill sequences in motor development, socioemotional development, cognitive development, and preacademic content areas. (No pre-requisites).

322. Characteristics and Methods: Physical Disabilities. 3 Hr. PR: Consent. Characteristics and educational implications of physical, neurological, and sensory impairments along with positioning, handling, and other management strategies, selection, design, and use of adaptive equipment, training programs for feeding, toileting dressing, and motor skills.

323. Family/Professional Collaboration: Developmental Disabilities. 3 Hr. Strategies and interpersonal skills for needs assessment, in-service training, conferencing, parental involvement, and interagency collaboration in educational programs for at-risk children, infants, and preschoolers with delays, and other persons with severe disabilities.


325. Secondary/Adult Programming: Severe Disabilities. 3 Hr. PR: Consent. Focuses on the education of secondary-level and adult severe and multiple disabilities. Methods and materials in areas of vocational training, home living, community living, recreational and leisure skills, and sex education.

326. Program Management: Early Intervention. 3 Hr. PR: Consent. Management skills to serve young children with disabilities, delays and at-risk based, self-contained, and mainstreamed models of early intervention.


330. Introduction to Specific Learning Disabilities. 3 Hr. PR: Consent. Historical, etiological, educational, and legislative aspects of, and multidisciplinary approaches to students with learning disabilities.

331. Evaluating and Teaching the Specific Learning Disabled. 3 Hr.

332. Teaching Strategies: Specific Learning Disabilities. 3 Hr. PR: SPED 330 and SPED 331 and consent. Curriculum planning, informal diagnosis, techniques, and teaching strategies in specific areas, opportunities to use strategies in student-designed programs.


341. Behavioral Dynmc Sch Cmmy. 3 Hr.

342. Teaching Strategies: Behavior Disorders. 3 Hr. Practical application of instructional methods for students with behavior disorders: assessment, management, and cognitive behavioral curriculum.

360. Introduction to Mental Retardation. 3 Hr. Mental retardation from historical, etiological, and educational perspectives; the impact of PL94-142 on special education. (3 hr. lec.)

362. Teaching Strategies: Mental Retardation. 3 Hr. Curriculum development based upon individual needs; application of classroom instructional methods for students with mild/moderate mental retardation.

365. Administration and Supervision of Programs for Exceptional Children. 3 Hr. PR: Consent. Administration and supervision with attention to: selection and placement procedures; facilities and equipment; local, state, federal legislation; and philosophy and recent research. (Consult program for course offerings.)

370. Introduction to the Gifted. 3 Hr. Introductory course concerning characteristics of gifted and talented children and implications these factors have for education. Definition, characteristics, history, and philosophy of special programs, identification procedures, and development of program prototypes.

372. Teaching Strategies: Gifted Education. 3 Hr. Development of qualitatively different educational experiences for gifted students. Models of differentiation in contents, process, and product in academic areas.

373. Professional Development. 1-6 Hr.

380. Culminating Project. 3 Hr. PR: EDP 320 and consent. Completion of master’s program; projects in applied research, curriculum development, or program design serve as exit examinations. (3 hr. lec).
381 A-Z. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

382. **Computer Applications in Special Education.** 3 Hr. PR: Consent. Implementing computer assisted instruction in the special education classroom; the computer as a tool to prepare and monitor instruction. (3 hr. lec.).

391 A-Z. **Advanced Topics.** 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

395. **Problem in Special Education.** 3 Hr. Research for master's degree in special education.

397. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

470. **Advanced Professional Knowledge: Special Education.** 3 Hr. Advanced foundations of special education and disability services; historical trends and philosophical perspectives; comparative international practices; policy formulation and analysis; and advocacy roles and activities.

471. **Personnel Preparation Strategies: Special Education.** 3 Hr. Design, delivery, and evaluation of preparation programs in special education and disability services; observation, supervision, and evaluation of student teaching and practicum experiences; issues and trends in special education personnel preparation.

472. **Professional Writing/Grant Writing: Special Education.** 3 Hr. Writing for professional publication in special education and disability services; review and editing of the written works of others; grant writing and review for private foundations or state and federal agencies.

474. **Analyzing/Interpreting Research: Special Education.** 3 Hr. Research literature in special education and disability services; formulation of research questions; translation of research questions into appropriate research designs and proposals.

478. **Technology Research/Training: Special Education.** 3 Hr. Review of research for computer-assisted instruction and applied technology with special populations; use of computer tools for research and productivity in special education and disability services; authoring computer-based materials with hypermedia programs.

479. **Current Issues/Trends: Special Education.** 3 Hr. Analysis, discussion, and research review of contemporary issues and trends in special education and disability services; selecting and defending a position on a variety of legal, ethical, social, and programmatic issues.

480. **Seminar.** I, II, S. 1-6 Hr. PR: Consent. Special topics concerned with the educational, sociological, and psychological aspects of special education.

483. **Internship in Professional Instruction.** 1-9 Hr. PR: SPED 471. Supervised experience in design, delivery, and evaluation of a college course in special education or disability services.

484. **Internship in Practicum Supervision.** 1-9 Hr. PR: SPED 471. Supervised experience in observing, supervising, and evaluating student teacher performance in a practicum setting in special education or disability services.

485. **Internship in Research.** 1-15 Hr. PR: SPED 474. Supervised experience in design, conduct, analysis, and report preparation of empirical, applied, or policy analysis research in special education or disability services.

487 A-Z. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in the college teaching of special education. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students no on assistantships to gain teaching experience. (Grading will be S/U.)
490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of special education. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not over assistantships to gain teaching experience. (Grading will be S/U.)

491. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. Directed Study. I, II, S. 1-6 Hr. Directed study of contemporary topics selected from recent developments in the field.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. Designed to permit graduate students an opportunity to present research to the assembled faculty and graduate study body. (Graded as S/U.)

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or the equivalent scholarly project, or a dissertation (Grading may be S/U.)

498. Thesis or Dissertation. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

900. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). The continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

930. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Speech Pathology and Audiology
Lynn R. Cartwright, Chairperson
805 Allen Hall
www.wvu.edu/~speechpa
Degree Offered: Master of Science

Admission
Students applying for programs leading to degrees in speech pathology and audiology must comply with general WVU requirements and the requirements of the College of Human Resources and Education and of the Department of Speech Pathology and Audiology.
The speech pathology and audiology graduate affairs committee accepts those applicants they believe will be successful in the graduate program. The number of applicants accepted depends upon the number of qualified applicants, the size of the speech pathology and audiology graduate faculty, and the facilities available for acceptable academic, clinical, and research training. A minimum overall undergraduate grade-point average of 3.0 is required for consideration for admission.

The master of science degrees in speech pathology and audiology are competency-based programs. Students are expected to achieve a minimum competency level of B or S in each required course. If a student receives a grade of C or U (or lower) in a required course, he/she must meet with his/her academic advisor and/or academic graduate committee before beginning additional course work. The course instructor in conjunction with the academic advisor or committee will recommend the appropriate steps to meet the minimum standards of professional competency.

Requirements

In addition to the requirements listed in the Human Resources and Education introduction, the M.S. in speech pathology and audiology requires the following.

• A minimum of 42 semester hours of approved graduate courses (including six hours of clinical practicum) in speech and hearing sciences, speech-language pathology, audiology, and other related areas to attain professional competence.
• Each semester students register for clinical practicum for a varying amount of credit that corresponds to their experience level. Six of these hours count toward the 42 semester hour requirement.
• A 3.0 grade-point average for all courses taken for credit toward the graduate degree.
• Successful performance during the last semester of graduate study on the NESPA examinations.
• Demonstration of professional competence in speech and/or hearing as measured by fulfillment of the academic and clinical practicum requirements established by the faculty.

A minimum of five consecutive semesters (including summer sessions) is required for master’s candidates with a background in speech and hearing. For candidates without a background in speech and hearing, a minimum of seven semesters is required for completion of the master’s degree.

The Department of Speech Pathology and Audiology is accredited by the Council of Academic Accreditation in Audiology and Speech-Language Pathology for both the speech-language pathology and audiology training programs. It has also been designated a program of excellence by the Board of Trustees.

Speech Pathology and Audiology (SPA)

285. Hearing-Impaired School Child. 3 Hr. Audiology in the public school classroom; remediation for the hearing-impaired child.


323. Advanced Study: Aural Rehabilitation. 3 Hr. Identification of candidates for aural rehabilitation; evaluating degree of handicap; introduction to speech, language, education, and academic achievement of hearing impaired children; auditory, visual, and combined methods of rehabilitation; aural rehabilitation counseling. (3 hr. lec.)

324. Central Auditory Disorders. 3 Hr. PR: SPA 322 or consent. Pathology and audiometric site-lesion testing of the central auditory nervous system. (3 hr. lec.)


326. Pediatric Audiology. S. 3 Hr. A study of the development of the auditory response and hearing problems of early childhood. Student will learn the construction and application of specialized assessment techniques suitable for the pediatric patient.

327. Pathologies of the Auditory System. S. 3 Hr. PR: Consent. Investigation of the nature and etiology of auditory system pathologies from the external ear to the auditory cortex and their audiologica manifestation.

330. Industrial and Environmental Audiology. II. 3 Hr. A study of various noise parameters, instrumentation for noise measurement, and measurement techniques. Effects of noise on man and industrial hearing conservation procedures discussed.

340. Experimental Phonetics. S. 3 Hr. PR: SPA 150 and SPA 151 or consent. Discussion of contemporary topics in the speech and hearing sciences, including acoustic, physiological, and perceptual phonetics.


343. Neurophys of Speech/Language. I. 3 Hr. PR: SPA 150 and SPA 258 or consent. General and typographic anatomy and physiology of CNS, with special attention to motor and sensory systems as they apply to speech, hearing, and language.


351. Advanced Voice Disorders. I. 3 Hr. PR: SPA 256 or consent. Advanced study of the vocal and respiratory mechanisms; epidemiology, classification, etiology, symptomatology, assessment, prevention, and remediation of voice disorders.

352. Advanced Stuttering Disorders. II. 3 Hr. PR: SPA 256 or consent. Advanced study of the symptomatology, epidemiology, etiology, research findings, assessment, prevention, and remediation of stuttering and related fluency disorders.

353. Adult Neurogenic Communication Disorders. II. 3 Hr. PR: SPA 343. Explores normal adult language processes and the effect of normal aging on communication. Advanced investigation of the etiology, diagnosis, nature, and therapeutic approaches of aphasia, agnosia, apraxia, dysarthria, dementia, right hemisphere impairment, and traumatic brain injury.

355. Advanced Study: Cleft Palate. II. 3 Hr. PR: SPA 255 or consent. Investigation of the etiology, diagnosis, nature, and therapy approaches of communicative disorders in persons with cleft palate.


357. Professional Issues. II. 2 Hr. PR: SPA 320 or consent. Discussion of contemporary professional issues in speech-language pathology and audiology.

361. Language Disorders in Children: Treatment. S. 3 Hr. PR: SPA 360 or consent. Treatment procedures for children with language disorders are presented. Clinician-oriented and client-oriented approaches are emphasized.

363. Dysphagia. 3 Hr. Assessment and treatment of feeding and swallowing disorders in children and adults.

371. AAC Technology. II. 3 Hr. PR: SPA 370 or consent. Provides training and experience in the utilization of augmentative/alternative communication technology for persons who are unable to meet their daily needs through natural modes of verbal, manual, or written communication.

381. Diagnostics in SLP. 3 Hr. PR: Consent. Discussion of issues related to the diagnosis of speech and language disorders, including interviewing, etiological factors, and the assessment process. Supervised clinical practicum that concerns the diagnosis of speech and language disorders.

382A. Advanced Practice/SLP 2. I, II, S. 3 Hr. PR: SPA 382 or consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with speech-language disorders.

382B. Advanced Practice/SLP 3. I, II, S. 4 Hr. PR: SPA 382A or consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with speech-language disorders.

382C. Advanced Practice/SLP 4. I, II, S. 4 Hr. PR: SPA 382B or consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with speech-language disorders.


383A. Advanced Practice/Audiology 2. I, II, S. PR: SPA 383 or consent. Supervised clinic practicum that concerns the evaluation and treatment of children and adults with hearing disorders.


384. Externship in Speech Pathology/Audiology. I, II, S. 1-9 hr. Supervised clinical practicum experience in selected work settings to provide students with a concentrated orientation to the professional work place. Coordination and evaluation is under the direction of faculty.

387 A-Z. Special Topics. I, II, S. 1-6 hr. A study of contemporary topics selected from recent developments in the field.


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Research. I, II, S. 1-15 hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U).

Thesis. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

Professional Development. 1-6 Hr. Courses intended for professional development and require students to possess a bachelor’s degree, but the course does not count toward graduation and is not applicable towards attaining a graduate degree. (Grading is S/U.)

Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

**Technology Education**

*David L. McCrory, Professor*

*509 Allen Hall*

*www.wvu.edu/~techedu/

**Degree Offered: Master of Arts**

**Area of emphasis for Doctor of Education**

The program includes the study of technology, the relation of technical systems to the civilization process, and the implications of changes in these systems on the quality of life and the education of citizens. Technology, in its simplest definition, is the study of human techniques for making and doing things, and is primarily concerned with the when, where, how, and why of such techniques, and interpreting them in a social context. The goal of the program is an increased level of understanding about technological systems in order to provide the basis for controlling, directing, and redirecting these systems for the benefit of humankind. Faculty and students in the program are committed to a continuing investigation of the impact of technology on people and society—including education and the environment. Because such an interdisciplinary study of technology dictates a wide exposure to other disciplines, students are encouraged to take advantage of educational opportunities in other departments within the University community.

Students from all regions of the United States and several other countries are engaged in graduate study at the master’s or doctoral level. Their undergraduate preparation varies, ranging from technical fields such as engineering, industrial technology, and safety studies to fields such as speech communication, art, and theology.

The program is involved in the Academic Common Market of the SREB (Southern Regional Education Board). Students from the southern region (thirteen southern states) should inquire about in-state tuition. Graduate assistantships are frequently available at both the master’s and doctoral levels. Information is available upon request.

**Admission**

All applicants must comply with the general WVU requirements and the requirements of technology education. Admission to the program is contingent upon assessment of official transcripts of all higher education work attempted, letters of recommendation, and the Miller Analogies Test or Graduate Record Examination.
In addition to the study of the interaction between technology and culture, the department has three major technical areas of concentration. Students are expected to focus their course of study on one of these areas:

- Communication and Information Systems—Study of visual, acoustical, telecommunication, and computer systems including the analysis of information transfer and its social/cultural impact.
- Transportation Systems—The study of air, space, terrestrial, and marine systems, including components and social, cultural, and environmental impacts.
- Production Systems—The study of manufacturing, construction, and processing systems, including the social/cultural impact of the industrial revolution, automation, and cybernation.

Students may also include in their plans of study special themes related to technology including appropriate technology, curriculum, and instructional design in the technologies, energy, environment, international development, public policy, technology assessment, technology and culture, and technology transfer.

**Master’s Areas of Emphasis**

The master’s degree enables students to select an emphasis of study based on their individual interest, goals, and objectives within the cohesive theme of the study of technology. The program culminates in a master of arts degree in technology education.

Each student’s program of study outlines the major courses and activities which the student pursues while engaged in graduate study. It is designed by the student in consultation with a faculty advisor. Programs of study are developed with concentrations in professional development, communication and information systems, or technology and society. Specific emphasis can be placed in areas such as appropriate technology and international or community development.

All master’s programs have requirements related to the discipline as well as areas of specialization. Typical master’s degree program requirements are ten core credits, 15 credits in the area of the specialization, and 12 credits in the area of research. Specific courses and activities in each of these categories are listed as follows:

### Communication And Information Systems

#### Core Courses

<table>
<thead>
<tr>
<th>Semester Hours</th>
<th>Required</th>
<th>Elective</th>
</tr>
</thead>
<tbody>
<tr>
<td>T E 281 Introduction to Technology</td>
<td>3</td>
<td></td>
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<tr>
<td>T E 344 Technology and Society</td>
<td>3</td>
<td></td>
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<tr>
<td>T E 384 Interdisciplinary Seminar</td>
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<tr>
<td>T E 496 Graduate Seminar</td>
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<td></td>
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<tr>
<td><strong>Total</strong></td>
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#### Specializations

<table>
<thead>
<tr>
<th>Semester Hours</th>
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<tr>
<td>T E 310 Contemporary Problems in Communication</td>
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<tr>
<td>T E 311 Technical Development in Communication</td>
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<tr>
<td>T E 365 Computer Mediated Communication</td>
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</tr>
<tr>
<td>T E 372 Development of Instructional Materials</td>
<td>3</td>
</tr>
<tr>
<td>T E 385 Practicum: (a) internship in business, or (b) curriculum development</td>
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<td><strong>Totals</strong></td>
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**6**
Research
ED P 320 Introduction to Research*** ................................................. 3
T E Advanced Studies .................................................................. 3
T E 397 Master’s Degree Research .............................................. 6
Total .......................................................................................... 12
Totals ........................................................................................ 31 .............. 6
Total Minimum Semester Hours ....................................................... 37

Professional Development
Core Courses
T E 281 Introduction to Technology ............................................ 3
T E 344 Technology and Society .................................................. 3
T E 384 Interdisciplinary Seminar .............................................. 3
T E 496 Graduate Seminar .......................................................... 1
Total .......................................................................................... 10

Specializations
T E 300 Contemporary Problems in Transportation and
T E 301 Technical Developments in Transportation or .......... 3
T E 310 Contemporary Problems in Communication and
T E 311 Technical Developments in Communication or .... 3
T E 320 Contemporary Problems in Production and
T E 321 Technical Developments in Production ..................... 3
T E 371 Technology Education Curriculum Development .... 3
Electives .......................................................................................... 6
Total ........................................................................................ 12 .............. 6†

Research
ED P 320 Introduction to Research† ............................................ 3
T E P 391 Advanced Studies ......................................................... 3
T E 397 Master’s Degree Research .............................................. 6
Total .......................................................................................... 12
Totals ........................................................................................ 31 .............. 6
Total Minimum Semester Hours ....................................................... 37

Technology and Society
Core Courses
T E 281 Introduction to Technology ............................................ 3
T E 344 Technology and Society .................................................. 3
T E 384 Interdisciplinary Seminar .............................................. 3
T E 496 Graduate Seminar .......................................................... 1
Total .......................................................................................... 10
Specialization

T E 245 Women in International Development .......................................... 3
T E 280A Shelter Design ........................................................................... 3
T E 280B Renewable Energy Systems ..................................................... 3
T E 320 Contemporary Problems in Production* .................. 3
T E 355 Technology and Environment ...................................................... 3
T E 357 Alternative Futures ....................................................................... 3
T E 390 A Technology and Community Development .......... 3
T E 390B Technology and Third World Development .......... 3
Total ...................................................................................... 9 ............... 6**

Research

ED P 320 Introduction to Research*** .................................. 3
T E 391 Advanced Studies ................................................... 3
T E 397 Master’s Degree Research ..................................... 6
Total .................................................................................... 12
Totals .................................................................................... 31 ............... 6
Total Minimum Semester Hours .............................................................. 37

* A minimum of six semester hours of graduate work in the department must be completed prior to taking this course.
** Three semester hours of the electives can be taken outside of the technology education department.
*** Or approved substitutions.

Doctor of Education

A plan of study leading to the doctor of education is designed by the student in conjunction with an advisor and faculty committee. The course of study is based on stated philosophy and objectives. Once the plan of study is approved, it becomes a contract between the student and the graduate faculty. Each personal program must include at least two continuous semesters of full-time, in-residence study. A minimum of 72 semester hours beyond the bachelor’s degree and a research dissertation are required.

The curriculum is oriented toward the development of professional competencies rather than specific course requirements. Generally, the competencies include the ability to interpret and to initiate scholarly research in the discipline of technology, a knowledge of significant technical developments in at least one area of concentration, an understanding of the historical development, cultural impact, and future implications of technology, the ability to develop effective instructional programs in the technologies, and the ability to integrate information from various sources in solving socio-technical problems.

Core Courses

T E 300 Contemporary Problems in Transportation and ...... 3
T E 301 Technical Developments in Transportation or ..... 3
T E 310 Contemporary Problems in Communication and .... 3
T E 311 Technical Developments in Communication or ... 3
T E 320 Contemporary Problems in Production and......... 3
T E 321 Technical developments in Production and ...... 3
T E 384 Interdisciplinary Seminar ..................................................... 3
T E 400 Technology: Its History and Development .......... 3
T E 404 Readings in Technology and Culture ....................... 3
T E 405 Innovation and Invention ..................................................... 3
T E 491 Advanced Studies .......................................................... 3
T E 496 Graduate Seminar ............................................................. 1
Technology Education (T E)

300. Contemporary Problems in Transportation. 3 Hr. Technical and social/cultural problems related to efforts in the development and utilization of new and improved modes of transportation.

301. Technical Developments in Transportation. 3 Hr. Selected developments in transportation technology. Principles, concepts, and processes fundamental to the design and development of transportation systems.

310. Contemporary Problems in Communication. 3 Hr. Technical and social/cultural problems related to efforts in the development and utilization of new and improved modes of communication.

311. Technical Developments in Communication. 3 Hr. Selected developments in communication technology; identification of principles, concepts, and processes fundamental to design and development of communication systems.

312. Distance Education. II. 3 Hr. This course addresses the nature of technical communication systems in distance education; their configuration and behavior, and the organizational factors associated with their development, acquisition, use, evaluation, and maintenance.

320. Contemporary Problems in Production. 3 Hr. Technical and social/cultural problems resulting from efforts in the development and utilization of new and improved methods of producing goods and services.

321. Technical Developments in Production. 3 Hr. Selected developments in production technology; identification of principles, concepts, and processes fundamental to the design and development of production systems.

365. Computer Mediated Communication. 3 Hr. Internet. This course will address the fundamental mechanics of using computers to access information networks for application in elementary, secondary, and higher education classroom instruction, as well as other education/business teaching/learning environment.

371. Curriculum Development and Physical Facility Design. 3 Hr. Development of curriculum components for the study of technology and the selection of facility design related to curricula requirements.

372. Development of Instructional Materials. 3 Hr. Design and development of media and instructional units for education in the technologies.

380. Rural Telecommunications. 3 Hr. Analysis of rural telecommunications infrastructure, policy, service providers, and agencies related to the role they play in strategic community development and education in rural America.

384. Interdisciplinary Seminar-Technology and Culture. 3 Hr. An analysis of the relationship between individuals, society, and technical systems. Guest presenters assist students in an examination of technology from the perspective of various disciplines.


390 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.


397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to these, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)
400. Technology: Its History and Development. 3 Hr. Major technical periods in the civilization process and the interrelationships of technological developments to the social/cultural milieu.

403. Design in Technology. S. 3 Hr. Study of the design of technical products and systems.

404. Readings in Technology and Culture. 3 Hr. Fundamental, historical, and contemporary ideas of the nature of technology as an area of created knowledge.

405. Innovation and Invention. 3 Hr. A study of the innovation and invention process.

444. Instructional Technologies Integration. 3 Hr. Development of advanced applications of high-end instructional technologies that support teaching/learning process. Participants will learn a range of technology-based teaching tools, understand the underlying learning theory and pedagogy, and develop instructional modules and prototypes.

450. Web-Based Instructional Design. 3 Hr. PR: TE 365 or consent. Address the concepts and applications of web-based instructional design as they direct the effective integration of internet activities and resources into a teaching/learning environment.

465. Internet for Educational Research. 3 Hr. An introduction and exploration into the use of computer mediated Communication (CMC) for conducting educational research and as a learning/teaching tool.

480. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of technology education. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


495. Independent Study. I, II, S. 1-6 Hr.

496. Graduate Seminar. I, II, S. 1 Hr.


499. Graduate Colloquium. 1-6 Hr.

930. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.
The master of science in journalism (M.S.J.) is a program of the School of Journalism, located on the downtown campus in Martin Hall, WVU's oldest building (constructed in 1870). Martin Hall was renovated, refurnished, and equipped in 1976-77.

Today, the school has modern broadcast news facilities and state-of-the-art electronic reporting and editing systems. The faculty, through their educational and professional backgrounds in mass communications studies and media-related experiences, are highly qualified to teach mass communications at both the undergraduate and graduate levels. About one-half hold terminal degrees.

The master’s program has granted more than 200 degrees since its first, in 1962. The School of Journalism, established in 1939 and one of the oldest in the United States, is one of approximately 100 such programs accredited by the Accrediting Council on Education in Journalism and Mass Communications. The school has a total of more than 4,000 graduates, the majority of whom have careers in newspaper journalism, broadcasting, advertising, public relations, or related fields.

Master’s Program

The master’s program offers students the choice of two tracks—the teaching-research track for persons who wish to go on for a doctoral degree, and the professional track for those who wish to enhance their professional opportunities in some area of mass communications.

The program, designed to help each student reach full potential as a practitioner, teacher, or scholar in mass communications, prepares a graduate not only for a first job—those who obtain the master’s degree should excel in the skills of the profession—but also for long-term productive career development through the study of mass communications and related fields.

The school is in the process of developing more specialized curricula for persons who aspire to become news or public relations specialists in such fields as business, energy and the environment, science, social relations, education, government, international affairs, and sports.

Assistantships

Assistantships available in and through the school each year pay stipends and usually provide tuition remission. Graduate assistants teach laboratories and assist professors with courses. Some work in media-related positions in other programs at WVU.

Admission

Those interested in learning about and applying to the master’s program should contact the dean, associate dean, or graduate director: School of Journalism, 112 Martin Hall, Box 6010, West Virginia University, Morgantown, WV 26506-6010, telephone: (304) 293-3505.
Graduate Faculty
† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.

Professors

Associate Professors
† Ralph E. Hanson, Ph.D. (Ariz. St. U.). Reporting, Editing, News and feature writing.
† R. Ivan Pinnell, Ph.D. (U. Denver). Public relations.
† Richard A. Schrieber, Ph.D. (U. Iowa). Creative advertising, Communication theory.

Assistant Professors
† Kurt Schimmel, D.B.A., (Cleveland St.). Research, Quantitative research, Advertising.

Emeriti Professors
Paul A. Atkins, M.A. (U. Va.).
Charles F. Cremer, Ph.D. (U. Iowa).
Guy H. Stewart, Ph.D. (U. Ill.). Dean.

The master of science in journalism (M.S.J.) program in the Perley Isaac Reed School of Journalism is designed to help persons involved in the various aspects of mass communication better understand and cope not only with the increased complexity of their own field, but also with fields outside mass communication.

The program, designed to help each student reach full potential as a worker, teacher, or scholar in mass communication, helps prepare a student not only for a first job—although students who obtain the M.S.J. degree should excel in the skills of the profession—but also for long-term and productive career development through the study of mass communication and related fields.

The M.S.J. program is intended to afford liberal arts graduates an opportunity to concentrate advanced study in mass communication; provide intensive study for persons who have undergraduate journalism training, but who wish to pool their journalistic skills with extensive knowledge in another substantive area or areas (e.g., political science, economics, science); and give persons who have had considerable professional experience an opportunity to broaden their academic bases through carefully selected advanced studies.

Admission
Admission to the M.S.J. program is limited to holders of baccalaureate or equivalent degrees from institutions of higher learning. Applicants should have combined verbal and quantitative scores on the Graduate Record Examination (GRE) Aptitude Test of at least 1000 and overall grade-point averages (GPA) of at least 3.0 on a 4.0 scale. Each applicant also should submit to the director of graduate studies in the School of Journalism a detailed essay explaining why the student wants to undertake graduate study in journalism, what the student hopes to get from the graduate journalism program, what the long-term goals are, and how graduate education in journalism can help achieve those goals.

An applicant who doesn’t meet the minimum GRE and/or GPA requirement(s) may be accepted only if the low GPA or GRE scores are offset by other factors. Excellent recommendations, unusual grading patterns (e.g., a steady rise of grades), an outstanding statement of purpose, or examples of professional accomplishment sometimes can offset low GRE scores or a low GPA.
Students applying for admission to the M.S.J. program are encouraged to send non-returnable supporting material to the director of graduate studies in the School of Journalism. Examples of published or unpublished writing, research, or photography, a detailed listing of professional media experience or other relevant job experience, and other supporting materials will be considered by the admissions committee. All other materials (e.g., transcripts, GRE scores, application forms) should be sent to the Office of Admissions and Records.

**Additional Requirements**

A student who does not have a bachelor’s degree in journalism or extensive professional experience must meet the following additional requirements.

- Must have completed a core of journalism courses, with subjects and grades acceptable to the School of Journalism, or
- Must complete undergraduate journalism and other courses to be prescribed by the School of Journalism, or
- Must demonstrate knowledge and competence in a number of journalism topics to be prescribed by the School of Journalism, or
- Must meet a combination of the foregoing requirements.

**Application**

All applications for admission are considered by the committee on graduate studies. The director of graduate studies advises all students about general problems and concerns, courses to take, projects to undertake, special training to obtain, and appropriate outside areas for study.

**Plan of Study**

Early in the student’s program, usually by the completion of six-to-nine credit hours of graduate course work, the student and the advisor draw up a plan of study to show the direction of the student’s course work. The plan may also indicate a general time frame anticipated for the completion of this work and may contain the direction and outline of the research problem to be undertaken. This plan of study becomes a part of the student’s record, and constitutes, with some degree of specificity, the terms and conditions that the student must meet for completing the degree requirements. Subsequent changes in the plan of study must be approved by the student and the advisor, and no graduate student may take a course S/U or pass-fail without written permission of the graduate director.

**Assistantships**

Approximately five assistantships and/or internships are available in and through the School of Journalism each semester. Graduate assistants teach laboratories and assist professors with their courses. Interns work in mass communication-related jobs on campus to obtain solid professional experience.

**Tuition Waivers**

Students receive stipends for the academic semester and may apply for tuition remission for the entire year. Although sometimes renewed for a second or third semester, assistantships and internships are granted for one academic semester. Graduate assistants and interns work an average of 20 hours per week during the academic year.

Persons who want to be considered for assistantships or internships should have their applications on file with the director of graduate studies in the School of Journalism before March 1.
Emphases
The School of Journalism offers two areas of emphasis—the teaching-research track and the professional track—within the M.S.J. program.

Teaching/Research The teaching/research track is generally a program for persons who want to go on for a Ph.D. degree, teach in a community college, or conduct research in some areas of mass communication. Persons in the track normally take research and theory courses both inside and outside the School of Journalism, statistics, and social science courses. The program culminates in a thesis, which is a scholarly study of an important aspect of mass communication.

Professional The professional track is designed primarily for persons who wish to become excellent practitioners in some field of mass communication and who have little desire to teach or become mass communication researchers. Persons in the professional track normally take communication and outside area courses that will help them become better practitioners. The program culminates in a professional project, which helps a student extend his or her knowledge about a given aspect of mass communication but which should be the sort of nonroutine project on which the student might work as a professional.

Time Limitation
Students must complete all requirements for their degrees, including either a thesis or professional project within four years of the start of the first course work in their programs.

Requirements
For the master’s degree in journalism, the student must meet the following requirements:

Teaching/Research A minimum of 30 semester hours of acceptable graduate credit, including a thesis for six hours of credit.
- As part of the 30 hours, a minimum of 18 hours, including the thesis, in School of Journalism courses.
- Included in the 30 hours, students may take nine hours in a minor conducted outside the School of Journalism.

Professional A minimum of 30 semester hours of acceptable graduate credit, including a professional project for six hours of credit.
- As part of the 30 hours, a minimum of 18 hours, including the professional project, in School of Journalism courses.
- Included in the 30 hours, students may take nine hours in a minor conducted outside the School of Journalism.

In either program, the candidate is allowed to take more than the minimum required number of hours.

All Students The following courses are required for all journalism graduate students:
- JRL 300 Introduction to Graduate Studies (no credit);
- JRL 304 Mass Media and Society (3 Hr.);
- JRL 320 Advanced Journalistic Writing and Research (3 Hr.); and
- JRL 401 Research Methods (3 Hr.).

In both programs, 60 percent of the graduate credits submitted for the degree must be in courses numbered 300 or above.

Course work must be completed with a minimum grade-point average of 3.0. The thesis and professional project are graded as S or U (satisfactory or unsatisfactory).

Except for thesis, professional project, and internship courses, no student will be permitted to take a course on a pass-fail or satisfactory-unsatisfactory grade basis without prior approval of the director of graduate studies.
Examination

The candidate for the master’s degree will pass an oral examination on the thesis or professional project. In addition, the thesis or professional project will be evaluated as a test of the candidate’s writing skill.

The kinds of courses taken in the M.S.J. program largely depend on each student’s background and interests. The program is intended to accommodate students of differing academic and professional backgrounds and interests.

A student typically will take all outside courses in one area (e.g., biology, political science, history), although the student may decide after consultation with the advisor to take courses in two or more outside areas. Courses outside the School of Journalism are selected by students in consultation with their advisors; outside courses selected are subject to the availability of space and prerequisite requirements in the offering departments.

Thesis/Professional Project

Each student must complete a thesis or professional project involving original work in the student’s area of interest. The student should have a thesis or professional project proposal written by the end of the semester in which the first 12 hours of course work are completed.

Each student is responsible for developing ideas for the thesis or project. Through consultations with members of the journalism faculty, the student determines faculty interests and areas of expertise, and ideas are refined to the point where the student has a significant and feasible idea in mind.

Advisory Committee

The student, with approval of the graduate studies committee, selects the journalism faculty member who would be best able to chair the advisory committee, subject to the agreement of the faculty member. If questions arise about a faculty member’s interest or knowledge, the student directly asks the faculty member or consults the academic advisor or other members of the graduate studies committee. With the chairperson, the student further refines the idea to a “preliminary proposal” stage, in which ideas and appropriate methodology are on paper, but not necessarily in formal proposal form.

After the student has written a preliminary proposal and selected a faculty chairperson, the student should select other members of the advisory committee, subject to their willingness to serve. The advisory committee must consist of not fewer than four members, one from outside the School of Journalism; two persons must be members of the WVU graduate faculty.

Proposal

At this point, students in the professional track must submit their proposals to the graduate studies committee, which must approve all professional project topics (but not research methods, specific research questions, or hypotheses, etc.). Students may attend the meetings at which their proposals are discussed. After securing graduate studies committee approval, students in the professional track schedule hearings with their guidance committees. Hearings with the guidance committees are required of all students (including those in the teaching research track).

Working under the guidance of the advisory committee, the student prepares a complete thesis or project proposal, extended from the preliminary proposal. Guidance for preparing a proposal is available from the director of graduate studies.
The student then has a consultative meeting, during which final revisions of and refine-
ments in the proposal are discussed with the members of the advisory committee. No-
tices of the public meeting (to which students are invited) must be placed in the boxes of
all members of the School of Journalism faculty and posted outside the dean’s office at
least two weeks before the meeting. One copy of the thesis or project proposal must be
placed on reserve in the journalism reading room.

Thesis Approval

After the consultation, the committee votes to accept or reject the proposal. The student
whose proposal is approved works closely with the committee in the completion of the
thesis or project. All committee members should be kept informed and consulted for advice
(as needed and as desired by them) as the thesis or project develops.

After each member of the advisory committee is satisfied with the work, a public oral
examination is scheduled. Two weeks’ notice must be given to all faculty of the School
of Journalism (notices should be placed in all faculty boxes and posted outside the
dean’s office). One copy of the final thesis or project must be placed on reserve in the
journalism reading room. Students also should make certain their shuttle sheets are
filed with the director of graduate studies in Journalism two weeks before the date of
the oral defense.

Only committee members may vote on acceptance or rejection of a thesis. A majority
vote is sufficient to approve the thesis, although a dissenting vote may be recorded.
Furthermore, at least three signatures (two of which must be signatures of graduate
faculty members) must be on the approval sheet. If one committee member is outvoted
and feels he/she cannot sign the approval sheet, he/she may resign from the commit-
tee. Such action may force a reconstitution of the committee and repetition of earlier
mentioned steps leading to the oral examination.

The chairperson of the advisory committee will decide whether final corrections (after the
oral examination) have been made properly, and he/she will check the style and form of the
final typed version. The MLA Stylesheet or other approved stylebook should be carefully
followed during preparation of a thesis or professional project. Four copies of the final thesis
or two copies of a project should be delivered to the School of Journalism.

Maintenance of Scholarship

All students are expected to maintain satisfactory progress toward the degree. A
student’s graduate record begins with the first course credited to the degree and in-
cludes all subsequent courses. All students must maintain a grade-point average of at
least 3.0 and complete all requirements within four years. Students who fail to meet this
standard will be dropped from the program.

Each student working toward the M.S.J. degree must register for at least one semes-
ter hour each regular (fall and spring) semester. This enrollment may be in course work
or in Journalism 497 Research.

International Students

Believing that mutual benefit is derived when students from other countries study in
the WVU School of Journalism, the School welcomes international students. At the
same time, the School recognizes that journalism, more than many other fields, re-
quires language skill. To profit by journalism study, international students must have a
ready understanding of English. They will be called on to follow rapid speech in inter-
views, press conferences, public addresses, and in the classroom, as well as to deal
with abstract ideas communicated in English. Award of the master’s degree in journal-
ism attests to the student’s facility in English. International students must maintain the
same 3.0 grade-point average required of other students.
Recognizing the language difficulty, the School of Journalism offers international students a transition semester. Unless students obviously are fluent in English and pass a test in which they demonstrate comprehensive knowledge of English fundamentals (grammar, punctuation, syntax, spelling), they will be offered a semester of undergraduate study (not for graduate credit), which will enable them to sharpen language skills. Such a transitional semester also will permit international students to study other selected courses in preparation for graduate study. These courses will help them adapt to the American system of journalism and to the new cultural environment.

Advertising (ADV)
201. Retail Advertising. I, II. 3 Hr. PR: ADV 115 and ADV 203. Principles and practices of retail advertising. Planning and budgeting; copy preparation and layout, evaluation and selection of media; outdoor advertising, specialty advertising.


210. Graphic Design. II. 3 Hr. PR: ADV 113. Design layouts for print media. Includes buying, supervising, and scheduling of art, typography, and print material. (2 hr. lec., 2 hr. lab.)

239. Seminar in Advertising Management Problems. I, II. 2 Hr. PR: Senior standing and major or minor in advertising. Application of the study of advertising research, law, and theory in the preparation of a national advertising campaign. Aspects of the campaign to cover marketing, research, creative, media, sales promotion, and presentation.

251. Direct Marketing. I, II. 3 Hr. PR: ADV 115 and ADV 203. An examination of the concepts, strategies and applications involved in direct marketing. Measurability, accountability, lists, data, and the integration of direct marketing programs into total marketing efforts are discussed.

259. Campaigns. I, II. 3 Hr. PR: ADV 115 and ADV 203 and JRL 221 and Senior standing. The capstone course in the undergraduate advertising curriculum. The course is designed to give students the opportunity to integrate all prior learning and apply it to the development of an advertising campaign for a real-world client. The actual output of the course will be a written plans book and a formal campaign presentation. (Should be taken the final semester before graduation.)

Broadcast News (BN)
287. Broadcast Journalism 2. I, II. 3 Hr. PR: BN 185 and BN 186. Continuation of BN 186. Television news, including electronic news gathering (ENG) and production of newscasts. (Lab fees will be assessed for this course.)

317. Contemporary Issues in Broadcast News. II. 3 Hr. Open to graduate journalism students and to journalism seniors with a 3.0 grade-point average, consent. In-depth study of contemporary issues in broadcast journalism; role of television news in society, fairness and objectivity in news presentation, economic and organizational influences, criticism of television news formats. Individual papers on selected topics.

391. Advanced Topics. 1-6 Hr.

397. Research. 1-15 Hr.

490. Teaching Practicum. 1-3 Hr.

492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.
494. **Special Seminars.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. **Research.** I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. **Thesis or Dissertation.** I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

499. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.

**Journalism (JRL)**

221. **Mass Communications Research Methods.** I, II, S. 3 Hr. A broad study of scientific and critical research methods as they apply to mass media practices; review of relevant sources for historical data gathering, readership, and audience analysis; evaluation of marketing and public opinion research. (2 hr. lec., 1 hr. field experience.)

231. **Multi-Media Production.** I. 3 Hr. PR: JRL 120. Preparation of two multi-media presentations; participation in a client-oriented project; color theory, slides, scriptwriting, research, and other aspects of visual communications. Supplies cost about $75.00. (Lab fees will be assessed for this course.)

241. **Internship.** I, II, S. 3 Hr. PR: Journalism majors only and foundation courses in one of the sequences. Full-time employment for a minimum of 10 weeks under a signed contract detailing the terms of the experience. (Graded pass/fail.)

300. **Introduction to Graduate Studies.** I. (No credit). (Required of all graduate journalism students.) Designed to orient students to graduate study. (Class meets once a week.)

304. **Mass Media and Society.** II. 3 Hr. (Required of all graduate journalism students.) Study of mass media and their role in and influence on society; includes analysis of the social, political, and economic determinants of media content and character.

320. **Advanced Journalistic Writing and Research.** I, S. 3 Hr. (Required of all graduate journalism students.) Study of advanced journalistic writing and research techniques. Students will practice the writing and research techniques on topics of their own choosing. Academic or popular topics may be selected.

339. **Seminar Adv Adv Manag Pr.** 3 Hr.

340. **Corporate Communications.** I. 3 Hr. Conferences to examine the synergistic effects of advertising, journalism, and public relations for different kinds of corporations. Team projects and presentations.

341 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.
351. *Journalism of the West.* 3 Hr. PR: Graduate status or consent. This course examines how journalistic writers have constructed a variety of images of the American West, both historically and in the present, through the use of readings, writing assignments, and web links.

355. *Women and Minorities in the Media.* 3 Hr. PR: Consent. Students explore the evolution of women and minorities in the media, from the 1960s to the present. Students critically examine how marginalized groups are depicted in mass media texts, such as television, movies, and magazines.

380. *Thesis or Dissertation.* I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)

389. *Ethics of Mass Communications.* I. 2. PR: Open to graduate journalism students and journalism seniors with a 3.0 grade-point average; consent. Introduction to ethical principles and their application in the development of mass media systems and societal changes; professional codes; case studies; current problems.

390. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Journalism. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistanships to gain teaching experience. (Grading may be S/U.)


401. *Research Methods.* I. 3 Hr. (Required of all graduate journalism students.) Study of quantitative methods common to research in communications. An introduction to sampling, measurement, analytic procedures, and data.

402. *Seminar in Research Problems.* II. 3 Hr. Advanced study of methodological techniques. Research project chosen from area of student's major interest. A written report of the study undertaken is required.

490. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

491. *Professional Field Experience.* I, II, S. 1-18 Hr. PR: Consent (may be repeated up to a maximum of 18 hours). Preamranged experiential learning program, to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development.

492. *Directed Study.* I, II, S. 1-3 Hr. Directed study, reading, and or research.


494. *Seminar.* I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

495. *Independent Study.* I, II, S. 1-3 Hr. Faculty supervised study of topics not available through regular course offerings.


498. *Honors.* I, II, S. 1-3 Hr. PR: Students in honors program and consent by the honors director. Independent reading, study, or research.

499. *Graduate Colloquium.* I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s *Graduate Colloquium,* to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**News-Editorial (N-E)**


225. *High School Publications Advising.* II. 3 Hr. PR: JRL 19 and ADV 113. (For students seeking Journalism certification.) Emphasizes writing styles, newspaper/yearbook layout, rights and responsibilities of the teacher, students, and school system. Enrollees will construct instructional portfolios based on research and classroom discussion concepts. (Offered alternate years.)


228. *Law of the News Media.* I, II. 3 Hr. (For Journalism seniors and graduate students.) PR: foundation courses for other sequences. The law as it affects the mass media. Considered are such areas as libel, privacy, public records, criminal pre-trial publicity, freedom of information, obscenity.

230. *Editorial and Critical Writing.* I. 3 Hr. PR: JRL 19 or PR 119. Students will analyze news issues, write editorials, and write editorial page columns. Students will also analyze the role and content of the editorial pages in contemporary newspapers.


397. *Research.* I, II. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research appear or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

490. *Teaching Practicum.* I, II. S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of News Editorial. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistanships to gain teaching experience. (Grading will be S/U.)

491. *Advanced Topics.* I, II. S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

492. *Directed Study.* I, II. S. 1-6 Hr. Directed study, reading, and/or research.

493. *Special Topics.* I, II. S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. *Seminar.* I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.
495. *Independent Study.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. *Graduate Seminar.* I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


499. *Graduate Colloquium.* I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s *Graduate Colloquium,* to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

**Public Relations (PR)**

222. *Public Relations Case Studies.* I, II. 3 Hr. PR: PR 124 and JRL 221 or consent. Seminar based on in-depth studies of public relations programs developed and applied in support of our institutions. Primary emphasis on successful campaigns, but unsuccessful efforts also will be examined for causes of failure.

312. *Fund Raising and Foundation Management.* I. 3 Hr. PR: Journalism graduate student or senior standing. Seminar. Studies in fund raising, alumni relations, and foundation management.


The West Virginia University School of Medicine shares excellent facilities in the Health Sciences Center with the other health-related professional schools of the University. The Ruby Memorial Hospital offers sophisticated medical technology, including magnetic resonance imaging, lithotripsy, laser surgery, and the necessary support technology. The Chestnut Ridge Psychiatric Hospital, the Mary Babb Randolph Regional Cancer Center, the Positron Emission Tomography, and the Mountainview Rehabilitation Hospital provide facilities totally dedicated to diagnosis, treatment, and research in their fields of specialization. Laboratories and teaching areas allow scientists to work toward their goals. Research areas of anatomy, biochemistry, cellular biology, medical technology, microbiology and immunology, pathology, pharmacology and toxicology, and physiology support study toward masters of science and doctor of philosophy degrees.

A combined M.D.-Ph.D. program is available to those students who show exceptional interest and scholarly promise. All of the admission requirements of the School of Medicine and the specific graduate program apply. Students may apply for the combined degree program in accordance with the application procedures for admission to the School of Medicine.

All basic science graduate programs require the submission of scores from the Graduate Record Examination and some may require scores from the applicable advanced test, but in no program are test scores the sole criterion for admission. Prospective graduate students are urged to initiate application for admission as early as possible. The first step is an inquiry to the department offering the program desired; the reply to such an inquiry will include instructions for applying to the particular program.

Initial application must be made for admission to graduate study on standard forms provided by the WVU Office of Admissions and Records. To transfer from one University school or department to another, students may initiate a transfer request by contacting the Health Sciences Center Graduate Programs Office or their advisors. The advisor must contact the Health Sciences Center Graduate Programs Office to complete transfer.

The West Virginia University School of Medicine is accredited by the Liaison Committee on Medical Education of the American Medical Association and the Association of American Medical Colleges.

**Graduate Programs**

Anatomy ................................................................. M.S., Ph.D.
Biochemistry (Medical) ........................................... M.S., Ph.D.
Community Health Promotion ........................................... M.S.
Exercise Physiology ................................................ M.S., Ph.D.
Medical Technology .................................................. M.S.
Microbiology and Immunology (Medical) .................. M.S., Ph.D.
Occupational Therapy ............................................... M.O.T.
Pharmacology and Toxicology ................................. M.S., Ph.D.
Physical Therapy ..................................................... M.P.T.
Physiology (Medical) .............................................. M.S., Ph.D.
Public Health ......................................................... M.P.H.
Graduate Faculty
† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.

Anatomy
Professors
†J. David Blaha, M.D. (U. Mich.). Orthopedics and tissue reactions to implants.
†James L. Culberson, Ph.D. (Tulane U.). Comparative vertebrate neuroanatomy of mammalian somatosensory systems.
†Rumy A. Hilloowala, Ph.D. (U. Ala.). History of medicine, Physical anthropology, Primatology (craniofacial structure).
†Gregory W. Konat, Ph.D. (U. Odense). Molecular biology of myelinogenesis in the central nervous system.
†Frank D. Reilly, Ph.D. (U. Cinn.). Neurohistochemical, biochemical, in vivo, and electron microscopic studies of mechanisms regulating hepatic or splenic blood flow and metabolism in conditions of health and disease.

Associate Professors
†Elizabeth R. Walker, Ph.D. (WVU). Science outreach activities to students at state, national, and international levels.

Assistant Professors
Ariel Agmon, Ph.D. (Stanford). Electrophysiology and morphology of developing cortex.

Biochemistry
Professors
†Diana S. Beattie, Ph.D. (U. Pitt.). Chairperson. Mitochondrial biogenesis, Mitochondrial metabolism, Heme biosynthesis, Interrelationship of heme and protein synthesis.
*Fred R. Butcher, Ph.D. (Ohio St. U.). Hormone action, Regulation of exocytosis, Calcium.
†John P. Durham, Ph.D. (Ohio St. U.). Control of cell proliferation.
†Marilyn I. Evans, Ph.D. (U. Wash.). Regulation of genes by estrogen.
†Charles L. Harris, Ph.D. (U. Ill.). Structure and function of transfer RNA, RNA synthesis in mammalian cells.
†Michael R. Miller, Ph.D. (Penn. St. U.). Regulation of DNA metabolism, DNA replication, Repair in mammalian and fish cells.

Associate Professors
†Lisa M. Salati, Ph.D. (U. Minn.). Regulation of gene expression by fatty acids.
Andrew K. Shiemke, Ph.D. (Oregon Grad. Inst.) Biological oxidation of methane and cyanide; Metalloproteins and bioinorganic chemistry.
Assistant Professors
†James E. Mahaney, Ph.D. (U. of Va.). Physical mechanisms of calcium transport regulations.
†Peter H. Mathers, Ph.D. (Calif. Inst. of Tech.). Molecular biology of the developing eye.

Community Medicine
Professors
Alan Ducatman, M.D. (Wayne St. U.), M.Sc. (City U. NY Hunter Coll. and Mt. Sinai, Sch.of Med. NY)
   Department chair.

Assistant Professors
Elizabeth Barnett, Ph.D., M.P.H. (U.N.C.). Prevention Research Center
Cathy Coyne, Ph.D. (Johns Hopkins U.), MPH (Boston U.).
Robert Pack, Ph.D., M.P.H. (U. of Ala.).
Judith Sedgeman, M.A. (Trinity Coll.).
Irene Tessaro, Dr. P.H., (U.N.C.).

Associate Professors
Edward J. Doyle, Jr., M.D. (George Washington U. Sch. of Med.), M.Sc. (U. of Southern Calif.).
   Clinical director, Institute of Occupational and Environmental Health.
Jacqueline J. Glover, Ph.D. (Georgetown U. & the Kennedy Institute of Ethics in Wash. DC).
   Center for Ethics and Law.
William D. Wyant, M.S.E, M.P.A. (WVU). Department associate chair Ed.D.

Instructors
Christopher Martin, M.D. (U. of Edmonton, Canada.)
Priscacah Mujuru-Simoyi, M.P.H. (Boston U., Mass.), SCM (Thanate and Kent and Canterbury School of Midwifery Eng.), SRN (Wycombe and Amersham Sch. of Nursing, Eng.).
   Institute of Occupational and Environmental Health.
Human Performance and Applied Exercise Science

Exercise Physiology

Professors
Christine Bayles, Ph.D. (Leeds U.). Renal and systemic hemodynamics.
†Robert Hoeldtke, M.D., Ph.D. (Cornell, MIT). Autonomic neuropathy, Diabetes.
†Irma Ullrich, M.D. (U. Minn.). Diabetes and exercise, Obesity, Osteoporosis.
†Rachel Yeater, Ph.D. (WVU). Division chair. Heart disease prevention, Cardiac rehabilitation.

Associate Professor
Matthew Boeghould, Ph.D. (U. of Ariz.). Regulation of the microcirculation; Microvascular alterations in hypertension.
†W. Guyton Hornsby, Jr., Ph.D. (LSU). Diabetes and exercise, Strength and conditioning.

Assistant Professors
Daniel Bonner, M.S. (WVU). Exercise physiology.

Occupational Therapy

Assistant Professors
Robert Chettlin, M.S. (WVU).
Melanie Collier, OTR/L, B.S. (U. of Penn.).
Anne F. Cronin, OTR/L, Ph.D. (U. of Fla., Webster U., U. of Missouri).
Randy P. McCombie, OTR/L, PhD (Loyola U. of Chi.). Division chair.

Physical Therapy

Professors
MaryBeth Mandich, Ph.D. (WVU). Interim chair, pediatric and neuroscience physical therapy.
John J Petronis, M.S. (WVU). Orthopedics physical therapy.

Assistant Professor
Scott Davis, PR, OCS (WVU). Orthopedical physical therapy.
Frances Huber, M.S. (U. Pitt.). Orthopedic physical therapy.
Corrie Mancinelli Ph.D. (WVU). Anatomy and orthopedic physical therapy.
Jane Pertko, B.S., CGS. (WVU). Geriatrics.
Anne Swisher, M.S. (UNC at Greensboro). Graduate and distance education coordinator, cardiopulmonary physical therapy, Exercise physiology.
Carol Waggy, Ph.D. (WVU). Anatomy and hand physical therapy.
Ralph Utzman, B.S. (WVU). Academic coordinator of clinical education, Junior level, Basic principles of physical therapy, Organization/management.

Medical Technology

Professors
*John G. Thomas, Ph.D. (Syracuse U.). Pathology, Virology, Microbiology.

Associate Professors
†Singanallur N. Jagannathan, Ph.D. (U. Bombay). Pathology, Biochemistry.

Microbiology

Professors
†John B. Barnett, Ph.D. (U. Louisville). Chairperson, Immunology, Mechanism of the effects of xenobiotics on the immune system.
†Nyles Charon, Ph.D. (U. Minn.). Medical bacteriology, Genetics and physiology of spirochetes.
Thomas Elliott, Ph.D. (UCSD). Bacterial gene expression.
†Kenneth Landreth, Ph.D. (U. Wash.). Immunology, Developmental immunobiology, Lymphopoiesis.
†Daniel M. Lewis, Ph.D. (WVU). Adjunct. Immunology, Mechanism of immunological reactions in the lung.
†Robert S. Pore, Ph.D. (U. Calif.). Mycology, Pathobiology of Prototheca sp. and the mycoses, Biotechnology projects include microbial bioconcentration and biopolymer production.
†William Sorenson, Ph.D. (U. Tx.). Adjunct. Role of fungi in occupational lung disease.
†Herbert A. Thompson, Ph.D. (U. Kans.). Medical bacteriology, Mechanisms of pathogenicity, Clinical microbiology.
†David B. Yelton, Ph.D. (U. Mass.). Microbial genetics, Molecular genetics, Bacteriophage.

**Associate Professors**
†Christopher Cuff, Ph.D. (Temple). Mucosal immunity of the gastrointestinal tract.
†Daniel Flynn, Ph.D. (NC St.). Tyrosine phosphorylation and signal transduction.
†James M. Sheil, Ph.D. (U. Ky.). Immunology, Mechanism of cytotoxic T lymphocyte-mediated antigen recognition and effector function.
David Weissman, M.D. (Nwstrn U.). Immunology, Pulmonary immune responses, Effect of airway disease and smoking on immune function of the lung.

**Assistant Professors**
Laura F. Gibson, Ph.D. (WVU). Cell and molecular biology, Developmental hematopoiesis, Bone marrow microenvironment, Stromal cell function in bone marrow.
Rosana Schafer, Ph.D. (Temple). Immunology. Immune response to infection by intracellular pathogens.

**Pharmacology and Toxicology**

**Professors**
†Charles R. Craig, Ph.D. (U. Wisc.). Interim associate dean.
†Jeffrey S. Fedan, Ph.D. (U. Ala.). Adjunct. Photo affinity labeling of receptors, Mechanisms of airway hyperactivity.
†David J. Smith, Ph.D. (WVU). Alterations induced by analgesics and anesthetics in monoaminergic and opiate neuronal transmission, Pain reactions.
†Robert E. Stitzel, Ph.D. (U. Minn.). Director of University Graduate Education, Interim chairperson.
†David A. Taylor, Ph.D. (WVU). Factors underlying cellular adaptation and its involvement in pathological conditions, Electrophysiology and signal transduction.
†Knox Van Dyke, Ph.D. (St. Louis U.). Chemiluminescence in human cells, Effects of antiinflammatory drugs on chemiluminescence.

**Assistant Professors**
Elizabet h Anne Johnson, Ph.D. (U. Cal., S. F.) Adjunct. Tumor tissue biology, Cell cycle regulating proteins, Tumor tissue markers.

William F. Wonderlin, Ph.D. (Johns Hopkins U.). Ion channel pharmacology, Physiological development of ion channels.

Research Assistant Professors
Peggy Biser, Ph.D. (WVU). Immunohistochemistry, Image analysis.

Physiology

Professors
Christine Baylis, Ph.D. (Leeds U.). Renal and systemic hemodynamics.
Paul B. Brown, Ph.D. (U. Chi.). Neurophysiology, Neuroanatomy.
Vincent Castranova, Ph.D. (WVU). Regulation of membrane transport.
Stanley Einzig, M.D. (UCLA), Ph.D. (U. of Minn.). Cardiovascular physiology.

Associate Professors
Matthew Boegehold, Ph.D. (U. Az.) Regulation of the microcirculation; Microvascular alterations in hypertension.
Gunter N. Franz, Ph.D. (U. Wash.). Voltage clamping of cell membranes and lung mechanics.
Wil E. Gladfelter, Ph.D. (U. Penn.). Emeritus. Hypothalamic control of the excitability of the motor system.
Ronald Millecchia, Ph.D. (Rockefeller U.). Neurophysiology.
Stanley Yokota, Ph.D. (U. Calif.-Riverside). Renal physiology, Microcirculation, Osmoregulation.

Assistant Professor

Research Associate Professor

Public Health (see Community Medicine)

Anatomy
Richard C. Wiggins, Chairperson of the Department, rwiggins@hsc.wvu.edu
Richard Dey, Graduate Program Coordinator, rdey@hsc.wvu.edu
4052 Health Sciences North
anatomy.hsc.wvu.edu

Degrees Offered: Master of Science, Doctor of Philosophy

General Description
The Department of Anatomy graduate program is committed to training competent researchers and teachers. Successful completion of degree requirements is based on research and scholarly achievement. Students will have opportunities to experience and acquire the skills needed for successful careers in biomedical sciences, including...
critical thinking, problem solving, and leadership. Research experiences include evaluating scientific literature, identifying critical scientific issues, experimental design, grant and manuscript writing, publication of scientific papers, and presentations at national meetings. Students with career interests in teaching will have the opportunity to gain experience in innovative teaching methods and techniques, including problem-based learning, computer-assisted learning, and integrated teaching approaches. The program emphasizes various aspects of biomedical sciences, including structural, cellular, molecular, and developmental biology. After completion of core courses, students conduct an original research project culminating in a dissertation (Ph.D.) or a thesis (M.S.).

Admission
In addition to the admission procedure of the University, the Department of Anatomy requires that each applicant complete a departmental application form available on the Internet at anatomy.hsc.wvu.edu/. After an application is favorably reviewed, applicants are invited for a personal interview whenever feasible. The applicant is admitted by the decision of the chair, the program director, and the admissions officer in consultation with the departmental graduate faculty.

Prerequisites
Candidates must hold a bachelor or masters degree. A strong background in biological sciences, inorganic and organic chemistry, physics, and mathematics is required. Under special circumstances, some course requirements may be fulfilled after admission to the program. A grade-point average above 3.0 is recommended. The general aptitude portion an advanced section of the graduate record examination are required.

Research
Interdisciplinary research projects in the department include: structure and transcriptional mechanisms controlling neural gene expression; molecular biology and molecular genetics of neural degeneration and regeneration in the central nervous system; developmental neurochemistry and environmental influences on brain development, especially nutrition; neuroanatomy and neurophysiology of somatosensory and auditory systems; structural plasticity of astrocytes and modulation of synaptic contacts in the central nervous system; development of synaptic connections in the neocortex; developmental genetics of behavioral rodent mutants; neural basis of pulmonary diseases, especially asthma and occupational/environmental diseases; mechanisms regulating microcirculation under pathophysiological conditions; orthopedic research on ligament healing and mathematically modeled joint motion; history of anatomy; postnatal craniofacial development.

Seminars and Journal Clubs
Students develop skills in formal presentation, critical thinking, and scientific analysis by participating in departmental seminars and journal clubs.

Course Requirements for the Ph.D. Degree
The first two years of the study consists of course work and introduction to research in one or more departmental laboratories. Completion of the two semester interdepartmental course in molecular and cellular biochemistry and one course in two of the following areas are required, gross anatomy, neurobiology, or microscopic anatomy. An approved course in biostatistics is also required. The selection of 10 credits in other courses in basic biomedical sciences (such as advanced molecular biology, advanced biochemistry, anatomy, neurobiology, pathology, immunology, virology, physiology, pharmacology, biostatistics, etc.) is required and allows substantial flexibility to tailor the
individual student's interests and research needs. The student, in consultation with a major advisor and an advisory committee, selects additional electives. Students must maintain a minimum 3.0 overall grade-point average.

**Ph.D. Candidacy**

To be admitted to candidacy for the Ph.D. degree, the student must pass a departmental preliminary examination and present plan for the dissertation research project for approval by the candidate's advisory committee.

**Ph.D. Dissertation**

To be recommended for the Ph.D. degree, each student must satisfactorily complete a dissertation based on original research and defend the dissertation at an oral examination. Success in the dissertation research is the core of the degree.

**Master of Science**

The master's program in anatomy is offered primarily for students in certain specialized fields, such as physical therapy or in a conjoint program in dentistry or medicine. Its purpose is to arouse curiosity in and provide direct experience of scientific investigation in anatomy. It is not necessary for the student to complete the M.S. degree in order to qualify for admission into the Ph.D. program, although the student may elect to complete the requirements for this degree in progress toward the Ph.D.

An applicant who shows a special need for the M.S. degree must generally be as well qualified as applicants to the doctoral program. The M.S. student must complete two courses in either gross anatomy, microanatomy, or neuroanatomy and six to nine hours of elective courses. A 2.75 grade-point average must be maintained. In addition to course work, the student must complete a thesis based on original research and defend the thesis at an oral comprehensive examination.

**Anatomy (ANAT)**

303. *Human Structure*. II. 1-17 Hr. PR: For medical and selected graduate students in the medical basic sciences with instructor consent. Integrated approach combining human gross anatomy, microanatomy, and embryology. Includes human cadaver dissection, microscopic anatomy of cells, tissues, and organs with application to human health and disease.

305. *Microanatomy*. (For medical students and a limited number of regular full-time graduate students in the medical basic sciences.) II. 5 Hr. PR: Medical student standing or consent of chairperson. Cells, tissues, and organs.

308. *Neuroanatomy*. (For students in physical therapy and a limited number of regular full-time graduate students in other health sciences.) II. 2 Hr. PR: Consent of instructor or chairperson. Gross and microscopic structure of the central nervous system.

309. *Microanatomy and Organology*. (For dental students and a limited number of regular full-time graduate students in the basic sciences.) I. 5 Hr. PR: Dental student standing or consent of chairperson. Cells, tissues, and organs.

312. *Special Topics in Anatomy*. I, II. 2-4 Hr. per sem. PR: Consent of chairperson or instructor. Different topics of current interest in anatomy that are not included in the regular graduate courses.

314. *Applied Anatomy*. I, II. 2-6 Hr. per sem. PR: Consent of instructor or chairperson. Detailed study of anatomy adapted to the needs of the individual student.

316. *Craniofacial Growth and Maturation*. I. 1 Hr. PR: Consent of instructor. The current concepts of craniofacial growth and maturation are presented and integrated for application to clinical problems.
318. **Oral Histology and Embryology.** (For dental students and a limited number of regular full-time graduate students in the medical basic sciences.) II. 2 Hr. PR: Dental student standing or consent of instructor or chairperson. Structure, function, and development of oral tissues.

319. **Advanced Head and Neck Anatomy.** 1 Hr. PR: Dental, medical, or graduate student in basic sciences, or consent. Head and neck craniofacial anatomy as it applies to specialties in dental or medical practice.

320. **Electron Microscopy.** II. 4 Hr. PR: Consent. (For graduate students, upperclass students in the sciences, medical students.) Interdisciplinary. Introduction to cell fine structure and function. Preparation of biological specimens for electron microscopy.

324. **Human Gross Anatomy.** (For dental students and a limited number of regular, full-time graduate students in medical basic sciences.) 7 Hr. PR: Dental student standing or consent of chairperson. Human anatomy including cadaver dissection for dental students. (4 hr. lec., 3 hr. lab.)

401. **Advanced Gross Anatomy.** I, II. 2-6 Hr. per sem. PR: ANAT 303 or 324 and consent of instructor or chairperson. Morphological and functional analysis of a selected region, with dissection.

402. **Advanced Developmental Anatomy.** II. 2-6 Hr. per sem. PR: ANAT 303 or 324 and consent of instructor or chairperson. Detailed developmental anatomy of the fetal period and infancy. With dissections and analysis of variations and malformations.

405. **Experimental Embryology.** II. 3 Hr. PR: Embryology and cellular physiology and biochemistry and consent of instructor or chairperson. Development, differentiation, and regeneration.

406. **Advanced Neuroanatomy.** I. 2-4 Hr. per sem. (Course may be repeated.) PR: CCMD 375 and consent of instructor or chairperson. Detailed study of selected areas of the nervous system.

408. **Histochemistry.** II. 3 Hr. PR: ANAT 305 or 309, biochemistry, and consent of instructor or chairperson. Histochemical theory and techniques.

451. **Advanced Microanatomy and Organology.** I, II, or S. 2-4 Hr. PR: ANAT 305 or 309, or BIOL 263 and consent of instructor or chairperson. An extension of the major topics included in ANAT 305 or 309. Special emphasis on recent contributions.

490. **Teaching Practicum.** I and II. 1-3 Hr. PR: Consent of chairperson. Supervised practice in college teaching of anatomy. (Graded as S or U.)

491. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent of chairperson.

492. **Directed Study.** I, II, S. 1-6 Hr. Directed study, readings, and research.

493. **Special Topics.** I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. **Seminar.** I, II, S. 1-6 Hr. Special seminars arranged for advanced graduate students.

495. **Independent Study.** I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. **Graduate Seminar.** 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program. (Graded S/U.)

497. **Research.** I, II, S. 1-15 Hr. PR: Consent of graduate committee. (May be repeated as needed with consent of Graduate Studies Committee.)
Grades Offered: Master of Science, Doctor of Philosophy

Graduate programs in the Department of Biochemistry are designed to assist students in the development of their own capabilities for independent thought and research. All students are provided with a strong biochemistry background; however, the program has sufficient flexibility to allow individual students to select advanced specialty courses in the basic sciences which are of particular importance to their career goals. Faculty research problems are of current interest and are diverse, reflecting the broad spectrum of areas encompassing biochemistry. A complete description of the graduate program and research opportunities can be found on the web at hsc.wvu.edu/som/biochem.

Prerequisites

A prospective graduate student should hold a bachelor’s degree with a science major and should have successfully completed courses in qualitative-quantitative chemical analysis, organic chemistry, calculus, physics, and physical chemistry. In some cases, a deficiency in the above may be made up after admission into the program.

Application Process

www.hsc.wvu.edu/som/biochem/graduate/gradprog.htm

Application is made by submission of the following items to the Department of Biochemistry.

- The completed departmental application form (sent on request).
- Three letters of recommendation from professors who can evaluate the student’s present abilities and potential.
- Official transcript of the applicant’s college grades.
- Official copy of Graduate Record Examination scores, preferably including an advanced subject test in chemistry, biology, or biochemistry, cell or molecular biology. Official copy of TOEFL scores for international applicants due to the sequence of courses, entrance in the fall is preferred. Application material and program details may be obtained by writing: The Graduate Coordinator, Department of Biochemistry, School of Medicine, West Virginia University, P.O. Box 9142, Morgantown, WV 26506-9142. They are also available on the web. The deadline for receipt of applications and supporting documents by the department is June 1; to be considered for financial support, applications should be submitted by February 1.

Course Work

To assure that all students become familiar with the basic principles of biochemistry, the first year of the doctor of philosophy (Ph.D.) program is devoted primarily to course work. In addition to formal courses during the first semester, students will undertake research in three laboratories of their choice. The laboratory experience is designed to introduce students to basic biochemistry research skills.
Research Advisor

Upon successful completion of the first year, students will choose a dissertation research advisor, at which time emphasis will be placed on research. During the second year, specialized courses in biochemistry will be offered as the students continue their research programs. During subsequent years, the students emphasize independent dissertation research, and a few formal courses are taken.

An essential component of the Ph.D. program is participation in departmental journal clubs and seminars. Both students and faculty participate; thus, students learn to organize effectively and present research material to a large group of people.

Completion of the Ph.D. program is realized when the student successfully presents the research results to both the Department of Biochemistry and a graduate advisory committee. Typically, four years are required to realize this goal.

Master of Science

The Department of Biochemistry offers the thesis master’s degree. This program involves completion of a master’s research project in addition to formal course work. Two to three years are generally required to complete the M.S. program.

Research

www.hsc.wvu.edu/som/biochem/faculty.htm


Biochemistry (BIOC)

www.hsc.wvu.edu/som/biochem/courses/courses.htm

Examples of current research include the following.

305. General Biochemistry. II. 5 Hr. PR: General chemistry, organic chemistry. (For dental students, others by consent.) General introduction to biochemical compounds, processes, and concepts as part of the training for the practice of dentistry, including passage of the Dental Board Exam. Four lectures and one clinical correlation or small group discussion per week.

351. Cell and Molecular Biochemistry 1. 4 Hr. PR: General Chemistry and Organic Chemistry. Part I of a two-semester graduate-level course that instills comprehension of biochemistry, molecular biology, and cell biology necessary for bio-medical research. This course covers biochemical principles, proteins, and molecular biology.

352. Cell and Molecular Biochemistry 2. 4 Hr. PR: BIOC 351 Part II of a two-semester graduate-level course that instills comprehension of biochemistry, molecular biology, and cell biology necessary for bio-medical research. This course covers metabolism, metabolic regulation, cell structure, and cellular communication.


491 A-Z. Advanced Study. I, II. 1-6 Hr. PR: Consent. Investigation in advanced subjects which are not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

492. Directed Study. 1-6 Hr.

493. Special Topics. 1-6 Hr.

494. Special Seminars. 1-6 Hr.

495. Independent Study. 1-6 Hr.

496. Graduate Seminar. I, II. 1 Hr. PR: Consent. Presentation and discussion of special topics.


498. Thesis. 2-4 Hr.

499. Graduate Colloquium. 1-6 Hr.

Center on Aging/Education Unit

The WVU Center on Aging, part of the Robert C. Byrd Health Sciences Center School of Medicine, reflects the University’s commitment to increased understanding of the aging process and support efforts to improve the quality of life for elderly persons, particularly the rural elderly of Appalachia. The Center on Aging promotes and coordinates interdisciplinary teaching, research, clinical service, and community outreach service in aging at WVU through the activities of its constituent units.

The Education Unit of the Center on Aging offers a graduate certification program in multidisciplinary gerontology for graduate students pursuing advanced degrees in other fields and special graduate students who are non-degree candidates.

The certificate program requires a minimum of 15 graduate hours including Fundamentals of Gerontology, which is cross-listed as biology 375 and psychology 375, and nine elective hours selected on the basis of appropriateness to the individual student’s goals from an approved pool of aging-related courses. All students will enroll for three hours in research and complete a required research project and paper that demonstrates linkage between gerontology and the student’s primary discipline. This capstone paper will be presented at a gerontology research seminar coordinated by the education unit.

Candidates for the graduate certificate must meet regular WVU graduate admission requirements and must be able to demonstrate elementary knowledge of gerontology, i.e. material covered in MDS 50 Introduction to Gerontology. Program participants must maintain a minimum grade-point average of 3.0 in certificate course work.

Other University units involved in teaching and research in human aging include the College of Agriculture and Forestry, the Eberly College of Arts and Sciences, the College of Human Resources and Education, the School of Nursing, the School of Pharmacy, the School of Physical Education, the School of Social Work, and Extension Services.

The education unit’s library collection augments the gerontology holdings of other campus libraries and is open to the entire community Monday through Friday, 8:30 a.m. to 5:00 p.m.
Further information, assistance in academic program planning in multidisciplinary gerontology, and registration forms may be obtained from the West Virginia University Center on Aging/Education Unit, Chestnut Ridge Professional Bldg, Suite 12, 918 Chestnut Ridge Road, P.O. Box 9127, Morgantown, WV 26506-9127. Telephone (304) 293-2081.

Gerontology (GERN)
291/391. Special Topics. I, II. 1-3 HR. PR: Consent. Special problems for undergraduate and graduate students working on certificate programs. Topics change from semester to semester. Students can enroll more than once.
Note: The Aging Woman is the topic for 291 section b and 391 section a.

Other Courses
Biology/Psychology (BIOL/PSYC)
375. Fundamentals of Gerontology. II. 3 HR. PR: MDS 50 or consent. An advanced multidisciplinary examination of current research in biological, psychological, and sociological issues of human aging and the ways in which these impinge on the individual to create both problems and new opportunities. (Also listed as PSYC 375.)

Counseling (COUN)
382. Special Topics. I, II, S. 1-6 hr. PR: Advanced standing and consent. Independent study and directed readings in specialized areas of counseling and guidance. (Some sections of COUN 382 have prerequisite requirements. Check with the instructor.)

For a complete listing of aging-related courses including graduate certificate electives, contact the Center on Aging, Chestnut Ridge Professional Building, 918 Chestnut Ridge Road, P.O. Box 9127, Morgantown, WV 26506-9127. Telephone (304) 293-2081.

Community Health Promotion
Kenard McPherson, Associate Chair for Educational Programs, Department of Community Medicine
3312 Health Sciences South
www.hsc.wvu.edu/som/cmmed

Degree Offered: Master of Science

The Community Health Promotion Program offers a master of science degree with majors in community health education and school health education. The community health education degree includes a clinical or research option. The major purpose of the program is to prepare health professionals to interface between communities and health care systems. Community health professionals serve as partners in the health care team and provide leadership in planning, developing, organizing, implementing, and evaluating health promotion programs.

Health promotion graduates may be employed as classroom health educators, community health educators, wellness center program managers, and health promotion educators in corporations, health agencies, or state/county health departments.

Admission
Applicants in either degree program must hold a bachelor’s degree from an accredited college or university, meet university admission standards, and demonstrate academic achievement in previous studies. Applicants for the school health education master’s program must hold a West Virginia teaching certificate or be in the process of obtaining certification.
Grade-Point Average
Applicants must have attained a GPA of 3.0 or better at the bachelor’s or master’s level to be accepted as a regular graduate student. Applicants with a GPA below 3.0 may be accepted on a provisional basis. Applicants meeting admission requirements may not be accepted if the maximum enrollment level has been reached. Preferential admission is given to the best qualified students fulfilling one or more of the following qualifications:
• At least two years of full-time work experience in the health or human services field.
• Breadth and depth of academic preparation in the biological or health sciences.
• Bachelor’s degree in health education or health promotion.

Application Deadline
Applicants are regularly admitted for the fall term. Preference is given to early applicants meeting all admission requirements by March 1 of the year in which the applicant intends to begin the master’s program. Under unusual circumstances, applicants may be admitted during the spring or summer terms.

Community Health Education Course Work Requirements
Students in the community health education master’s program must complete either a clinical or research emphasis. Students selecting the clinical emphasis complete 48 hours of study (36 hours of course work and a 12-hour practicum). Required courses are: CHPR 310, 311, 312, 314, 334, 335, 338, and 348. In addition to the 24 hours of required courses, students must take 12 hours of electives approved by the student’s faculty committee. They may choose from local areas such as substance abuse, injury control, wellness, evaluation, and epidemiology. The practicum, CHPR 350, is designed for students without professional health promotion-related work experience. For students without work experience, 12 hours of CHPR 350 is required. For those with two or more years of professional health promotion-related work experience, the work experience may be accepted in lieu of the practicum. Partial credit for CHPR 350 for students with less than two years of professional health promotion-related work experience may be determined by the student’s faculty committee.

Students selecting the research emphasis must complete 36 credit hours. Required courses are: CHPR 310, 311, 312, 314, 334, 335, and 397 (six hours). In addition to 24 hours of required courses, students must take twelve hours of electives from health promotion, epidemiology, statistics, research, and scientific methods courses. Electives must be approved by the student’s faculty committee.

A customized program may be designed for students with extraordinary professional experience or academic preparation. Such a program must be approved by the faculty committee and incorporated into the student’s plan of study before completing any course work toward the community health promotion degree.

The school health education master’s degree program is open only to students who hold a West Virginia teaching certificate or are eligible for certification. Students must complete 36 credit hours. Required courses are: CHPR 301, 307, 220 or 309, 310, 311, 312, 333, 334, 335, 338, 391 Advanced Topics: Health Concepts, and 391 Advanced Topics: Performance Assessment.

The graduate program in school health education is undergoing review at this time. For more up-to-date information, please contact the program director.
Community Health Promotion (CHPR)


309. Community Health: Drug Education. 3 Hr. PR: Consent. Designed to help students learn appropriate components of a drug education program, gain an understanding of drug taking in this society, and acquire insights into dependent behaviors.

312. Social and Behavioral Theory. 3 Hr. The focus of this course is on the role of individual behavior in attaining health. Integration of the concepts of health education and behavioral science to facilitate changes in health behavior is addressed.

314. Injury Prevention and Control. I. 3 Hr. The injury control problem is examined as a public health concern. Strategies and programs for injury prevention are studies for implementation with target groups who are overrepresented within the injury problem.

333. Foundations of Wellness. I. 3 Hr. Wellness is examined as a component of health promotion. A wellness lifestyle is fundamental to promoting a holistic wellness concept. Quality of life issues and programs are explored for a variety of audiences.

334. Health Promotion Research Methods. 3 Hr. PR: CHPR 310 and CHPR 311 and CHPR 312 or consent. This course is designed to introduce students to the basic elements of conducting effective evaluation of health promotion programs.

335. Management for Community/Public Health. 3 Hr. PR: CHPR 310 and CHPR 311 and CHPR 312 or consent. The course provides students with the essential skills to be effective managers in the community and public health environment.

338. Community Health Assessment/Evaluation. 3 Hr. PR: CHPR 310 and CHPR 311 and CHPR 312 or consent. This course is designed to convey theory and practice for developing health promotion programs. The course addresses assessment and evaluation principles appropriate to a wide range of health promotion programs.

342. Grant Writing for Health Educators. 3 Hr. PR: CHPR 312. This course addresses various components of the grant writing process, including collaboration, funding sources, proposal preparation, and grants management for the health professional.

348. Intervention Design. I, II. 3 Hr. PR or Conc: CHPR 338. Students will apply information from CHPR 338 and other foundation courses in designing a health promotion intervention for a health agency or enterprise. Students will defend their intervention before their faculty committee.

350. Practicum. 1-12 Hr. PR: Majority of plan of study completed and consent. Students are assigned to a field placement based on prior health promotion work experience. Under the supervision of faculty, students assume major responsibility for a program with a community health promotion organization.

391 A-Z. Advanced Topics. 1-6 Hr. PR: Consent.

397. Research. 1-15 Hr. PR: Consent. Research activities leading to thesis. (Grading may be S/U.)

490. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of health-related learning experiences.

491 A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation in advanced topics which are not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.
Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

Research. 1-15 Hr. PR: Consent. Research activities leading to dissertation. (Grading may be S/U.)

Thesis or Dissertation. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may be counted against credit requirements for master’s programs.

Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). The continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Community Medicine, Department of Educational Programs
Kenard McPherson, Ed.D., Associate Chair for Educational Programs
Melissa R. Baker, Senior Program Coordinator, Educational Programs
Alan Ducatman, M.D., M.S.C., Chair, Community Medicine
P.O. Box 9190
E-mail: chp@wvu.edu
www.hsc.wvu.edu/som/cmed/

Community Health Education
Melissa R. Baker, Senior Program Coordinator, Educational Programs, Department of Community Medicine
Kenard McPherson, Ed.D., Associate Chair for Educational Programs
Alan Ducatman, M.D., M.S.C., Chair, Community Medicine
Degree Offered: Master of Science

The Department of Community Medicine offers the master of science (M.S.) degree in Community Health Education. The major purpose of the program is to prepare health professionals to interface between communities and health care systems. Community health professionals serve as partners in the health care team and provide leadership in planning, developing, organizing, implementing, and evaluating health promotion programs.

Health promotion graduates may be employed as community health educators, wellness center program managers, and health promotion specialists in corporations, health agencies, or state/county health departments.
Goal of the M.S. Program
To prepare leaders who can develop effective programs in the community and public health work force to address health needs and maintain healthy lifestyles. Upon completion of the program, graduates will have the ability to:

• Identify relevant data sources and organize data for analysis and interpretation.
• Mobilize communities to address their health needs.
• Identify goals and priorities and use them in planning interventions appropriate for the target community.
• Assist the community in implementing health interventions designed to effect changes in knowledge, attitudes, or behavior by individuals or groups.
• Evaluate interventions to assess the degree to which communities have successfully addressed health priorities.
• Provide consultation and technical assistance to a wide array of audiences.
• Communicate effectively with target populations who need to enhance their health and with those segments of society who can influence public health.
• Manage prevention programs in a variety of settings including community, school, medical, and workplace.
• Identify health partners and develop networks to enhance the health of communities.

Admission Requirements
Admissions decisions will be based on an overall assessment of the adequacy of an applicant’s educational and professional preparation for the successful completion of the master of science degree program. Applicants must hold a bachelor’s degree from an accredited college or University; meet university admission standards; and demonstrate academic achievement in previous studies. Applicants are regularly admitted for the fall term. The preferred admission cycle is for fall, but applicants may be admitted during the spring or summer terms if they are highly qualified and the program has not reached capacity enrollment.

1. Applicants must complete a WVU application for graduate admission and attach a nonrefundable check for the amount specified on the application form.
2. Applicants must submit sealed transcripts of all college coursework to the Graduate Unit, West Virginia University Office of Admissions and Records.
3. Applicants must have attained a GPA of 2.75 or better on a scale of 4.0 at the baccalaureate level to be accepted as regular graduate students. Students with a GPA of 2.75 or better must submit: (a) a one-page (typewritten/wordprocessed) statement addressing their goals and interests in health, and (b) a resume (vitae) of all prior work experiences.
4. Applicants with a GPA below 2.75 may be accepted on a provisional basis. Previous work experience is a requirement for students admitted provisionally. Students seeking provisional admission must submit: (a) a one-page (type written/wordprocessed) statement addressing their goals and interests in health, (b) a resume (vitae) of all prior work, and (c) three reference letters addressing potential for academic success and effectiveness in prior work performance.
5. The ability to use computers in community/public health applications is a requirement for graduate work. It is the responsibility of students accepted into the M.S. program to become skilled in computer applications.
6. Applicants meeting admission requirements may not be accepted if program enrollment maximum level has been reached. Preferential admission is given to the best qualified students who have the following:
• At least two years of full-time professional work experience in the health or human services field.
• Bachelor’s degree in health promotion or health education.

Performance Standards
1. All students must maintain a 3.0 grade-point average in order to graduate with the master of science degree.
2. No more than two grades of C may be earned in required courses. A third C in a required course will result in dismissal from the program.
3. Courses in which the student receives a C, D, or F may be repeated. The grade made in the second effort is the final grade. Students will have only one opportunity to improve a grade.
4. A grade of I (incomplete) must be removed within one calendar year or it will be converted to a grade of F.
5. All students completing the CHPR master’s degree must sit for the CHES (Certified Health Education Specialist) examination given annually by the National Commission for Health Education Credentialing. This examination provides for nationally recognized individual certification as a community health education specialist.
6. All student’s must complete a program satisfaction survey before graduation.

Course of Study
Students in the M.S. program will select either a practicum track or a research track. The course of study includes a minimum 24 hours of required courses, nine hours of electives, and either a six-hour practicum (CHPR 350) or a six-hour thesis (CHPR 397), for a minimum total of 39 credit hours.

An alternative program may be designed for students with extraordinary professional experience or academic preparation. Such a program must be approved by the student’s graduate committee and incorporated into the student’s plan of study before completing any course work toward the M.S. degree.

Transfer Credit
1. No grade lower than a B may be transferred into the program.
2. No required courses may be transferred into the program.
3. All transfer electives must be approved in advance by the appropriate program committee(s). A maximum of six credit hours of approved electives may be transferred into the program.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Hrs.</th>
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<tbody>
<tr>
<td>PUBH 301</td>
<td>Introduction to Community and Public Health</td>
<td>3</td>
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<tr>
<td>PUBH 311</td>
<td>Applied Biostatistics for Health</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 312</td>
<td>Social and Behavioral Theory</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 325</td>
<td>Biology, Society, and Human Health</td>
<td>3</td>
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<tr>
<td>CHPR 334</td>
<td>Health Promotion Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 335</td>
<td>Management for Community and Public Health</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 338</td>
<td>Community Health Assessment and Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 348</td>
<td>Intervention Design</td>
<td>3</td>
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<tr>
<td>CHPR 350</td>
<td>Practicum</td>
<td>6</td>
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</tbody>
</table>

OR

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<tr>
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<tbody>
<tr>
<td>CHPR 397</td>
<td>Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

Community Health Education 441
For information on a related program in the Department of Community Medicine, see the listing for the master of public health degree program.

The Department of Community Medicine Educational Programs are currently undergoing revision. The stated admission requirements are subject to change. Please consult the Department of Community Medicine Educational Programs Policy Handbook for current program requirements. To obtain a copy, contact the Department of Community Medicine Educational Programs office at 293-1048 or visit our website at www.hsc.wvu.edu/som/cmed/resources-fr.htm.

**Public Health**

Melissa R. Baker, Senior Program Coordinator, Educational Programs Department of Community Medicine

Kenard McPherson, Ed.D., Associate Chair for Educational Programs

Alan Ducatman, M.D., M.S.C., Chair

P.O. Box 9190

E-mail: mph@wvu.edu

www.hsc.wvu.edu/som/cmed/mph/index.htm

**Degree Offered: Master of Public Health**

The field of public health encompasses a number of specific disciplines whose mission is to improve quality of life and health outcomes among all members of a community. Public health strategies typically are implemented at a broad societal and population level—for example, environmental regulations, water quality control, immunization programs, and health education initiatives.

**Goals of the M.P.H. Program**

- To improve the education and professional impact of public health professionals in West Virginia.
- To improve the cost effectiveness, quality assurance, and impact of population-driven health policy decisions in West Virginia.
- To increase the interdisciplinary collaboration among health care personnel in West Virginia.
- To measure and improve the health status of West Virginians.

Our program offers a generalist M.P.H. degree that prepares students for professional positions in a wide range of settings including local, state, and federal public health agencies, community-based organizations, consumer groups, and private enterprise. Required and elective courses cover the five core areas of public health.

- Biostatistics
- Epidemiology
- Environmental Health Science
- Behavioral and Social Science
- Health Services Administration

Our program is accredited by the National Council on Education in Public Health (CEPH).

**Admission Requirements**

The M.P.H. program seeks students with a strong, genuine commitment to a career in public health. An M.P.H. degree is appropriate for physicians, nurses, nutritionists, and other health care professionals with a strong interest in preventive medicine and community health. We welcome applications from both mid-career professionals and from students who have recently completed the bachelor’s degree. Physicians may also apply to the Occupational Medicine Residency Program, designating the M.P.H. as part of their residency.
Admissions decisions will be based on an overall assessment of the applicant’s demonstrated commitment to public health and her/his educational and professional preparation for the successful completion of the master of public health degree program. All aspects of an applicant’s record, such as professional experience and career achievements, will be considered. The admissions committee reviews applications on a rolling basis. Contact the Department of Community Medicine for current application deadline dates.

Applicants to the M.P.H. program must:
1. Submit an application for graduate admission to West Virginia University and attach a nonrefundable check for the amount specified on the application form.
2. Submit sealed transcripts of all college coursework to the Graduate Unit, West Virginia University Office of Admissions and Records.
3. Hold a bachelor’s degree from an accredited college or university and a minimum grade-point average of 2.75 on a scale of 4.0.
4. Submit scores for the general test of the Graduate Record Examination (GRE).
5. Complete an official M.P.H. program application form.
6. A minimum score of 550 on the TOEFL (Test of English as a Foreign Language) exam is required for all international applicants and for all applicants whose first language is not English.
7. The ability to use computers in public health applications is a requirement for graduate work. It is the responsibility of students accepted into the M.P.H. program to become skilled in computer applications.

Performance Standards
1. All students must maintain a 3.0 grade-point average during their course of study.
2. Grades lower than C will not count toward fulfilling degree requirements.
3. A faculty review is required if two grades of C or lower are recorded. Three grades of C or lower will result in academic suspension or termination from the program.

Course of Study
The course of study includes a minimum 24 hours of required courses, nine hours of electives, and a six-hour practicum (PUBH 389), for a minimum total of 39 credit hours.

Required Courses

<table>
<thead>
<tr>
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<tr>
<td>PUBH 311</td>
<td>Applied Biostatistics for Health</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 312</td>
<td>Social and Behavioral Theory</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 325</td>
<td>Biology, Society, and Human Health</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 330</td>
<td>Policy and the Health System</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 335</td>
<td>Management for Community and Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 350</td>
<td>Environmental Health</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 360</td>
<td>Public Health Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 389</td>
<td>Practicum</td>
<td>6</td>
</tr>
</tbody>
</table>

For information on a related program in the Department of Community Medicine, see the listing for the master of science degree in Community Health Education.
The Department of Community Medicine Educational Programs are currently undergoing revision. The stated admission requirements are subject to change. Please consult the Department of Community Medicine Educational Programs Policy Handbook for current program requirements. To obtain a copy, contact the Department of Community Medicine Educational Programs Office at 293-1048 or visit our website at http://www.hsc.wvu.edu/som/cmed/edhome.htm

Public Health

301. *Introduction to Community/Public Health*. 3 Hr. An introduction to the field of community/public health with an emphasis on the relationship and role of public health to other disciplines in resolving public health problems.

311. *Applied Biostatistics for Health*. 3 Hr. Statistical models, distributions, probability, random variables, tests of hypotheses, confidence intervals, regression, correlation, transformations, F and Chi-square distributions, analysis of variance and multiple comparisons. For students in the MPH and CHPR programs.

315. *Nutrition/Chronic Disease Prevention*. 3 Hr. This course addresses the role of nutrition and food components in primary, secondary, and tertiary disease prevention. Through cooperative learning, students will practice critical thinking skills in the study of nutrition in chronic disease prevention.

317. *Ethical/Legal Issues in Public Health*. 3 Hr. PR: PUBH 301. This course provides an opportunity for sustained reflection on the many ethical and legal issues involved in public health. Ethical and legal frameworks will be identified and applied to the analysis of critical issues.

318. *Health Services Research Methods*. 3 Hr. PR: PUBH 301. This course covers the key issues facing the health care system today and teaches the basic skills needed to evaluate health care programs addressing these issues.

325. *Biology, Society, and Human Health*. 3 Hr. This course will cover fundamental biological knowledge about disease developments in individuals and populations. The interaction of social and physical environments with physiological, psychological, and emotional characteristics is emphasized.

330. *Policy and the Health System*. 3 Hr. PR: PUBH 301. Overview and analysis of the development of health-related public policy in the United States, with particular emphasis on aging populations, policy development, process, and implementation on the state and national levels.

350. *Environmental Health*. 3 Hr. A review of issues illustrating the responsibilities and roles of the public health workplace in identifying, managing, and preventing casualties from environmental causes in air, water, soil, food, pesticides, and related subjects.

360. *Public Health Epidemiology*. 3 Hr. Epidemiological study of populations in terms of morbidity, mortality, and other vital statistics in WV. Scientific appraisal of public health problems and analysis of data will be emphasized. Evaluation of current literature is included.

389. *Practicum*. 3-9 Hr. Under guidance of faculty and field counselors, M.P.H. students will assume major responsibilities for intervention and practice projects during a semester in a community-based organization.

391 A-Z. *Advanced Topics*. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.
Department of Human Performance and Applied Exercise Science

Three divisions make up the Department of Human Performance and Applied Exercise Science. The divisions are:

- **Division of Exercise Physiology** *bachelors, masters, and doctoral programs*
- **Division of Occupational Therapy** *entry-level masters program*
- **Division of Physical Therapy** *has an entry-level masters program*

The chairs of all three divisions make up an executive council to govern the department.

**Division of Exercise Physiology**

*Rachel Yeater, Chair Division of Exercise Physiology*

8707D HSC

[www.hsc.wvu.edu/som/ep](http://www.hsc.wvu.edu/som/ep)

**Degrees Offered: Master of Science, Doctor of Philosophy**

The exercise physiology master of science program prepares students for careers in adult fitness, hospital- or corporate-based wellness programs, or cardiac rehabilitation. Students specialize by completing a 200-hour internship. A thesis option is also available.

**Admission**

Fifteen students are accepted once a year (by May 30) on a competitive basis. Applicants must have a baccalaureate degree in an allied field from an accredited institution with a minimum undergraduate grade-point average of 2.75 (based on A = 4.0 grade points). Three letters of reference are required. Applicants are selected for admission on the basis of scholastic standing (special attention is given to science grades), and recommendations. The graduate application, three letters of reference, and college transcripts must be submitted by March 15.

**Required Courses**

A minimum of 36 semester hours of credit is required for graduation. The following courses or course equivalents are required:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>ATTR 219 Gross Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>PSIO 241 Mechanisms of Body Function</td>
<td>4</td>
</tr>
<tr>
<td>PHAR 249 Drugs and Medicines</td>
<td>3</td>
</tr>
<tr>
<td>HN&amp;F 310 Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>SS 315 Research Methodology in Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 367 Theories of Sport Physiology</td>
<td>3</td>
</tr>
<tr>
<td>STAT 311 Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 370 Advanced Study (Laboratory Techniques)</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 371 Advanced Study (Stress Testing)</td>
<td>3-6</td>
</tr>
<tr>
<td>EXPH 368 Advanced Study (Diabetes and Exercise)</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 372 Advanced Study (Internship)</td>
<td>6</td>
</tr>
</tbody>
</table>

**OR**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPH 397 Research</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 498 Dissertation/Thesis Seminar</td>
<td>3</td>
</tr>
</tbody>
</table>

*Exercise Physiology*
Doctor of Philosophy

Program Features

1. Admissions and Performance Standards
   Students must have a master’s degree with a minimum graduate grade-point average of 3.0 or they must complete the equivalent of the courses required for the M.S. during the course of the doctoral curriculum. In addition, applicants must submit two letters of recommendation from professors involved with the student’s academic work, an official transcript of all college work, and the results of the Graduate Record Examination. The minimum recommended score on the Graduate Record Examination is 1200 for the verbal and quantitative scores combined. However, students will not be accepted nor denied acceptance based solely on test scores. An interview with the program faculty is required. Students will be selected by the exercise physiology admissions committee.

   Grade requirements for the doctoral major in exercise physiology include the following.
   b. No more than one C will be allowed in any exercise physiology course.
   c. No grade less than C will be allowed in any of the courses on the plan of study.

   Failure to meet these requirements will result in dismissal from the program. The exercise physiology graduate faculty reserves the right to retain a student in the program if special circumstances exist. In this case, the graduate faculty and the doctoral committee will review the student’s record and render its decision by majority vote.

   The student may appeal a decision for dismissal by writing an appeal to the chair of the Division of Exercise Physiology. The division chair will convene a meeting of the exercise physiology graduate faculty and the student’s doctoral committee members if a doctoral committee had been formed prior to the student’s dismissal. The student may appear at the meeting to make his/her appeal. The graduate faculty and doctoral committee members will review the appeal and render a decision by majority vote.

2. Program Requirements
   Students will be assigned a provisional advisor upon acceptance into the program. By the end of the first academic year the student must choose a committee chair. The student and chairperson will invite other faculty members to serve on a graduate committee. All members of the committee must be acceptable to both the student and the chair. The committee and student will develop a plan of study that will include required course work for the program. The committee will consist of at least five faculty, the majority of whom hold regular graduate faculty status. The chairperson and two other members of the committee must be members of the exercise physiology graduate faculty. One member of the committee must be from the student’s minor area. The committee members will be selected according to their abilities to assist the students with critical aspects of their doctoral work.

### Basic Science Prerequisites

<table>
<thead>
<tr>
<th>Hours</th>
<th>Subject</th>
<th>WVU Course Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 hrs</td>
<td>Biology</td>
<td>Biology 1, 2, 3, 4</td>
</tr>
<tr>
<td>8 hrs</td>
<td>Physics</td>
<td>Physics 1, 2</td>
</tr>
<tr>
<td>8 hrs</td>
<td>General chemistry</td>
<td>Chemistry 15, 16</td>
</tr>
<tr>
<td>3 hrs</td>
<td>Organic chemistry</td>
<td>Chemistry 133, 134, 135, 136</td>
</tr>
</tbody>
</table>
M.S.-Level Required Courses (or equivalent)  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATTR 219</td>
<td>Gross Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>PSIO 241</td>
<td>Mechanisms of Body Function</td>
<td>4</td>
</tr>
<tr>
<td>PHAR 249</td>
<td>Drugs and Medicines</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 367</td>
<td>Theories of Sport Physiology</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 370</td>
<td>Laboratory Techniques/Methods</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 371</td>
<td>Stress Testing</td>
<td>3</td>
</tr>
</tbody>
</table>

Required Doctoral Coursework (or equivalent)  

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Human Function Module a combination of physiology, biochemistry, and genetics.</td>
<td>9</td>
</tr>
<tr>
<td>Biochemistry 399D</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>EXPH 401</td>
<td>Advanced Study Exercise Physiology I</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 402</td>
<td>Advanced Study Exercise Physiology II</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 403</td>
<td>Exercise and Disease</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 497</td>
<td>(Must be completed prior to dissertation.)</td>
<td>15</td>
</tr>
<tr>
<td>EXPH 496</td>
<td>Graduate Colloquium</td>
<td>3</td>
</tr>
</tbody>
</table>

*Specific courses to be determined by doctoral committee.

In addition to formal course work students will be expected to be heavily involved with research throughout the doctoral program (see Required Research Participation, below, and Dissertation page 449).

Doctoral committees may require additional course work or research credits, depending on a student’s research or professional goals. Students designate a minor area such as cardiac rehabilitation, reproductive physiology, or nutrition and take a minimum of 12 hours of coursework in this area. In addition, all doctoral students will be required to present three one-hour graduate seminars to faculty and students before graduating. Doctoral students are also required to teach as part of their training. Students typically spend three to five years completing the program depending on whether they have a master’s degree in exercise physiology before entering.

Required Research Participation

Because the doctorate is a research degree, students will be expected to be involved in research from the beginning of their programs. When each doctoral student enters the program, the ongoing research projects in the division will be explained by the principal investigator(s). Each student will be required to collaborate with a faculty mentor and senior doctoral students on ongoing research projects during the first semester of doctoral work. The students will concurrently be reviewing the literature in an area of interest as part of the required doctoral seminar. During the second semester, the student will complete EXPH 401. One of the course requirements in EXPH 401 is to develop a research proposal and submit a protocol to either the human subjects or animal research committee for approval. The students would then begin their first research projects as principal investigators working closely with faculty mentors during the spring and summer of their first year. Doctoral students will be encouraged to assist each other in their projects. This will enable students to have experience with a variety of laboratory techniques and to work as research team members, as is required in most exercise-focused research projects. Students will learn to analyze and interpret data, and they will be encouraged to submit abstracts based on their projects for presentation at appropriate national meetings. Students will be expected to be heavily involved in research throughout the doctoral program with a goal of having at least one manuscript published or in preparation prior to beginning their dissertation research. During the second advanced exercise physiology course (EXPH 402), the students will be required to write a major grant proposal. The students will use the data from their pilot
studies as part of their grant applications. During the final semester of advanced exercise physiology (EXPH 403), the students are required to prepare a manuscript describing the results of the project and submit it to an appropriate research journal. The preliminary research projects are designed to provide students with the skills necessary to become independent investigators. The research experience will culminate with the completion of the doctoral dissertation.

Prerequisites For The Candidacy Examination
The following are prerequisites for advancement to the qualifying examination:
1. The student must have a dissertation advisor and a dissertation committee.
2. The student must be in good academic standing as defined in the doctoral program and have satisfactorily completed the first two years of course requirements (including those specified by the student’s advisory committee) with at least six credit hours (or equivalent) of laboratory research experience.
3. Two-thirds of the exercise physiology graduate faculty must approve each student for candidacy. In case such approval is not given, the exercise physiology graduate faculty will recommend a course of action.

Candidacy Examination
Purpose: To evaluate a student’s readiness for advancement to doctoral candidacy. Advancement to candidacy means that in the judgment of the faculty, the doctoral student has an adequate knowledge of exercise physiology, knows how to use academic resources, and has potential to do original research autonomously. In other words, the student is qualified to complete the doctoral dissertation.

Format
Part I: Comprehensive written examination over major areas of exercise physiology.
Part II: Research Design examination
   Written research proposal
   Oral examination of research proposal

Qualifications for advancement to candidacy:
The student must demonstrate:
a. A wide base of knowledge in exercise physiology (evaluated in Part I)
b. An ability to think independently (evaluated in Part I and Part II)
   Integration of existing knowledge
   Critical evaluation of literature
   Problem-solving skills
c. Acceptable written and oral communication skills (evaluated in Part I and Part II)

It is expected that the intellectual and communication skills outlined in b. and c. will continue to improve over subsequent years.

Part I: Comprehensive exam
1. Scheduling of examination
   The examination will be scheduled by the graduate faculty, and will be held as soon as convenient after completion of all required course work.
2. Type of examination
   The comprehensive part is a written examination.
3. Content of the examination
   The student must answer questions from each of the following major areas of exercise physiology: energy metabolism, muscle physiology, cardiovascular physiology, pulmonary physiology, exercise responses in gender and age groups, exercise and environmental stress, exercise and the endocrine system, exercise and disease, and clinical exercise physiology. Three questions will be asked in the minor area of concentration.
4. Participating faculty
   All graduate faculty in the division will participate in the planning of this examination. The faculty will participate as groups, based on the major areas exercise physiology. Each group will provide questions written by some or all members of the group at their discretion.

5. Duration of examination
   The examination will be given on a Monday, Wednesday, and Friday of one week. The examination will be divided into two equal segments each day: from 8:00 a.m. to 12:00 p.m. and from 1:00 p.m. to 5:00 p.m.

   Each question will be graded by the author of that question. One week will be allowed for grading. Each question will be given a numerical score (0-100 percent). In order to pass the examination, the student must obtain a score of 70 percent or above in each of the major areas of exercise physiology.

7. Course of action for students who fail.
   If the overall examination average is less than 70 percent, the entire exam must be repeated.
   If the overall examination average is greater than 70 percent, but the score(s) in one or two areas is(are) below 70 percent only the question(s) in that (those) area(s) must be repeated.
   If the overall examination average is greater than 70 percent, but the scores in three or more areas are below 70 percent, the entire examination must be repeated.

If a portion of the examination or the entire examination must be retaken, the student must do this within a period of one month after failure of the original examination. The examination or a portion of the examination may be retaken only once. The above-mentioned criteria will apply to this examination.

Part II: Research Design Exam

   The following guidelines are to be reviewed by the student and his or her committee before scheduling the research design examination.

1. Scheduling of examination
   Students will individually schedule the research design examination within a period of six months after passing the comprehensive examination.

2. Participating faculty
   The student's dissertation committee will administer the examination.

3. Type of examination
   The research design examination will consist of both a written research proposal and an oral examination of the research proposal. The two parts of this examination are designed to evaluate the student's ability to: 1) organize a large body of information directed to one topic; 2) communicate verbally to questions relating to topic of presentation; and 3) develop arguments with information derived from recalled knowledge.

4. Duration of examination.
   The student will have a period of two weeks to complete the written research proposal, and the committee will have two weeks to read and evaluate the proposal before the oral examination.

5. Details of research design exam format.

   a. Written Research Proposal
      The entire dissertation committee will be involved in formulating two research design questions that can be within the student's area of interest but not directly based on ongoing research in the advisor's laboratory. At the time the questions are formulated, the committee members should also schedule the oral examination. The student will select one of the questions to answer in the form of a research proposal. This proposal may not be pre-
pared in consultation with the advisor. The format for the written proposal will be a modified PHS 398 Research Plan format containing the following sections.

I. Specific Aims
   A concise description of what the proposed research project will accomplish, including the hypothesis.

II. Background and Significance
   A discussion of the scientific literature relevant to the proposed project that illustrates the current level of understanding in this area and identifies specific gaps in knowledge that the proposed project is intended to fill.

III. Research Design and Methods
   A description of the research design and experimental procedures that will be used to accomplish the specific aims of the project. This section should clearly present the rationale for the chosen experimental design and procedures, and should also include information on how the experimental data will be analyzed. Anticipated results and their interpretation should also be discussed relative to the proposed hypothesis.

IV. References
   The length of the written proposal should not exceed 10 single-spaced pages (excluding references), with a minimum font size of 11 pt. Appropriate lengths for each section are:
   - Specific aims: 1 page.
   - Background and significance: 2-3 pages.
   - Research design and methods: 6-7 pages.

b. Oral Examination
   The student must be able to discuss the proposed research project in depth and to effectively respond to questions concerning the proposal. In answering these questions, the students must demonstrate a good working knowledge of physiology in general as well as an understanding of other disciplines (biochemistry, molecular biology, pharmacology, etc.) as they directly relate to the proposal. The student must also be able to clearly articulate this knowledge and to synthesize or integrate known information in new ways. If it becomes apparent in the first examination that the student is incapable of answering the questions in a satisfactory manner, the committee reserves the right to stop the exam without failing the student. The committee will then clarify its expectations to the student, and the exam will be rescheduled in short order to allow the student time to adequately prepare.

6. Grading of the research design exam.
   The written and oral parts of the research design exam will each be graded on a pass-fail basis by the committee. To successfully pass each part, the student must receive no more than one unfavorable vote among the members of the committee.

7. Course of action in the event of failure.
   If the written proposal is judged by the committee to be unacceptable (i.e., “failed”), the committee will ask the student to revise the proposal after providing the student with constructive criticism during the oral examination. The student will then have two weeks to complete this revision and submit it to the committee for approval. If the revisions to the proposal are extensive and/or the student has failed the oral exam on the original proposal, a second oral exam will be held on the revised proposal.
   If the written proposal is judged to be acceptable but the student fails the oral exam, the second oral exam must be taken within four weeks after the failed exam.
Failure of either the written research proposal or the oral examination for a second time is grounds for dismissal from the program, although the graduate faculty reserve the right to retain any student in the program if special circumstances exist. In this case, the graduate faculty will review the situation and determine the appropriate action by majority vote.

8. Temporary committee substitutions

Membership on a doctoral dissertation committee signifies the highest level of commitment to all phases of the students doctoral training. All committee members must therefore be present for the oral research design exam. Absence of a committee member from the exam is only acceptable in the event of illness or some other serious unforeseen problem.

If a committee member is unexpectedly unable to participate in a scheduled oral examination, the examination should be rescheduled for some time within the next two weeks. The student may request that the examination not be rescheduled, provided that a substitute committee member can be found (if one is needed to meet minimal dissertation committee requirements). The substitute must have adequate time to read the written proposal and prepare for the examination. Any substitute must be acceptable to both the student and the advisor, and must meet the requirements for dissertation committee membership. The substitute member will be considered a full-fledged member of the committee (with voting rights) for the purpose of administering the grading the examination. The examining committee may contain no more than one substitute member, and the student’s advisor (normally committee chair) may not be substituted for.

Dissertation

The student must complete a dissertation that makes a contribution to knowledge in exercise physiology and must pass an oral examination based primarily upon the dissertation. The purpose of the dissertation is to provide experiences that will assist the student in becoming an independent investigator. These experiences include:

1. Reviewing the literature and identifying and defining an appropriate problem;
2. Formulating research hypotheses, deducing consequences, and defining basic terms and variables;
3. Constructing an experimental plan that considers all of the elements, conditions, and relations of the consequences including:
   a. Identifying all extraneous variables that might contaminate the experiment and determining how to control them;
   b. Selecting a research design;
   c. Selecting appropriate subjects to represent a given population, assigning subjects and treatments to groups;
   d. Selecting or constructing instruments or assays and validating them in order to measure outcomes;
   e. Writing protocols to the Institutional Review Board for the Protection of Human Subjects or the Animal Use Committee;
   f. Outlining procedures for data collection; and
   g. Conducting pilot studies to perfect the instruments, assays, and research designs.
4. Conducting experiments;
5. Preparing raw data for analysis;
6. Applying appropriate statistical methods to determine significance;
7. Interpreting and discussing the results.

The students will also learn to organize and express themselves in scientific writing through the development of the document. After successful completion of the oral examination and submission of the final copy of the dissertation, the candidate will be recommended for the degree.
Student Evaluations
Students will be formally evaluated by the program faculty on a yearly basis with respect to courses, clinical field experiences, research, teaching, professional development, and progress through the program. The student will be asked to fill out an activity report encompassing these areas and submit it to the chair of the Exercise Physiology Division. The chair will convene the program faculty to evaluate each student. The chair will provide the students a written assessment of their progress.

Exercise Physiology (EXPH)

367. Exercise Physiology 2. II. 3 HR. PR: Consent. Thorough and workable knowledge of the functioning of body systems during exercise, the acute and chronic adaptations that occur, and the practical application of work physiology.

368. Diabetes and Exercise. II. 3 HR. PR: Graduate standing, Consent. In-depth study of topics related to the comprehensive management of patients with diabetes mellitus, with special emphasis on the use of exercise in diabetes care.

370. Lab Techniques and Methods II. I, S. 3 HR. PR: Graduate standing, Consent. This course teaches the techniques and methods used to monitor physiologic systems in humans during rest and exercise. It includes methods used to assess the health status of individuals desirous of exercise testing or prescription.

371. Stress Testing. II. 3 HR. PR: EXPH 370, consent. In-depth study of graded exercise testing in laboratory or field situations. The course includes protocols for athletes, asymptomatic individuals, and special populations.

372. Professional Field Placement II. I, II, S. 1-18 HR. PR: EXPH 370, and EXPH 371, Consent. Prearranged program to be planned, supervised, and evaluated for credit by faculty and field supervisors. Involves temporary placement with public or private enterprise for professional competence development. (Internship.)


491. Advanced Study. I, II, S. 1-6 HR. PR: Consent. Investigation in advanced subjects which are not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

492. Directed Study. I, II, S. 1-6 HR. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 HR. PR: Consent. A study of contemporary topics selected from recent developments in the field.

494. Special Seminars. I, II, S. 1-6 HR. Special seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 HR. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. 1 HR. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program. (Graded S/U).

497. Research. 1-15 HR.
Division of Occupational Therapy

Randy P. McCombie, Ph.D., OTR/L, Chair.

www.hsc.wvu.edu/som/ot

Degree Offered: Masters of Occupational Therapy

Introduction

In fall 1993, the WV Board of Trustees approved the establishment of a new master’s degree program at West Virginia University. The program at WVU accepted its first students into the professional program in the fall semester of 1996. The academic and fieldwork program requires three years to complete. Prior to application, students are required to complete 63-65 hours of prerequisite courses, which in most cases will take two years to fulfill.

Accreditation Status

WVU’s Division of Occupational Therapy has been granted accreditation status by the Accreditation Council for Occupational Therapy Education (ACOTE) of the American Occupational Therapy Association (AOTA), located at 4720 Montgomery Lane, P.O. Box 31220, Bethesda, MD 20824-1220. AOTA’s phone number is (301) 652-AOTA. Graduates of the program will be able to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy, Inc. (NBCOT). After successful completion of this exam, the individual will be an occupational therapist, registered (OTR). Most states require licensure in order to practice; however, state licenses are usually based on the results of the NBCOT Certification Examination.

The Profession of Occupational Therapy

Occupational therapy is a health profession whose services are provided to people of all ages with physical, mental, or developmental disabilities. The purpose of occupational therapy is to help individuals achieve a maximum level of independence. The focus is developing the capacity to function in all activities (occupations) of daily life, including self care, work, and leisure, hence, the name occupational therapy. Occupational therapy is a health and rehabilitation profession designed to help people regain and build skills that are important for health, well-being, security, and happiness.

Occupational therapists work with people of all ages who, because of physical, developmental, social, or emotional deficits, need specialized assistance in learning skills to enable them to lead independent, productive, and satisfying lives.

According to the U.S. Bureau of Labor Statistics, there will be a 55 percent increase in the number of available positions by the year 2005. Occupational therapists work in schools, hospitals, rehabilitation centers, home health agencies, skilled nursing homes, and private practice.

Application and Admission

Traditionally, students apply to the program during their second year of college. They must have a minimum of 60 to 65 hours of college credit which includes the prerequisites listed below. Students who already have a degree in another field are also eligible to apply. All applicants must meet the following criteria:
- Minimum GPA of 3.0, overall and prerequisites, (a higher GPA may be necessary given the competitive nature of the program).
- The students are required to have volunteer/work experience with people with disabilities. Students should contact the Division of Occupational Therapy to determine amount of hours required.
- Two letters of recommendation are required: one from an occupational therapist OTR/L or certified occupational therapy assistant (COTA) who supervised volunteer/work experiences and one from a professor who has recently taught the applicant.
- Completion of all prerequisite courses by the end of the semester of application (traditionally, second semester of sophomore year) is normally required.
- Strong consideration will be given to residency and a commitment to stay in West Virginia to practice after graduation.

### Required Prerequisite Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 2</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 1</td>
<td>Introduction to Psychology</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 141</td>
<td>Introduction to Human Development</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 281</td>
<td>Abnormal Psychology</td>
<td>3</td>
</tr>
<tr>
<td>SOCA 1 OR SOCA 5</td>
<td>Introduction to Sociology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 1 and BIOL 3</td>
<td>General Biology I and Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 2 and BIOL 4</td>
<td>General Biology II and Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 15</td>
<td>Fundamentals of Chemistry (includes lab)</td>
<td>4</td>
</tr>
<tr>
<td>MATH 3</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 4</td>
<td>Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 14</td>
<td>Pre-calculus Math</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 1</td>
<td>Introductory Physics I (includes lab)</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 2</td>
<td>Introductory Physics II (includes lab)</td>
<td>4</td>
</tr>
<tr>
<td>STAT 101</td>
<td>Elementary Statistical Inference</td>
<td>3</td>
</tr>
<tr>
<td>COMM 11</td>
<td>Principles of Human Communication</td>
<td>1</td>
</tr>
<tr>
<td>COMM 12</td>
<td>Human Communication in the Interpersonal Context</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Appalachian, Rural, or West Virginia studies course in any discipline</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Fulfillment of WVU’s foreign or minority cultures requirement</td>
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</tr>
<tr>
<td></td>
<td>(See WVU on-line catalog)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Completion of WVU’s LSP requirements — Cluster A courses</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>(see WVU on-line catalog)</td>
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</tbody>
</table>

WVU students must consult the Student Advising Center prior to enrolling in prerequisite courses. These courses may be taken at any institution which offers equivalent courses. Equivalence may be determined by contacting the transfer desk, Admissions and Records, West Virginia University, P.O. Box 6009, Morgantown, WV 26506-6009.

Persons interested in occupational therapy should obtain an application packet from the Admissions and Records Office (304) 293-3521, starting December 1 and completing that packet by February 15. A personal interview may be required.
## Course of Study

Like many professional programs, the curriculum in the master’s entry-level occupational therapy program is fairly fixed and intense. The first professional year will include courses in basic sciences and introductory professional courses. The second and third professional years will deal more specifically with training in occupational therapy theory and practice as administered across a wide variety of settings. The professional curriculum includes two off-campus, full-time clinical experiences known as fieldwork. Students are financially responsible for transportation, housing, and meal expenses related to clinical assignments.

### Summer Session II

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTH 300</td>
<td>Essentials of Clinical Anatomy</td>
</tr>
<tr>
<td>OTH 480</td>
<td>Current Topics in Occupational Therapy</td>
</tr>
</tbody>
</table>

### Fall Term - First Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSIO 241</td>
<td>Mechanisms of Body Function</td>
</tr>
<tr>
<td>OTH 301</td>
<td>Professional Foundations</td>
</tr>
<tr>
<td>OTH 302</td>
<td>Survey of Clinical Problem Solving</td>
</tr>
<tr>
<td>OTH 303</td>
<td>Functional Movement Across the Lifespan</td>
</tr>
<tr>
<td>OTH 304</td>
<td>Clinical Sciences</td>
</tr>
<tr>
<td>OTH 306</td>
<td>Kinesiologic Foundations for Intervention</td>
</tr>
</tbody>
</table>

### Spring Term - First Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPH 265</td>
<td>Human Nutrition and Exercise Physiology</td>
</tr>
<tr>
<td>OTH 307</td>
<td>Neurobiologic Foundations</td>
</tr>
<tr>
<td>OTH 308</td>
<td>Evaluation Procedures</td>
</tr>
<tr>
<td>OTH 321</td>
<td>Developmental Life Tasks</td>
</tr>
<tr>
<td>OTH 360</td>
<td>Research Methods in OT</td>
</tr>
<tr>
<td>OTH 480</td>
<td>Current Topics in Occupational Therapy</td>
</tr>
</tbody>
</table>

### Fall Term - Second Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>OTH 395</td>
<td>Fieldwork I (1)</td>
</tr>
<tr>
<td>OTH 401</td>
<td>Clinical Decision Making</td>
</tr>
<tr>
<td>OTH 402</td>
<td>Clinical Sciences</td>
</tr>
<tr>
<td>OTH 406</td>
<td>Cardio-pulmonary Evaluation and Intervention</td>
</tr>
<tr>
<td>OTH 408</td>
<td>Tests and Measures in OT</td>
</tr>
<tr>
<td>OTH 430</td>
<td>OT in Mental Health</td>
</tr>
<tr>
<td>OTH 480</td>
<td>Current Topics in Occupational Therapy</td>
</tr>
</tbody>
</table>

### Spring Term - Second Year

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tr>
<td>OTH 386</td>
<td>Fieldwork I (2)</td>
</tr>
<tr>
<td>OTH 416</td>
<td>Professional Decision Making</td>
</tr>
<tr>
<td>OTH 417</td>
<td>Occupational Therapy in Geriatrics</td>
</tr>
<tr>
<td>OTH 419</td>
<td>Professional Values</td>
</tr>
<tr>
<td>OTH 432</td>
<td>OT Interventions - Mental Health</td>
</tr>
<tr>
<td>OTH 435</td>
<td>Therapeutic Activity</td>
</tr>
<tr>
<td>OTH 480</td>
<td>Current Topics in Occupational Therapy</td>
</tr>
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### Summer - Beginning Third Year

<table>
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<tr>
<th>Course Code</th>
<th>Course Name</th>
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<tbody>
<tr>
<td>OTH 540</td>
<td>Level II Fieldwork</td>
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</tbody>
</table>
Fall Term - Third Year

OTH 500  Health Care Issues in OT
OTH 501  Management for OT Practice
OTH 503  OT in Pediatrics
OTH 505  Prosthetics and Orthotics
OTH 520  OT in the Work Environment
OTH 580  Current Topics in Occupational Therapy

Spring Term - Third Year

OTH 550  Education in OT Practice
OTH 551  OT in Prevention and Wellness
OTH 580  Current Topics in Occupational Therapy
OTH 697  Supervised Research in OT
OTH 640  Fieldwork II

Occupational Therapy (OTH)*

*Courses listed on previous page but not enumerated below are in the process of obtaining approval from the Faculty Senate at WVU.

201. Clinical Sciences 2. I. 4 Hr. PR: OTH student status. Introduction to selected topics in clinical medicine which are basic to occupational therapy and physical therapy practice. Topics include metabolic and endocrine disorders, oncology, dermatology, wound care, burns, OBS, Alzheimer’s, clinical neuropathies, and rheumatology. (Contact hours - 5.)

202. Clinical Decision Making 1. 2 Hr. PR: OTH student status. Continuation of preparation for critical thinking and decision making in the field using appropriate information and technology in a case study format. An emphasis on autonomous practice and referral decisions.

206. Cardio-pulmonary Rehabilitation. I. 3 Hr. PR: OTH student status. Lectures on cardiovascular and pulmonary conditions including medical interventions. Discipline-specific laboratory sessions include stress testing, physical capacity assessment, ecological analysis, use of monitoring equipment, and evaluation and planning rehabilitation protocols. (Contact hours - 4.)

208. Tests and Measures in Occupational Therapy. I. 3 Hr PR: Occupational therapy student status. Presentation of test and measures used by occupational therapists in the assessment of various conditions. Emphasis will be placed on the clinical and functional evaluation of clients within the domain of occupational therapy practice. (Contact hours - 4.)

216. Professional Decision-Making. II. 2 Hr. Students are provided with opportunities to develop critical thinking clinical reasoning, and decision-making skills in occupational therapy. Emphasis is on autonomous practice and referral decisions.

217. Occupational Therapy in Geriatrics. II. 3 Hr. Overview of normative aging using an occupational therapy frame of reference. Common problems of seniors are discussed.

219. Professional Values. II. 3 Hr. An introduction to ethics and how it specifically applies to rural health and life in West Virginia. Students will be given an opportunity to explore their own conceptions of ethics in health care.

221. Development Life Tasks. II. 3 Hr. Life-span human development across cognitive, psychosocial and neuromotor domains with particular emphasis on applications to physical or occupational therapy interventions. Cultural influences in health and illness.

230. Occupational Therapy in Mental Health. I. 3 Hr. PR: Occupational therapy student status. Clinical and functional science lectures pertaining to OT practice in mental health environments. Course includes introduction to occupational therapy, clinical and functional assessment, and management protocols. (Contact hours - 3.)

232. Occupational Therapy Interventions in Mental Health. II. 4 Hr. Interventions commonly used by occupational therapists in the field of mental health. Emphasis on group processes, life skills, reintegration strategies.
235. *Therapeutic Activity*. II. 3 Hr. Students will develop skills in performance component analysis, performance context analysis, and occupational performance analysis.

280. *Current Topics in OTH*. I, II. 1-3 Hr. (Not to exceed 18 Hr.) A seminar course designed to provide a forum for discussing the frontiers of the occupational therapy profession. Topics will include: research in progress, new developments, and salient professional issues.

**Division of Physical Therapy**

*MaryBeth Mandich, PT, Ph.D., Chair*

[www.hsc.wvu.edu/som/pther](http://www.hsc.wvu.edu/som/pther)

**Degree Offered:** Masters of Physical Therapy

**Introduction**

The WVU Physical Therapy Program was established in 1970 under the auspices of the School of Medicine to help meet the need for physical therapists in West Virginia. The program is accredited by the Commission on Accreditation in Physical Therapy Education, a specialized accrediting body recognized by the Council on Postsecondary Accreditation. The West Virginia Board of Trustees approved the transition of the Physical Therapy Program at WVU from a bachelors degree program to its current entry-level masters degree status in May of 1996. Accreditation for this transition was obtained from the American Physical Therapy Association in May 1997.

Thirty full-time students are admitted each year. Preference is given to West Virginia residents. A limited number of non-residents who have attended a West Virginia college or university, or who have other strong ties to the state, may also be considered.

**The Profession of Physical Therapy**

Physical Therapy is a hands-on health care profession which promotes optimal health and function through the application of scientific principles to prevent, identify, assess, correct, or alleviate acute or prolonged movement dysfunction. The goal of physical therapy is to help individuals reach their maximum potential and to contribute to society while learning to live within the limits of their capabilities.

The long-standing shortage of physical therapists no longer exists. Demand for physical therapy services will continue, however. The demand for physical therapists in all practice settings is affected by such factors as an aging population and increased emphasis on a healthy, active lifestyle. The professional organization represents therapists on health care issues and is working hard to assure that PT continues to be a favorable career choice.

Physical therapists are respected members of the health care team. They work with other health care providers, such as physicians, occupational therapists, rehabilitation nurses, psychologists, social workers, dentists, podiatrists, and speech pathologists and audiologists.

Though a large number of physical therapists work in hospitals, now more than 70 percent of them can be found in private physical therapy offices, community health centers, corporate or industrial health centers, sports facilities, research institutions, rehabilitation centers, nursing homes, home health agencies, schools, pediatric centers, and colleges and universities.

Some physical therapists work as employees in these settings, while others are self-employed as owners or partners in private practices. Indeed, settings, employment arrangements, career responsibilities, and career opportunities depend on the interests and skills of each practitioner. A license is required to practice physical therapy in all states.
Application and Admission

The following requirements must be met to apply to the WVU Physical Therapy Program:

1. Applicant must have a minimum cumulative GPA and a minimum prerequisite science GPA of 3.0.
2. Applicant must have a minimum of 60 hours of clinical volunteer or work experience in a physical therapy setting. This experience should be obtained in at least two different settings.
3. Applicant must take the Allied Health Professions Admissions Test (AHPAT) prior to application deadline. The AHPAT is an aptitude test that measures proficiency in chemistry, biology, verbal ability, quantitative ability, and reading comprehension.
4. Applicant must have a minimum grade of C in each prerequisite course.
5. Applicant must have completed or be enrolled in the required courses listed below:

**Required Prerequisite Courses**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
<th>WVU Course Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Biology with lab</td>
<td>Biology 1, 2, 3, 4</td>
</tr>
<tr>
<td>8</td>
<td>Physics with lab</td>
<td>Physics 1, 2</td>
</tr>
<tr>
<td>8</td>
<td>Chemistry with lab</td>
<td>Chemistry 15, 16</td>
</tr>
<tr>
<td>3</td>
<td>General psychology</td>
<td>Psychology 1</td>
</tr>
<tr>
<td>3</td>
<td>Developmental psychology (Life-span)</td>
<td>Psychology 141</td>
</tr>
<tr>
<td>3</td>
<td>Introductory statistics (Inferential and descriptive)</td>
<td>Statistics 101</td>
</tr>
</tbody>
</table>

**WVU Liberal Studies Requirements:**

<table>
<thead>
<tr>
<th>Hours</th>
<th>Course</th>
<th>Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>English composition</td>
<td>English 1, 2</td>
</tr>
<tr>
<td>12</td>
<td>Cluster A courses (Humanities and fine arts)*</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Cluster B courses (Social and behavioral sciences)*</td>
<td></td>
</tr>
</tbody>
</table>

* Please consult the WVU Undergraduate Catalog for further information on Cluster requirements. Please note that three hours in either Cluster A or B courses must focus on a foreign, gender, or minority issue.

The courses listed above are minimum requirements for application. Other recommended courses are: speech communication, any course dealing with Appalachian or rural studies, and an introduction to a computer science course. Students are encouraged to pursue studies in other courses of interest. Students who wish to substitute a course for one of those listed above should write for permission to the chairperson of the admissions committee, Division of Physical Therapy. A photocopy of the course description from the school catalog or class syllabus of the proposed substitution must be enclosed. Applicants who complete any of their prerequisite courses at a college or university outside West Virginia must submit a catalog or photocopy of a catalog description of those courses. Non-WVU applicants may access the University’s transfer equivalency web page at www.arc.wvu.edu/admissions/Admissions_main.html to determine their course equivalency. (Follow directions from “Transfer Equivalency system” link.)

Applicants who have met all program requirements are interviewed by the physical therapy admissions committee. Those considered to demonstrate the greatest potential for success are recommended for admission into the program.

Students who meet the application requirements for the physical therapy program can obtain an application packet beginning December 1 from the Office of Admissions and Records, WVU Health Sciences Center, P O Box 9815, Morgantown, WV 26506-9815, phone (304) 293-3521. All application materials must be received no later than February 15 for admission consideration into the next class.
Course of Study
Students admitted to the program complete a combination of classroom and laboratory work at the Health Sciences Center in Morgantown. Clinical education rotations are at various sites in West Virginia and other states.

### Year One

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 241</td>
<td>4</td>
<td>EXPH 165</td>
<td>3</td>
</tr>
<tr>
<td>PT 100</td>
<td>4</td>
<td>PT 106</td>
<td>4</td>
</tr>
<tr>
<td>PT 101</td>
<td>3</td>
<td>PT 107</td>
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</tr>
<tr>
<td>PT 102</td>
<td>2</td>
<td>PT 108</td>
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<tr>
<td>PT 104</td>
<td>4</td>
<td>PT 184</td>
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<td><strong>Total</strong></td>
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<td><strong>PT 221</strong></td>
<td><strong>3</strong></td>
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</table>

#### Summer

| PT 199         | 3    |

### Year Two

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
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<th>Hrs.</th>
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<tbody>
<tr>
<td>PT 185</td>
<td>2</td>
<td>PT 216</td>
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<tr>
<td>PT 201</td>
<td>4</td>
<td>PT 217</td>
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</tr>
<tr>
<td>PT 202</td>
<td>2</td>
<td>PT 219</td>
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<tr>
<td>PT 204</td>
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<td>PT 220</td>
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<td>PT 206</td>
<td>3</td>
<td>PT 225</td>
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<tr>
<td>PT 210</td>
<td>4</td>
<td>PT 250</td>
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<td><strong>Total</strong></td>
<td><strong>18</strong></td>
<td><strong>Total</strong></td>
<td><strong>18</strong></td>
</tr>
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#### Summer

| PT 384         | 6    |

### Year Three

<table>
<thead>
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<th>Second Semester</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
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<td>PT 350</td>
<td>3</td>
</tr>
<tr>
<td>PT 301</td>
<td>3</td>
<td>PT 351</td>
<td>3</td>
</tr>
<tr>
<td>PT 302</td>
<td>3</td>
<td>PT 397</td>
<td>3</td>
</tr>
<tr>
<td>PT 303</td>
<td>2</td>
<td>PT 385</td>
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<td>PT 305</td>
<td>3</td>
<td>PT 391</td>
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</tr>
<tr>
<td>PT 306</td>
<td>4</td>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>

#### Summer

| PT 380         | 2    |
| PT 391         | 1-3  |
| PT 397         | 1    |
| **Total**      | **4-6** |
Physical Therapy (PT)

300. Health Care Issues in PT. 2 Hr. PR: Majors only. The roles of physical therapists as advocates of people with disabilities are discussed. Investigation of community and home barriers is included. Students and clinicians discuss the roles of and demands on physical therapists in various practice settings.

301. Management for PT Practice. 3 Hr. PR: Majors only. Principles of business and management are covered as they apply to contemporary physical therapy practice. Fiscal management, risk management, marketing, and program improvement are addressed.

302. PT Research 1. 3 Hr. Introduces research theory and application with special emphasis on physical therapy. Includes elements of research design, hypothesis testing, methodology, literature review, analysis, and statistical methods. Students are required to complete a research proposal.


305. Prosthetics and Orthotics. 3 Hr. Presents the principles of biomechanics as they apply to prosthetic and orthotic prescription and fabrication. Student learns how to plan and implement rehabilitation programs for patients that must use orthotic or prosthetic.

306. Neurologic Physical Therapy. 4 Hr. Prepares physical therapy students to perform examinations and treatments of patients with a variety of neurologic diagnoses. Introduces the students to assistive technology and adaptive equipment as adjuncts to treatment.

350. Education in PT Practice. 3 Hr. Designed to allow students to practice the fundamental elements of developing instructional units for a variety of audiences. The students will produce educational materials for use in physical therapy practice.

351. PT in the Community. 3 Hr. PR: Majors only. Students investigate community services and the role of the physical therapist in promotion of community health.

380. Case Reports Seminar. 2 Hr. PR: Majors only. Students prepare oral and written case reports based on their patient care experiences.

384. Clinical Education 2. 3 Hr. PR: Physical therapy majors only; must have completed first two years of the professional sequence. Students practice full-time for twelve weeks under the direction of licensed physical therapists, and participate in rural health projects.

385. Clinical Education 4. 6 Hr. (Majors only.) Students practice full-time for twelve weeks under the direction and supervision of licensed physical therapists.


397. Research. 1-15 Hr.
Medical Technology
Jean D. Holter, Director of the Program; Graduate Coordinator
2163E Health Sciences North
Degree Offered: Master of Science

The WVU medical technology graduate program prepares graduate medical technologists for positions either as administrators and teachers in medical technology educational programs or as supervisors and administrators of the clinical laboratory. The primary objective is to assist in development of knowledge in an area in administration, education, or a special area of interest selected by the student, which may be a special medical laboratory science as the specific area applies to laboratory medicine. Areas of emphasis include clinical chemistry, clinical microbiology, hematology, and immunohematology and blood banking. The specific course work requirements for the master of science degree rests with the graduate advisor in the student's specific area of interest.

Admission
Applicants must have a baccalaureate degree in medical technology from an accredited institution or a baccalaureate degree in an allied field and be a certified medical technologist with an acceptable certifying agency. Information concerning the medical technology undergraduate program may be found in the WVU Health Sciences Catalog and the WVU Undergraduate Catalog.

Basis for Evaluation
The area of concentration in medical technology desired by the student is considered in the evaluation of the undergraduate as follows:

- Individuals who desire to do special study in clinical chemistry, hematology, or immunohematology and blood banking must have completed eight hours of physics, three hours of mathematics, and four hours of organic chemistry on the college level.
- Individuals who desire to do special study in microbiology must have completed four hours of organic chemistry and 16 hours of biological sciences.
- A minimum of one year's experience in a clinical laboratory is required for admission. Students will be required to make up deficiencies in the above, as well as other deficiencies deemed necessary by the advisor.

GPA
Applicants must have a minimum undergraduate grade-point average of 2.75 (based on A = 4.0 grade-point scale) for admission.

GRE
All applicants are required to take the general aptitude part of the Graduate Record Examination. Results should be sent to the WVU Medical Technology Programs Office, P.O. Box 9211, Morgantown, WV 26506-9211.

Letters of Reference
Two letters of reference must be on file in the medical technology office. One letter should be from the major advisor in the undergraduate college and another from the immediate supervisor of the applicant's present position. An interview will be requested for all applicants who meet the requirements for admission.

Application
Applicants are selected for admission on the basis of scholastic standing, recommendations, and interest in the field of medical technology. The number of applicants accepted is necessarily limited by the available facilities; and in general, applicants with the most experience are considered first.
1. A preliminary application is filed in the Medical Technology Programs office.

2. Two letters of recommendation are sent to the Medical Technology Programs office.

After approval of the preliminary application, the admission procedure is the same as for other WVU graduate programs.

A personal interview is required before final admission to the program. This interview will give the graduate student an opportunity to evaluate the program and to determine if the program will offer the educational opportunities which the student desires.

Course of Study

It is expected that the students entering the graduate program in medical technology will have a goal in mind and a special field of interest in medical technology. A minimum of 36 semester hours of credit, including a research problem, is required. The student selects a major area of concentration from either education, supervision, or administration, and a minor area from clinical microbiology, clinical chemistry, clinical hematology, or immunohematology. A minimum of 15 semester hours of course work from the following courses is required, depending upon the major area of concentration.

ED P 320 Introduction to Research (required).

• If the major area is education, the following three-hour courses are available:
  - CHPR 320 Roles and Functions of Health Education
  - EDLS 320 Personnel Administration
  - EDLS 351 Administrative Procedures in Adult Education
  - EDLS 462 Higher Education Law
  - EDLS 463 Higher Education Finance
  - ED F 320 Philosphic Systems and Education

• If the major area is supervision and/or administration, the following three-hour courses are available:
  - EDLS 320 Personnel Administration
  - EDLS 462 Higher Education Law
  - EDLS 463 Higher Education Finance
  - PUBA 341 Administrative Organization and Management
  - PUBA 344 Public Personnel Administration
  - PUBA 345 Public Administration and Policy Development

• Other three-hour courses available for either major for additional credit are:
  - ED P 231 Sampling Methods
  - ED P 260 Medical and Microcomputers in Instruction
  - ED P 301 Introductory Behavior Analysis: Human Resources
  - ED P 321 Design of Experiments
  - ED P 343 Statistical Analysis in Education
  - ED P 364 Precision Teaching
  - ED P 370 Programmatic Research
  - CHPR 308 Community Health: Death Education
  - CHPR 309 Community Health: Drug Education

Recommended:
  - ED P 311 Statistical Methods,
  - STAT 311 Statistical Methods, or
  - CCMD 311 Biostatistics

Other courses to complete 36 semester hours are selected by the student and the advisor in the area of concentration selected by the student. Students may select courses in departments in schools other than the School of Medicine.
Minimum Hours
All students must complete a minimum of 18 semester hours in a science related to medical technology including seminar (three hours) and problem study (six hours).
In addition, at the discretion of the student’s advisor, other requirements in teaching, supervision, and administration may be necessary.

Plan of Study
The advisor formulates with the student a plan of study for the entire graduate program. This plan is usually made at the end of the first semester of the student’s graduate study. The plan of study is signed by the advisor and student and sent to the Health Sciences Graduate Program office for approval. The original plan of study is returned to the Medical Technology Office to be put in the student’s file.

A final written comprehensive examination in the major and minor interest areas is given approximately one month before the oral defense. An oral defense of the problem study is given about one month after submission of the problem study in its final form to the student’s graduate committee.

Time Limitations
All requirements for the master of science degree, as outlined in this catalog, must be fulfilled. These requirements can be fulfilled in three semesters of full-time work, but ordinarily at least four semesters are required for completion of the degree requirements. Degree candidates must have a 3.0 grade-point average and must have removed all incomplete grades and deficiencies. All students must complete a problem study (see MTEC 397).

Medical Technology (MTEC)
300. Seminar. I, II, S. 1 Hr. Seminars include topics in laboratory management and education in medical technology, and timely topics. Minimum of three semester hours to include all three topics is required of all graduate students in the medical technology program.

391. Advanced Topics. I, II, S. 1-6 Hr. PR: Consent. Investigation in advanced subjects which are not covered in regularly scheduled courses.


Microbiology and Immunology
John B. Barnett, Chairperson of the Department, jbarnett@hsc.wvu.edu
James M. Sheil, Graduate Coordinator, jsheil@hsc.wvu.edu
2095 Health Sciences Center - North
www.hsc.wvu.edu/micro

Degrees Offered: Doctor of Philosophy, Master of Science

The Department of Microbiology and Immunology offers programs of study leading to the degrees of doctor of philosophy or master of science in microbiology and immunology. The department also offers a masters of science degree. Students with an undergraduate degree from an accredited institution can apply to either the M.S. or Ph.D. program. The major purpose of graduate education in microbiology and immunology is research training. The basic philosophy of the department is that the students acquire a strong foundation in basic concepts of microbiology and immunology and have flexibility in choosing advanced course work in their specific areas of interest.
Application

Applicants to the graduate program of the Department of Microbiology and Immunology must have earned a bachelor or master’s degree. Applicants should have a strong background in biological sciences, organic chemistry, physics, and mathematics. Applicants must submit a departmental application form, three letters of recommendation, and Graduate Record Exam (GRE) scores to the Admissions Committee Chairperson, Department of Microbiology and Immunology, Robert C. Byrd Health Sciences Center, West Virginia University, Morgantown, WV 26506-9177. In addition, all college transcripts and an official application for admission must be sent directly to the WVU Office of Admissions and Records, P.O. Box 6009, Morgantown, WV 26506-6009. Applicants for admission to a degree program should have a grade-point average of 3.0 or better. GRE scores are used as one of the selection criteria for admission to the department’s graduate program. Although no minimum score is required for consideration, successful applicants usually have a combined score of 1600 or greater on the general GRE. International students must have a TOEFL score of 550. Admission to the department and award of assistantships is considered throughout the year and early application is encouraged. Applicants desiring financial aid should complete their application before March 1. All applications must be completed by April for fall admission.

Course Requirements

Every student must take the following courses or demonstrate proficiency by examination in each of the following areas: MBIM Graduate Microbiology and Immunology, MBMI 317 and MBIM 391 Advanced Topics (laboratory rotation). In addition, two semesters of Cell and Molecular Biochemistry (BIOCH 399), are required. The remainder of the course work is selected by the student and the advisory committee from the graduate course offerings of department, school, or University. Enrollment in MBIM 496 Graduate Seminar is required each semester that the student is in residence. Full time students in the Department of Microbiology and Immunology are required to participate in teaching during of residence in the department.

Master of Science

The master of science program requires 30 hours of course work, of which at least 20 hours must be in microbiology and immunology. Six hours must be in research (MBIM 397 Master’s Degree Research and Thesis). A thesis representing original research and a final oral examination are required. A grade-point average of at least 3.0 must be maintained throughout the program.

Doctor of Philosophy

Students with either a bachelor’s or master’s degree can apply to the Ph.D. program. The doctoral candidate with an M.S. degree from another department must have had course work or demonstrate knowledge in microbiology, immunology, and biochemistry equivalent to that of a master’s student in the department. In addition, the doctoral student will take additional course work as determined by the student’s graduate research advisory committee. A minimum of six hours in microbiology 491 courses or selected advanced courses from other departments is required. Where appropriate, course work in related subjects such as computer science, cell biology, biochemistry, or statistics will be required. MBIM 496 Seminar is a required course each semester that the student is in residence. The student will maintain a grade-point average of 3.0 or higher. The doctor of philosophy degree requires a dissertation representing the results of an original research investigation. Candidacy to the Ph.D. degree program requires a passing score on a comprehensive written exam on microbiology and immunology.
and a preliminary oral examination. The written qualifying exam is given at the end of
the first year of residence. The preliminary oral exam is normally held after two years of
residence. Ph.D. candidates must pass a final oral examination in defense of the dis-
sertation. This final oral examination is given after completion of the research project
and submission of an acceptable dissertation.

The Department of Microbiology and Immunology has informal journal clubs in im-
munology, virology, microbiology, and hematopoiasis. These are designed to help stu-
dents develop skills in reading, interpreting, and discussing current research articles.
All students are expected to participate in one or more journal clubs per year.

For application materials, a description of faculty research interests, or guidelines for
graduate students in the Department of Microbiology and Immunology, write to the
Chairperson, Admissions and Scholarship Committee, Department of Microbiology, WVU
Health Sciences Center, Morgantown, WV 26506-9177.

Areas of Current Research
Pathogenic Bacteriology: mode of action of microbial products in pathogenicity; oral
microbiology; biology of spirochetes; microbial adherence.
Mycology: pathobiology of medical mycoses; environmental health research implica-
tions of fungal and algal toxicoses.
Physiology: nutrition and metabolism of a variety of pathogenic microorganisms, growth
and protein synthesis in obligate intracellular bacteria.
Genetics: basic studies in the mechanisms of genetics including transfer of genetic
information; recombinant DNA studies.
Virology: mechanism of retrovirus replication and mutation.
Parasitology: host-parasite relationships between helminth parasites and insects and
vertebrate hosts; endosymbionts in protozoa.
Immunology: developmental aspects of immunity, immunopathology of pulmonary dis-
ease; inflammatory response to inhaled organisms; mechanisms of T-cell function;
effects of xenobiotic exposure on the immune system.
Tumor biology: mechanisms of oncogenesis and signal transduction; functional analy-
sis of oncogenic proteins.
Other programs: detection of environmental pollutants; effect of environmental agents
on host resistance.

Microbiology and Immunology
301. Immunity, Infection and Disease. 12 Hr. PR: For second-year medical students. An integrated
approach to the study of infectious disease in humans. With focus on innate and acquired immunity,
mechanisms of pathogenesis of infectious microorganisms, transmission, and treatment.
302. Microbiology. (For dental students only.) I. 5 Hr. PR: Organic chemistry. Detailed study of
pathogenic microorganisms. Emphasis on oral flora.
310. Structure and Activities of Microorganisms. II. 2-7 Hr. PR or Conc.; Biochemistry, Consent.
Molecular biology of e. coli and other selected organisms.
311. Prin Infection and Resist. 1-5 Hr.
317 A-Z. Special Problems in Microbiology. I, II, S. 1-7 Hr. A graduate Immunology and Virology. I. 3 Hr.
PR: Consent. Parasitology laboratory. II. 1 Hr. PR: Consent. B. Graduate Pathogenic Microbiology. II.
3 Hr. PR: Consent. C. Special Problems in Post Graduate Dental Microbiology. II. 4 Hr. PR: Consent.
391 A-Z. Advanced Topics. I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not cov-
ered in regularly scheduled courses.
Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to a thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Teaching Practicum. I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of microbiology. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

Directed Study. I, II, S. 1-6 Hr. Directed study, readings, and/or research.

Special Topics. I, II. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

Seminar. 1-6 Hr. PR: Consent. Seminars arranged for advanced graduate students.

Graduate Seminar. I, II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

Independent Study. I, II. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Thesis. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Pharmacology and Toxicology
Robert E. Stitzel, Interim Chairperson of the Department
Stephen Graber, Graduate Coordinator
3151 Health Sciences North
www.hsc.wvu.edu/som/pcol_tox/pcoltox.htm

Degrees Offered: Master of Science, Doctor of Philosophy

Pharmacology and toxicology involve all aspects of the action of drugs on living systems and their constituent parts. These range from the chemical reactions taking place within cells to the evaluation of a drug in the treatment of human disease. The Department of Pharmacology and Toxicology offers graduate studies leading to the degrees of master of science and doctor of philosophy, with research concentrations in such areas as cellular and molecular pharmacology, autonomic pharmacology, biochemical pharmacology, neuropharmacology, cardiovascular pharmacology, endocrine pharmacology, and renal, hepatic, and pulmonary toxicology.
Admission

Regular applicants for the graduate program in pharmacology and toxicology should present, as a minimum, the following undergraduate courses: one semester of biology; two semesters of physics; one semester of calculus; four semesters of chemistry including two semesters of organic chemistry. Two letters of recommendation from science professors, an official transcript, and the results of the Graduate Record Examination are also required. The prospective student should have a minimum 3.0 overall grade-point average at the undergraduate level.

Financial Aid

In general, students requesting financial support should have all credentials forwarded by February 1. For additional information write to the Director of Graduate Studies, Department of Pharmacology and Toxicology, WVU Health Sciences Center, Morgantown, WV 26506.

Master of Science

Ordinarily the department does not accept graduate students solely into a master’s program. However, the master’s degree is offered and is available as an intermediate degree en route to the Ph.D. Its primary function, as viewed by the faculty, is as an aid to the student new to research for the formulation, conduct, and writing of an abbreviated, but complete, independent research project. Most students, with the faculty’s concurrence, choose to proceed directly with their doctoral research without a master’s degree.

Doctor of Philosophy

Before official admission to candidacy for the doctorate, the student must satisfactorily complete a grant-writing exercise, an acceptable progress report, and an oral comprehensive qualifying examination.

Doctoral Committee/Examinations

A doctoral examining committee will be formed at the time of submission of the grant proposal (at the beginning of the third year in the program). The committee will generally consist of at least three members from within the Department of Pharmacology and Toxicology and two from outside the department. Before any doctoral committee is appointed, its membership must be approved by the department’s faculty. The committee will then meet with the student to approve the grant-writing exercise and to discuss the details of the proposed dissertation research. Regardless of whether the student takes an M.S. or elects to do a progress report, he/she and the committee must agree on the final plan for the thesis or dissertation research. The committee is to be informed if major changes in the plan are contemplated and will meet periodically with the student to discuss his/her progress. Three or four months before the completion of the research project, the committee will again meet with the student to decide specific details of the thesis or dissertation preparation.

The oral preliminary examination will be held in early January of the student’s third year in the program. The scheduling of the preliminary examination is contingent upon successful completion of all work to that date, including a satisfactory grant application. The student’s doctoral committee will constitute the oral examining body.

If the student successfully passes the oral examination, a progress report should be submitted to his/her dissertation committee on or about March 1 of the third year.

If a student is not successful in the oral preliminary examination, the committee may recommend a second attempt to take place not less than one nor more than three months later. Alternatively, the committee may recommend to the entire faculty that the student should write a master’s thesis.
**Progress Report**  A progress report is expected to be written by each student in the program, except those students who are receiving an M.S. degree. M.S. students will write a master’s thesis. The progress report should be written in the style of a dissertation and should be presented in an acceptable form to the dissertation committee on or about March 1 of the student’s third year in the program. The student will defend the progress report before the dissertation committee.

**Dissertation**  Upon admission to candidacy for the degree of doctor of philosophy, the candidate must select a topic for the dissertation under the direction of the candidate’s advisor, complete a dissertation which makes a contribution to knowledge in the candidate’s area of concentration, and pass an oral examination based primarily upon the dissertation. After successful completion of the oral examination and submission of the final written and electronic copy of the dissertation, the candidate will be recommended for the degree.

**Research Areas**
Autonomic pharmacology: autonomic regulation of the cardiovascular system and of smooth muscle; sensitivity to autonomic drugs; electrophysiological studies of cardiac and smooth muscle.

Chemotherapy: antimalarial agents, anticancer agents, effects of pharmacological agents on single-cell organisms.

Biochemical pharmacology: drug metabolism, effects of drugs on lipid and nucleic acid metabolism, metabolisim of environmental substances to carcinogens.

Molecular pharmacology: interaction of drugs and hormones with nucleic acids, molecular mechanisms of signal transduction.

Cellular pharmacology: mechanism of interaction of receptors with second messenger systems, function of ion channels.

Endocrine pharmacology: mechanism of action of steroids, metabolism of sex accessory tissues, relationship of hormones to tumor growth and development.

Neuroparmacology: neuromediators in the central nervous system, electrophysiology of neurons.

Toxicology: metabolism of toxic agents, pulmonary toxicology, renal toxicology, environmental toxicology, and perinatal pharmacology and toxicology.

**Pharmacology and Toxicology (PCOL)**

343. *Pharmacology* 1. 3 Hr. PR: Second year professional standing or consent. Cellular and biochemical effects that explain the therapeutic or adverse effects of drugs. These will be integrated into considerations of drug effects, toxicities, and interactions between drugs.

344. *Pharmacology* 2. 3 Hr. PR: Second year professional standing or consent. Continuation of *Pharmacology* 1. Cellular and biochemical effects that explain the therapeutic or adverse effects of drugs. These will be integrated into considerations of drug effects, toxicities, and interactions between drugs.

360. *Pharmacology and Therapeutics*. (For dental and graduate students.) I. 4 Hr. PR: Dental student standing or consent. Lecture and demonstrations on pharmacological actions and therapeutic uses of drugs.

361. *Medical Pharmacology*. 7 Hr. (For medical and selected graduate students in the medical sciences with instructor’s consent.) PR: Basic principles of drug action, mechanisms of therapeutic effects, and undesirable effects. Emphasis on the classes of drugs currently used in medical practice.
362. Occupational Toxicology. II. 3 Hr. PR: Consent. General principles of toxicology with special emphasis on occupational health. Classes of chemicals which pose problems in the workplace will be emphasized.

364. Advanced Pharmacology. I. (Alternate years.) 1-6 PR: PCOL 361 or consent. Advanced lectures and discussion of general principles of pharmacology and toxicology and advanced lectures in biochemical, endocrine, pulmonary, and cardiovascular pharmacology. (1-6 hr. lec.) (Offered every second year.)

367. Advanced Neuropharmacology. I. 1-6 Hr. PR: PCOL 361 or consent. Advanced lectures and discussion on drug receptor theory, neurophysiological aspects of pharmacology, supersensitivity, and the actions of drugs on the central and peripheral nervous system. (1-6 hr. lec.) (Offered every second year.)

462. Literature Survey. I, II. 1 Hr. per sem. PR: Graduate status in pharmacology and toxicology. Current literature pertinent to pharmacology and toxicology including journals of allied biological sciences.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis (697), problem report (697), research paper or equivalent scholarly project (697), or a dissertation (797). (Grading may be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their students' reports (698), thesis (698), or dissertations (798). (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University's facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department's 799 or 899 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.
Physiology

Robert L. Goodman, Acting Chairperson of the Department
John Connors, Graduate Coordinator
3051 Health Sciences North
www.hsc.wvu.edu/som/physio/phys.html

Degrees Offered: Master of Science, Doctor of Philosophy

The doctor of philosophy program is designed to produce physiologists of high quality, capable of conducting independent research, and being effective teachers. Students are exposed to all aspects of physiology and a variety of related sciences. Our graduates, as a result of this rigorous training, may pursue careers in any area of physiology and can interact creatively with scientists in related fields. The master’s program is an introduction to research in physiology for students interested in, but not yet committed to, a research career. Students in this program receive training in the fundamentals of physiology and experience in a research laboratory.

Admission Requirements

Applicants should have a strong background in biology and/or chemistry. In addition to a basic biology course, it is strongly recommended that applicants have taken cellular or molecular biology and an introductory physiology course; a course on comparative anatomy also provides particularly useful background information. Inorganic and organic chemistry are basic requirements, while physical chemistry is recommended, but not required. As several areas of physiology require an understanding of the fundamentals of calculus and physics, introductory courses on these subjects are also essential.

The department requires the following materials for consideration for the M.S. or Ph.D. program: three letters of recommendation; transcripts of all undergraduate and graduate grades; a completed departmental application form; and Graduate Record Examination scores (aptitude only). Students from non-English speaking countries also need to pass the Test of English as a Foreign Language (TOEFL). The minimum acceptable score is 550. A bachelor’s degree or equivalent is required for admission; a M.S. degree is not a prerequisite for the Ph.D. program.

A complete application kit and detailed descriptions of the degree programs can be obtained by writing to the Graduate Coordinator, Department of Physiology, Robert C. Byrd HSC of WVU, P.O. Box 9229, Morgantown, WV 26505-9229. Although applications may be submitted as late as March 1 of the year of matriculation, applications must be received before February 1 to be considered for financial aid.

Master of Science

The first two semesters are devoted largely to course work in physiology (12 hours of graduate physiology, four hours of neurophysiology, and four hours of physiological methods). An additional course requirement is cellular and molecular biochemistry (four hours per semester). Students are also introduced to the research interests of the faculty through the physiological methods course, which includes rotations in two or more faculty member laboratories. At the end of the second semester, students pick a thesis advisor and begin work in that laboratory during the summer. The second year is spent primarily on research for and writing of the master’s thesis. Students are required to present a research seminar during the second year.
Doctor of Philosophy
The first year curriculum familiarizes students with the basic information and principles that form a background for advanced work in physiology. Much of the first year is devoted to graduate physiology, neurophysiology, and cellular and molecular biochemistry (four hours per semester). In the second year, the student will take advanced physiology, which emphasizes critical appraisal of the current research literature.

Faculty Research In addition to the above course work, students are introduced to the research interests of the physiology faculty in the first year through the graduate colloquium and laboratory rotations. The latter are designed to help students choose a dissertation advisor by exposing them to the experimental approaches and techniques used in different laboratories within the department.

During the first summer, students are expected to begin research projects in a departmental research laboratory of their choice. This allows a student to explore an area of research interest without a firm commitment to pursue a dissertation project in that laboratory.

During the second year, the student combines course work with the continuing development of research interests. A graduate advisor is selected during this year. Courses include: advanced physiology (six hours), graduate colloquium (two hours), graduate seminar (one hour), and a teaching practicum. Through the teaching practicum, the student begins to develop his/her teaching skills. The purposes of the graduate colloquium and seminar are twofold. First, they give students an opportunity to become informed of the latest scientific advances. Second, students have an opportunity to develop and practice presentation of research seminars. In addition to presentations by faculty and students from the Department of Physiology, faculty members from other departments at WVU and from other institutions are invited to present seminars in the program.

Qualifying Examination After successful completion of the second academic year, the students take a two-part qualifying examination. The exam consists of a comprehensive oral examination covering all of the major areas of physiology, followed by a written and oral research design examination. Upon successful completion of the qualifying examination, the student is admitted to candidacy for the degree of doctor of philosophy.

Teaching During the third and fourth years the student may enroll in elective courses. Yearly participation in the teaching practicum provides additional experience in delivering lectures to undergraduate and professional students. However, the student’s major effort is directed toward dissertation research. Results of this effort are presented annually in the graduate colloquium. During these years the student will attend and present papers at national meetings of scientific societies (e.g., American Physiological Society, Biophysical Society, Endocrine Society, Experimental Biology, Society for Neurosciences). The Ph.D. degree generally can be completed in four to five years.

Faculty laboratories offer opportunities for research in cardiovascular, cell, endocrine, gastrointestinal, muscle, neural, renal, and respiratory physiology.
Physiology (PSIO)

341. Physiological Methods 1. II. 1-5 Hr. PR: Consent. Research techniques and strategies for physiology.

342. Physiological Methods 2. II. 1-4 Hr. PR: Consent. Research techniques and strategies for physiology.

343. Fundamentals of Physiology. (For dental students and a limited number of regular full-time graduate students in the Health Sciences Center’s basic sciences departments.) I. 5 Hr. PR: College physics, algebra, chemistry, and consent of department chairperson. Analysis of basic facts and concepts relating to cellular processes, organ systems, and their control. (3 hr. lec., 1 hr. conf., 1 hr. lab.)

346. Neurophysiology. (For graduate students in the Health Sciences Center’s basic sciences departments and a limited number of regular full-time graduate students.) II. 1-4 Hr. PR: MATH 3 or 141, PHYS 1 and 2 or consent of department chairperson. Properties of excitable tissues (nerve and muscle), synaptic transmission, reflexes and central nervous system function, and behavior. (1-3 hr. lec., 1 hr. conf.)

350. Graduate Physiology 1. I. 9 Hr. PR: Graduate student status or consent. Analysis of basic facts and concepts relating to cellular processes, organ systems, and their control.

444. Graduate Seminar. I, II. 1-3 Hr. PR: Graduate standing and consent. (Graded S/U.)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practices in college teaching of physiology. (Graded as S or U.)

491. Advanced Topics. I, II, S. 1-15 Hr. PR: Consent. Lecture-conference in; cellular physiology, neurophysiology, circulation, respiration, acid-base and renal physiology, digestion and energy metabolism, and endocrinology. (3 hr. lec., 3 hr. conf.)

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis. I, II, S. 2-4 Hr. PR: Consent. (Graded as S or U.)

499. Graduate Colloquium. I, II. 1-6 Hr. PR: Consent. (Graded as S or U.)
The School of Nursing, one of the four professional schools housed at the Health Sciences Center, offers undergraduate and graduate programs of study leading to the B.S.N., M.S.N., and D.S.N. degrees and post-master’s nurse practitioner certification in Morgantown and Charleston. Courses are offered via satellite television and other advanced telecommunications systems to selected extension sites. The basic B.S.N. program can be completed in four years in Morgantown. Consortium programs with Glenville State College and WVU at Potomac State College allow students to complete the first two years at Glenville or Potomac State and the last two years in Morgantown or at West Virginia University Institute of Technology in Montgomery, WV.

The School of Nursing offers a program of study leading to the master of science in nursing (M.S.N.) degree in rural primary health care and the doctor of science in nursing (D.S.N.) degree. The functional areas of M.S.N. study available are advanced practice nursing (nurse practitioner) and nursing education. The focal populations are family health, child health, and women’s health. Additional sub-specialties may become available based on student demand and faculty availability. An enrollment of at least eight students is required for offering courses. The school also offers a post-graduate nurse practitioner certification program in the same specialities for those who already have an M.S.N. Additional tracks leading to the M.S.N. degree and the B.S./B.A. to B.S.N./M.S.N. for non nurse college graduates. The programs are offered at the WVU Health Sciences Center campuses in Morgantown and Charleston. Contact the School of Nursing for additional information.

Accreditation

The programs are accredited by the national nursing accrediting agency, (CCNE), for 10 years, and approved by the West Virginia Board of Examiners for Registered Professional Nurses.

For further information write: Assistant Dean Student and Alumni Affairs, WVU School of Nursing, RCB Health Sciences Center, P.O. BOX 9600, Morgantown, WV 26506-9600 or visit the School of Nursing’s web site at www.hsc.wvu.edu/son.
Faculty
† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.
# Clinical track appointment.

Professors
† Laurie Badzek, M.S.N., J.D., L.L.M., R.N. (WVU). Associate professor.
Barbara Banonis, M.S., R.N. (WVU). Adjunct instructor.
Ann Cleveland, M.S.N., R.N. (U. Va.). Lecturer.
Heather S. Cline, M.S.N., R.N., P.N.P. (WVU). Adjunct instructor-Research.
Sandra Cotton, M.S., C.R.N.P. (U. of Md.). SN Assistant professor and Director, Faculty Practice Plan.
Theresa Cowan, M.N., R.N.C.S. (WVU) Assistant professor and Coordinator, GSC/WVU Joint Nursing Program.
† Pamela Deiriggi, Ph.D., R.N., P.N.P., C.R.N.P. (U. Tx.). Associate professor and Assistant to the Dean for Research.
† Rose Ann DiMaria, Ph.D, R.N., C.N.S.N. (NYU) Assistant professor, Charleston Division.
Mary F. Fanning, M.S.N., R.N.-C., C.C.R.N. (WVU). Adjunct instructor and Lecturer.
Kay E. Finkel, M.S.N., R.N. (U. Of Pitt.). Adjunct instructor.
Imogene Foster, Ed.D., R.N. (WVU). Associate professor and Coordinator of Rural Health Nursing Education.
Mary Gibson, M.S.N., C.N.M. (Yale U.) Lecturer.
Suzanne W. Gross, Ph.D., R.N. (U. Texas). Assistant professor and Interim Chairperson, Health Promotion/Risk Reduction Department.
Denice Hamula, M.S.N., R.N. (WVU). Adjunct instructor.
Patricia Harman, M.S.N., R.N., C.N.M. (U. of Minn.). Adjunct instructor.
Diana Higginbotham, M.S., R.N. (WVU). Adjunct instructor.
Stephen Hines, Ph.D. (Purdue U.). Adjunct assistant professor.
Jean M. Hoff, M.P.H., R.N. (U. Pitt.). Associate professor emerita.
Patricia Horstman, M.S.N., R.N. (WVU). Adjunct instructor.
Michele Zlokas Hubbard, M.S.N., R.N. (WVU). Adjunct instructor.
Elizabeth Hupp, M.S.N., R.N. (WVU). Adjunct Instructor.
Jodie Jackson, M.P.H., R.N. (Johns Hopkins U.) Adjunct instructor.
*Michelle Janney, Ph.D., R.N. (U. of Toledo). Associate dean for HSC Clinical Services.
Linda Joyce Justice, M.S.N., R.N. (WVU). Adjunct instructor.
Judith D. Klingensmith, M.S.N., R.N. (U. Of Pitt.). Adjunct assistant professor.
Nancy Koontz, M.S.N., R.N. (U.Md.). Associate professor emerita.
Michelle L. Kopf, M.S., R.N. (Georgetown U.) Adjunct instructor.
Barbara J. Koster, M.S.N., R.N. (WVU), Adjunct instructor.
Patricia Biller Krauskopf, M.S.N., R.N. (U. Of Colo.). Adjunct instructor.
*Barbara Kupchak, Ph.D., R.N. (U. Tx.). Associate Professor.
†June H. Larrabee, Ph.D., R.N. (U. Tenn.-Memphis). Associate assistant professor.
†Susan Leight, Ed.D., R.N. (WVU). Assistant professor.
†Nan Leslie, Ph.D., R.N. (U. Pitt.), Associate professor.
Kathleen Marsland, M.S., R.N. (U. Colo.). Assistant professor.
*E. Jane Martin, Ph.D., R.N., C.S., F.A.A.N. (U. Pitt.). Professor and Dean.
Anne Slaughter Miller, M.S.N., R.N. (National U.). Adjunct instructor.
Carol Parsons Miller, M.S.N., R.N. (WVU). Adjunct instructor.
Lois Morgan, B.S.N., R.N. (U. Wash.). Adjunct instructor.
Alvita Nathaniel, M.S.N., R.N. (WVU). Lecturer, Charleston Division.
Cynthia A. Neely, M.S.N., R.N.C., E.N.P. (WVU). Adjunct instructor.
Mary Nemeth-Pyles, M.S.N., R.N.C. (WVU). Lecturer, Charleston Division.
Barbara Jean Nightengale, M.S.N., R.N. (WVU). Adjunct instructor.
Barbara Nunley, M.S.N., R.N.C. (Ohio St. U.). Lecturer, Charleston Division.
Lois O'Kelley, M.S.N., R.N. (Wayne St.U.). Associate professor emerita.
†Lynne Ostrow, Ed.D., R.N. (WVU). Associate professor and Chair, Health Restoration
Department and Interim associate dean for Undergraduate Academic Affairs,
†Cynthia Armstrong Persily, Ph.D., R.N. (U. of Penn.). Associate professor, Chairperson,
Charleston Division and Associate dean for Academic Affairs, WVUSON-Southern Region.
Drema Pieson, M.S.N., R.N., C.N.A. (Bellarmine Coll.). Adjunct instructor.
Judith Polak, M.S.N., R.N., N.N.P. (U. of Fla.) Adjunct instructor.
*Beverly C. Richert, Ph.D., R.N. (U. Pitt.) Lecturer.
Jacqueline Riley, M.N., R.N. (U. Fla.). Associate professor and Assistant dean for Student and
Alumni Affairs.
Bonnie Roche, M.S.N., R.N.-C. C.R.N.P. (WVU). Adjunct instructor.
Ashley C. Ross, M.S.N., R.N. (WVU) Visiting instructor.
Joanne Seasholtz, Ph.D.,R.N. (U. Pitt.). Adjunct assistant professor.
Debra J. Shupienis, M.S.N., R.N. (WVU). Lecturer, Charleston Division
†Patricia Simoni, Ed.D., R.N., C.S. (WVU). Associate Professor and Chair, Health Systems
Department

School of Nursing  475
Master Of Science In Nursing

The School of Nursing offers a program of study leading to the master of science in nursing (M.S.N.) degree. The functional areas of study available are advanced practice nursing (nurse practitioner) and nursing education. The focal populations are family health, child health, and women’s health. The School also offers a post-graduate nurse practitioner certification program in the same specialties for those who already have an M.S.N. The programs are offered at the University main campus in Morgantown and the Charleston Division. Courses are offered utilizing interactive television. An enrollment of at least eight students is required for offering courses.

The graduate program offers a curriculum that allows students to enroll on a part-time or full-time basis. Throughout the curriculum, students are guided in the processes of self-development aimed at pursuing excellence in scholarly and professional endeavors. The program allows flexibility within the basic curricular structure through the individualization of learning experiences, electives, participation in a guided research experience, and the opportunity to investigate an area of interest in advanced study.

The pattern and duration of the student’s study plan is determined in consultation with a faculty advisor and is based on the student’s background and goals. The program can be completed in four semesters plus one summer session of full-time study. The average full-time load is nine to 12 credit hours per semester.

Graduate education in nursing prepares clinicians capable of leadership in developing and expanding nursing knowledge, skills, and practice competencies in light of societal needs. Preparation at the master’s level provides the opportunity for the student to demonstrate self-direction and effective interactions with other health professionals in improving nursing practice and the health care delivery system. The master’s graduate is able to provide quality health care in a variety of settings while clarifying and redefining nursing roles.

As a part of the University System’s commitment to the West Virginia Rural Health Education Partnerships Program (WVRHEP) and health care for all West Virginians, all health sciences students in state-supported schools are required to complete a rural rotation of at least three months prior to completion of degree requirements. Nursing students will complete this rotation at a designated WVRHEP site during their practicum courses. Every effort will be made to accommodate requests for placement at specific sites, especially sites near a student’s home.
Admission Requirements

These criteria must be met for regular admission to graduate study in the School of Nursing. The applicant must:

1. Meet WVU requirements for admission to graduate study.
2. Have a cumulative grade-point average of 3.0 or higher on a 4.0 scale on all college work attempted.
3. Have GRE scores within the last five years with minimum scores of 400 verbal and analytical and 350 quantitative and totaling 1250 or higher.
4. Have a current, unrestricted R.N. license in at least one state.
5. Have a bachelor of science in nursing degree from a nationally accredited school.
6. Have completed three credits of statistics acceptable for transfer with grade of C or better.
7. Have completed a health assessment course which included physical examination skills with a grade of B or better and acceptable for transfer.
9. Submit a typewritten statement of professional goals (limited to two typewritten, double-spaced pages).

A B.S.N. degree is mandatory. Applicants who do not meet #6 and/or #7 may be considered for provisional admission on an individual basis. The specific provisions which must be met for progression to regular status will be noted in the individual's admission letter. Preference is given to West Virginia residents.

The application process must be completed by June 1 for fall enrollment and October 1 for spring enrollment. The sequence of courses in the M.S.N. program begins in the fall semester only. Initial enrollment in the spring semester is limited to applicants who wish to complete prerequisites or who have prior graduate level nursing courses. Class sizes are limited based on available faculty resources and space.

Progression Standards

In order to progress in the master of science in nursing curriculum, a student is expected to meet the following performance standards:

1. Achieve an overall academic grade-point average of at least a 3.0 in all work attempted in the master’s program.
2. A student may only carry forward one “C” grade in a nursing course. A “C” in a second nursing course will result in dismissal from the program.
3. A student who falls below the 3.0 GPA on nine or more credit hours has one semester to bring up their GPA to the 3.0 requirement. Failure to do so will result in dismissal from the program.
4. A student may repeat only one nursing course and only one time.

Degree Requirements

1. Completion of 44 credit hours in nursing.
2. Completion of a guided research experience.
3. Pass comprehensive examinations in the last semester of enrollment.
4. Removal of all conditions, deficiencies, and incomplete grades. Credit hours for courses in which the grade is lower than C will not count toward satisfying graduate degree requirements.

Required courses must be taken for letter grades (A, B, C). Electives may be opted for pass (P) or fail (F) grades, subject to the approval of the advisor.
Post Graduate Nurse Practitioner Certificate Program

This program prepares master’s prepared nurses as nurse practitioners. The fields of specialization offered are the same as those available in the M.S.N. curriculum. An enrollment of at least eight students is required for offering courses. Those who complete the program of study are eligible to sit for the examination for national certification as a nurse practitioner.

Application Requirements

To be considered for admission, the applicant must have a master’s degree in nursing from a nationally accredited program with a minimum cumulative GPA of 3.0 or better and an unrestricted R.N. license in at least one state.

Certificate Program Requirements

Each student’s program will be individualized based on their educational and experiential background. Prerequisites to registration for the four required clinical courses are evidence of competence in advanced physiology/pathophysiology, applied therapeutics (pharmacology), and physical examination skills. Competence may be established by transfer of academic credit, enrollment in academic or CEU courses, or challenge examination. The four required courses for post master’s certification as a nurse practitioner are: NSG 336 Clinical Diagnosis across the Lifespan, the Speciality Cognate, Speciality Practicum I, and Speciality Practicum II. In addition, the student must maintain a 3.0 GPA and satisfactory clinical ratings.

Deadlines

The application process for both the master’s and post-master’s program must be completed by June 1 for fall enrollment and October 1 for spring enrollment. The sequence of courses in the M.S.N. program begins in the fall semester only. Initial enrollment in the spring semester is limited to applicants who wish to complete prerequisites or who have prior graduate level nursing courses. Class sizes are limited based on available faculty resources and space.

Application Process

Applicants need to complete the following steps in order to be considered for admission:

1. Complete two application forms as indicated and return to the appropriate offices to avoid unnecessary delay in the review process.
   a. Application for admission to graduate studies (available from Admissions and Records). To be returned with a non-refundable service fee to: Office of Admissions and Records, West Virginia University, P.O. Box 6009, Morgantown, WV 26506-6009.
   b. Application for admission to the graduate study in Nursing (available from School of Nursing Student Affairs Office). To be returned to: WVU School of Nursing, Student Affairs Office, P.O. Box 9600, Morgantown, WV 26506-9600.

2. Request an official transcript of records from each college or university previously attended. Transcripts and records should be sent directly from the institution to the WVU Office of Admissions and Records, P.O. Box 6009, Morgantown, WV 26506-6009.

3. Send three recommendation letters directly to the Student Affairs Office, WVU School of Nursing, P.O. Box 9600, Morgantown, WV 26506-9600.
The parameters used for review of applicants include: test scores, academic achievement, professional experience, career goals, and recommendations. Once admitted the student is assigned a faculty advisor who guides the student in curricular and academic matters. Enrollment in nursing courses is based on readiness and availability of space.

M.S.N. Curriculum
(Note: Course numbers are expected to change within the 2000-2001 academic year.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
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<tbody>
<tr>
<td>NSG 322</td>
<td>Theory/Critical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>NSG 324</td>
<td>Research, Evaluation, and Statistics</td>
<td>5</td>
</tr>
<tr>
<td>NSG 326</td>
<td>Health Policy, Issues, and Ethics</td>
<td>3</td>
</tr>
<tr>
<td>NSG 328</td>
<td>Advanced Pathophysiology</td>
<td>4</td>
</tr>
<tr>
<td>NSG 330</td>
<td>Health Promotion</td>
<td>2</td>
</tr>
<tr>
<td>NSG 331</td>
<td>Advanced Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td>NSG 332</td>
<td>Concepts of Advanced Nursing</td>
<td>2</td>
</tr>
<tr>
<td>NSG 333</td>
<td>Family, Community, Rural Health Systems</td>
<td>2</td>
</tr>
<tr>
<td>NSG 336</td>
<td>Clinical Diagnosis Across the Life Span</td>
<td>3</td>
</tr>
<tr>
<td>NSG 340/50/80</td>
<td>Speciality Course</td>
<td>4</td>
</tr>
<tr>
<td>NSG 341/51/81</td>
<td>Speciality Practicum 1</td>
<td>5</td>
</tr>
<tr>
<td>NSG 342/52/75/82</td>
<td>Speciality Practicum 2</td>
<td>5</td>
</tr>
<tr>
<td>NSG 397</td>
<td>Guided Research Experience</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>44</td>
</tr>
</tbody>
</table>

M.S.N. Suggested Plan of Study
(Note: all courses are not available every semester.)

Full Time

<table>
<thead>
<tr>
<th>First Semester Year 1</th>
<th>Second Semester Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSG 322 Theory*</td>
<td>NSG 324 Research*</td>
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<tr>
<td>NSG 332 Concepts*</td>
<td>NSG 336 Diagnosis*</td>
</tr>
<tr>
<td>NSG 328 Adv. Pathophysiology</td>
<td>NSG 330 Promotion</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
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</tbody>
</table>

| Summer I              |
| NSG 331 Adv. Pharm    |
| NSG 333 Rural Fa.*    |
| NSG 397               |
| Total                 |

Part Time

<table>
<thead>
<tr>
<th>First Semester Year 1</th>
<th>Second Semester Year 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSG 322 Theory*</td>
<td>NSG 324 Research*</td>
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<tr>
<td>NSG 332 Concepts*</td>
<td>NSG 330 Promotion*</td>
</tr>
<tr>
<td>Total</td>
<td>Total</td>
</tr>
</tbody>
</table>

| Summer I              |
| NSG 333 Rural Fa.*    |
| Total                 |

School of Nursing
First Semester Year 2  
NSG 328 Adv. Patho .......................... 4  
Total .................................................. 4  

Second Semester Year 2  
NSG 336 Diagnosis* .......................... 3  
NSG 326 Policy* .............................. 3  
Total .................................................. 6  

Summer I  
NSG 334 Adv. Pharm .......................... 3  
NSG 397 ........................................... 1  
Total .................................................. 4  

First Semester Year 3  
NSG340, 350, or 380 .......................... 4  
NSG341, 351, or 381 Practicum I  .... 5  
Total .................................................. 9  

Second Semester Year 3  
NSG 342, 352, 375 or 382 Practicum II  ... 5  
NSG 397 ........................................... 2  
Total .................................................. 7  

### Schedule of Course Offering  

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
<th>Summer I and II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory*</td>
<td>Research*</td>
<td>Rural Family*</td>
</tr>
<tr>
<td>Concepts*</td>
<td>Diagnosis*</td>
<td>Adv. Pharmacology</td>
</tr>
<tr>
<td>Specialty</td>
<td>Policy*</td>
<td></td>
</tr>
<tr>
<td>Practicum I</td>
<td>Practicum II</td>
<td></td>
</tr>
</tbody>
</table>

*MDTV Offering 
Accepted by graduate curriculum committee November 24, 1997. 
Accepted by Graduate Faculty February 23, 1998.

### Doctor Of Science In Nursing  
The doctor of science in nursing is a post-master’s professional degree that focuses on the development of knowledge to improve health. The emphasis is on research and knowledge development for application in nursing practice. 

The program of study includes 54 semester credit hours of post-master’s coursework. There are three curricular components of core, electives, and dissertation. Students can complete the program on a full-time basis in three years, including two summer sessions. A part-time student can complete the program in four years with three summer sessions. The first class will be admitted to begin studying in the fall 2000 semester. See the School of Nursing web site at: www.hsc.wvu.edu/son for additional information.

### Nursing (NSG)  

322. **Theory and Critical Analysis.** I, S. 3 Hr. Introduction to the theoretical foundations of the discipline of nursing as a basis for applying critical thinking skills to the development of a conceptual framework for nursing.

324. **Research, Evaluation and Analysis.** II. 5 Hr. PR: NSG 322. An overview of research, measurement, and evaluation models useful to nursing practice.

326. **Health Policy: Issues and Ethics.** 3 Hr. PR: NSG 322 or Consent. A focus on the social, political, technological, ethical, and economical dynamics that shape health care delivery.

328. **Advanced Pathophysiology.** I. 4 Hr. Theoretical basis of pathophysiological changes in acute and chronic illness across the lifespan. This course lays the foundation for subsequent courses in diagnosis management and therapeutic interventions.
330. *Health Promotion for All Ages*. II. 2 Hr. Exploration of the theoretical foundations of health promotion, prevention of illness, and maintenance of function across the life-span applicable to the advanced practice of nursing.

331. *Advanced Pharmacology*. 3 Hr. This course reviews and updates the nurse practitioner’s knowledge of pharmacology and therapeutics. Overviews of underlying disease processes and reviews of pharmacological principles of available therapeutic agents are presented.


333. *Family, Community, Rural Health Systems*. II. 2 Hr. PR: NSG 322. Exploration and analysis of theories and research on family, community, and rural health systems applicable in the advanced practice of nursing.

336. *Clinical Diagnosis Across the Lifespan*. I, S. 3 Hr. PR: NSG 322. Introduction to the knowledge and skills basic to the assessment of health status, diagnosis, treatment, and evaluation in the advanced practice of nursing.


342. *Women’s Health Practicum 2*. II, S. 5 Hr. PR: NSG 341. Supervised clinical experience under the direction of an advanced practice nurse faculty in the delivery of primary health care to women in rural areas.


352. *Child Health Practicum 2*. II. 5 Hr. PR: NSG 351. Supervised clinical experience under the direction of an advanced practice nurse faculty in the delivery of primary health care to children in rural areas.

375. *Education Practicum*. I, II. 6 Hr. PR: NSG 336, specialty practicum 1 in area of interest. Supervised practice in the application of theories and methods related to nursing education.


381. *Rural Family Health Practicum 1*. I. 5 Hr. PR or CONC: NSG 380. Implementation of theory-based advanced nursing practice with individuals, families, and groups in the rural community systems; student development of the advanced practice role in managing, consulting, and caring for families.

382. *Rural Family Health: Practicum 2*. II, S. 5 Hr. PR: NSG 381. Supervised clinical experience under the direction of an advanced practice nurse faculty in the delivery of primary health care to individuals, families, and groups in rural areas.
391 A-Z. **Advanced Topics**. I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

397. **Research**. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

422. **Philosophical Basis of Nursing**. 3 Hr. PR: NSG 322. This course provides a foundation for scientific inquiry by examining the philosophical structure of science, relative to the discipline of nursing. The philosophical basis of ways of sciencing and theory development are explored and analyzed.

426. **Research Methods 1**. 3 Hr. Advanced qualitative and quantitative research methods relevant to conducting research in nursing are studied, focusing on the study of phenomena that support clinical practice. Interrelationships among questions, theoretical framework, and design are emphasized.

427. **Evidence Based Practice**. 3 Hr. PR: NSG 324. This course focuses on the critical appraisal of research findings, synthesis of empirical evidence, and the decisions on the use of evidence to impact the care of vulnerable populations.

428. **Theoretical Basis of Nursing**. 3 Hr. PR: NSG 422. This course builds on philosophical basis of nursing. Discovery and verification of scientific knowledge are addressed by focusing on theory development. Methodologies include concept analysis and evaluation of middle-range theories of nursing and related sciences.

429. **Research Methods 2**. 3 Hr. PR: NSG 426 and PR or CONC: STAT 312. This course continues the study of the quantitative and qualitative research process extending from methodology to analysis and interpretation. It includes sampling theory, power, measurement, data collection procedures, and advanced analysis procedures.

434. **Use of Data**. 3 Hr. PR: NSG 426 and NSG 429. This course focuses on use of the following data bases: clinical, financial, health services, nursing, local, state, and national. The uses of existing data in clinical and policy decisions and in research will be explored.

435. **Principles: Nursing Education**. 3 Hr. PR: EDP 450. This course examines the research base of educational strategies in nursing education in classroom and clinical settings. The course also examines external determinants on nursing curriculum, accreditation issues, and evaluation of nursing programs.

437. **Issues in Health Policy**. 3 Hr. PR: NSG 326 and NSG 434. This course focuses on critical analysis, synthesis, and integration of knowledge about health policy issues and interdisciplinary and ethical implications in national health care delivery systems.

481. **Research Mentorship 1**. 1 Hr. PR: NSG 429. In this guided practicum, the student's research skills are developed and cultivated through participation in the mentorship process with an experienced researcher (the chairperson or his/her designee).

482. **Research Mentorship 2**. 1 Hr. PR: NSG 481. This is the second guided practicum in which the student participates in the mentorship process for the purpose of continued development of the student's research skills.

483. **Dissertation Seminar 1**. 2 Hr. PR: NSG 429. This seminar provides and opportunity for continued knowledge synthesis related to the selected topic of research. Students will participate in proposal presentation and critique. The expectation is a National Research Service Award Predoctoral Fellowship Application.

484. **Dissertation Seminar 2**. 2 Hr. PR: NSG 483. This seminar provides an opportunity for refinement of the proposal developed in NSG 483. Student critique of presented proposals, as well as feedback of faculty, is expected to result in the dissertation proposal.

492. Directed Study. I, II, S. 1-6 Hr. Directed study and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
The WVU School of Pharmacy offers graduate programs in the pharmaceutical sciences for both the M.S. and Ph.D degrees. The school is advantageously located in the Health Sciences Center complex which also houses all departments of the Schools of Medicine, Nursing, and Dentistry, as well as a comprehensive medical library, audio-visual and computer-based learning center, photo-illustration service, and laboratory animal quarters. The School of Pharmacy maintains its own research laboratories and equipment on three floors within a section of the Health Sciences Center complex. The scientific community, which is especially well developed, draws on area scientists at WVU, NIOSH, NASA, FBI, and a variety of research centers supported by NSF and the Department of Energy. A new NIOSH research facility is two blocks away and Mylan Pharmaceuticals, the largest generic drug producer in the country, is located across the street from the Health Sciences Center campus.

Applicants for the Ph.D. may choose among several specialty areas, which include medicinal chemistry, pharmaceutics, biopharmaceutics/pharmacokinetics, and pharmaceutical systems and policy. The pharmaceutical sciences uniquely encompass a wide variety of interrelated areas of science and technology. For example, students in medicinal chemistry are trained to combine knowledge in analytic/synthetic chemistry, biochemistry, pharmacology, pharmacokinetics, and toxicology and molecular modeling in the design and synthesis of new drugs; those who specialize in pharmaceutics, biopharmaceutics, and pharmacokinetics are trained to combine physicochemical methods, cellular and molecular biology, and drug metabolism in the design and evaluation of novel drug delivery systems and their impact on pharmacodynamic and therapeutic effects; and those who specialize in pharmaceutical systems and policy may integrate sociology, marketing, economics, health care policy administration, public health, etc., or may develop optimal methods in the delivery of pharmaceutical and health services.

Master of Science and Doctor of Philosophy

Students must possess a baccalaureate degree from a suitable academic discipline with an overall grade-point average of at least 2.75 and an aptitude and interest for graduate work in the pharmaceutical sciences. Furthermore, GRE scores in the verbal, quantitative, and analytical sections are required. TOEFL scores may be required of international students.

To obtain specific information related to the school’s graduate programs, graduate faculty research interests, and availability of graduate assistantships or fellowships, applicants may write directly to: Assistant Dean for Research and Graduate Programs, WVU School of Pharmacy, Health Sciences Center North, P.O. Box 9500 Morgantown, WV 26506. Telephone: (304) 293-1482. E-mail: pcallery@hsc.wvu.edu, website: www.hsc.wvu.edu/sop.

School of Pharmacy Graduate Programs

Pharmaceutical Sciences ................................................. M.S., Ph.D.
Graduate Faculty in Pharmaceutical Sciences
* Indicates associate membership in the graduate faculty.

Professors
Marie A. Abate, Pharm.D. (U. Mich.). Drug information, Computer assisted instruction, Study design and evaluation.
*Calvin C. Brister, Ph.D. (U. Miss.). Biopharmacy.
Patrick S. Callery, Ph.D. (UCSF). Drug design, Drug metabolism.
David Lalka, Ph.D. (SUNY-Buffalo). Pharmacokinetics, Biochemical pharmacology.
Joseph H.K. Ma, Ph.D. (Duquesne U.). Pharmaceutics and pharmaceutical chemistry; Molecular and cellular approaches to targeted drug delivery.
Charles Ponte, Pharm.D. (U. Utah). Women’s health, diabetes mellitus.
Sidney A. Rosenbluth, Ph.D. (U. Tx.). Development and evaluation of expanded pharmacists’ roles in health care delivery, Disease prevention/health promotion.
George R. Spratto, Ph.D. (U. Minn.). Dean. Pharmacology.

Associate Professors
Peter M. Gannett, Ph.D. (U. Wisc.). Metabolism and carcinogenesis of alkyl hydrazines.
Robert K. Griffith, Ph.D. (Ohio St. U.). Drug design, Medicinal chemistry.
Sundareswaran (Suresh) Madhavan, Ph.D. (Purdue U.). Health care and pharmaceutical marketing, Health services research, Pharmaceutical cost-containment.
Yongyut Rojanasakul, Ph.D. (U. Wisc.). Pharmaceutics, Drug delivery and transport phenomena in biological systems; antisense oligonucleotides.
Timothy Tracy, Ph.D. (Purdue U.). Clinical pharmacology; Drug metabolism.

Assistant Professors
Mayur M. Amonkar, Ph.D. (WVU). Health services and outcomes research.
Samuel M. Mazza, Ph.D. (U. Pitt.). Radiopharmaceuticals, Organic chemistry.
David P. Nau (U. FL). Outcomes assessment and quality improvement research.
Paul D. Siegel, Ph.D. (Tulane). Immunopharmacology and toxicology.
*David Toledo-Velasquez (U. Wisc.). Pharmaceutics, Targeted drug delivery systems.
Ginger G. Scott (U. Mn.). Pharmacy practice and health services research.

Pharmaceutical Sciences
Patrick S. Callery, Assistant Dean for Research and Graduate Programs
1136 Health Sciences North
www.hsc.wvu.edu/sop/bps

Degrees Offered: Master of Science, Doctor of Philosophy

The School of Pharmacy offers graduate programs in the basic pharmaceutical sciences and in pharmaceutical systems and policy, leading to the degrees of master of science and doctor of philosophy. These research-oriented programs are sufficiently flexible to accommodate individual interests, capabilities, and potential of the student for maximum academic development in becoming an accomplished research, scholar, and teacher. For general admission, applicants must satisfy the requirements for all graduate students entering WVU. For admission with regular student status, the applicant must possess a baccalaureate degree in a suitable academic area, an overall grade-point average of at least 2.75, and an aptitude and interest for graduate work in
the pharmaceutical sciences. Applicants not admitted with regular student status may be considered for alternative admission status. Graduate Record Examination scores in the verbal, quantitative, and analytical portions of the examination are required of all students, and TOEFL or similar scores are additionally required of international applicants for whom English is a foreign language. For applicants in the area of pharmaceutical systems and policy, test scores on the Graduate Management Admissions Test (GMAT) are acceptable, although GRE scores are preferred.

No course credits with a grade of less than C may be counted toward fulfilling credit-hour requirements for a graduate degree. Furthermore, a cumulative grade-point average of no less than 3.0 in all graduate courses must be obtained by the student to qualify for an advanced degree.

Master of Science
Students admitted for the master of science (M.S.) may specialize in pharmaceutical systems and policy, medicinal chemistry, pharmaceutics, biopharmaceutics, and pharmacokinetics.

To be eligible for the M.S. degree, students must complete a minimum of 30 hours of graduate credit, of which no more than six hours may be for research and thesis.

Upon completion of course work and research requirements, and after submission of the thesis, an oral examination for the thesis defense will be administered by the student’s advisory committee.

Doctor of Philosophy
Students admitted for the doctor of philosophy (Ph.D.) degree program may choose among several specialty areas, which include medicinal chemistry, pharmaceutics, biopharmaceutics/pharmacokinetics, and pharmaceutical systems and policy.

Course Work  The student’s first semester is usually occupied with course work while under the guidance of the assistant dean for research and graduate programs. During this period, a student will confer with faculty members in the student’s area of interest concerning a possible research project, and a major professor should be chosen by the end of the first semester of graduate study. Prior to the third semester for M.S. students or the fourth semester for Ph.D. students in the program, under the direction of the agreed upon research advisor, the student shall have completed the process of selecting members of their masters thesis (minimum of three) or doctoral dissertation (minimum of five) research committee.

The interest to pursue the M.S. degree en route to the Ph.D. should also be stated at this time. Students must complete all requirements for the M.S. degree except the preparation and defense of the thesis in order to advance in the Ph.D. program. With committee advice, the student, however, may elect to prepare and defend a thesis to obtain the M.S. before the Ph.D.

Study Plan  A formal plan of study must be submitted by the student upon completion of 30 credit-hours (or 18 credit-hours for the M.S.) of formal graduate course work. With guidance from the research advisory committee and by the end of the second year in the program, the student should have completed the language/research tool requirements.

Candidacy  To be admitted for candidacy of the Ph.D. degree, the student must satisfy the above requirements and pass oral and written qualifying examinations. After admission to candidacy for the Ph.D., a student normally devotes substantial time to an original research project that culminates in a dissertation. The dissertation must be satisfactorily completed and defended at an oral examination before the recommendation to award the Ph.D.
Pharmacy (PHAR)

301. Advanced Biopharmaceutics. I or II. 3 Hr. Concepts of biopharmaceutics and pharmacokinetics in relation to the design and evaluation of dosage forms and determination of rational dosage regimens in health and disease.

302. Advanced Pharmaceutics. I or II. 3 Hr. Physicochemical and biopharmaceutical principles involved in disperse systems (liquid, semi-solid, and solid) which function as dosage forms. Considerations of properties of solid dispersions, micromeritics, diffusion of liquid dispersions, interfacial phenomena, emulsification, suspensions, prolonged action medication, etc.

323. Economics of the Pharmaceutical Industry. I or II. 3 Hr. History, background, and formation of major drug industries. Oligopolistic practices, mergers, combines, costs of research, and production.

351. Physical Pharmacy. 3 Hr. PR: First professional year standing or Consent. Physical pharmacy is designed to teach students the basic principles related to physical phenomena and stability as well as introduce them to a variety of factors that influence drug dosage form design and stability.

353. Pharmacy as a Profession. 3 Hr. PR: First professional year standing or Consent. The course introduces students to the concept of professionalism, the scope of pharmacy practice opportunities, the health care system as it relates to pharmacy, and other contemporary issues in pharmacy practice.

354. Pharmaceutics. 3 Hr. PR: PHAR 351. Pharmaceutics builds upon the concepts discussed in physical pharmacy and focuses on drug dosage forms and delivery systems, their design, drug delivery to the body through a variety of routes, and factors affecting drug delivery.

356. Immunology, Biotechnology, and Anti-infectives. 3 Hr. PR: First professional year standing or Consent. Integration of immunology, biotechnology, and anti-infective. Students will learn basic functions of the immune system, elements of the pharmaceutical applications of biotechnology, and be introduced to the chemotherapy of infections.

358. Chemical Properties of Drugs. 1 Hr. PR: First professional year standing or Consent. An introduction to principles of chemical stability and chemical properties as they relate to drug molecules. Topics to be covered include functional group analysis, solubility, oil/water partitioning, organic acids and bases, and drug decomposition.

363. Chemistry of Drug Action 1. 3 Hr. PR: PHAR 358 or consent. Chemistry of drug action 1 provides a basic understanding of relationships between the chemical structure of a drug and its biological effect. Physicochemical properties, enzymatic transformations, and structure-activity relationships (SAR) of important pharmaceutical agents are discussed.


366. Pharmacy Management. 2 Hr. PR: Second professional year standing or consent. This course provides an introductory survey of the basic principles of personnel and fiscal management as they apply to organizational planning and decision-making, organizational design and structure, leadership and control in organizations, and the issues facing pharmacy managers.

368. Medical Literature Evaluation. 2 Hr. PR: Second professional year standing or consent. Will be built upon information describing drug literature resources presented previously with emphasis on the review and evaluation of the primary literature, secondary and computerized resources, drug policy management, and drug information controversies.

373. Biopharm and Pharmacokinetics. 3 Hr. PR: Third year professional standing or consent. Fundamental principles of biopharmaceutics (physicochemical and biological processes affecting drug transit into the systemic circulation) and pharmacokinetics (kinetic and biological processes a drug undergoes upon entering the body).

375. Advanced Pharmaceutical Analysis 1. I or II. 3 Hr. Spectroscopic and chromatographic methods of analysis with emphasis on their applications in pharmaceutical problems and in biological sciences.
378. Disease Prevention Health Promotion. 2 Hr. PR: Third year professional standing or consent. This course exposes pharmacy students to pharmacoepidemiology and public health. Instruction focuses on pharmacists as integral to preventing and detecting disease and promoting community health. Emphasis is given to rural health care and Appalachian culture.

380. Outcomes Assessment and Quality Improvement. 2 Hr. PR: Third professional year standing or consent. Outcomes assessment and quality improvement will expose students to the development and implementation of formularies, drug use evaluations, outcomes assessment and quality improvement. Emphasis will be placed on how these issues relate to pharmaceutical services.

381. Pharmacy Systems. 2 Hr. PR: Third year professional standing or consent. Basic principles of financial management as they apply to the day-to-day operations in pharmacy systems present in institutional, community, long-term care facilities and other pharmacy venues.

390 A-Z. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

391 A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

396. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

397. Research. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

484 A-Z. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

490. Teaching Practicum. I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Pharmacy. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

495. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)

499. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
School of Physical Education

Dana D. Brooks, Ed.D., Dean
Lynn Housner, Ph.D., Associate Dean
William Alsop, Ed.D., Coordinator, Sport Management
Vince Stilger, H.S.D., Interim Coordinator, Athletic Training
Andrew Ostrow, Ph.D., Coordinator, Sport Behavior
Robert L. Wiegand, Ed.D., Coordinator, Teacher Education
Daniel Ziatz, Ph.D., Coordinator, Athletic Coaching Education
Andrew H. Hawkins, Ed.D., Graduate Program Coordinator

www.wvu.edu/~physed

The School of Physical Education is organized into five programs: athletic coaching, athletic training, sport psychology, sport management, and teacher education.

The doctoral program administered through the School of Physical Education has two major areas: sport psychology and teacher education. The School’s master’s program allows specialization in teacher preparation, athletic training, athletic coaching education, sport psychology, and sport management leading to a master of science in physical education.

The facilities of the School of Physical Education include the gymnasium, dance studio, and swimming pool in E. Moore Hall; a gymnasium and fitness center in Stansbury Hall; bowling lanes in the Mountainlair; indoor track, sports area, martial arts room, and rifle range in the Shell Building; outdoor areas include the stadium, tennis courts, archery range, soccer and field hockey fields, and outdoor track; and the Natatorium with its pool and diving well.

The Coliseum contains the Ray O. Duncan Reading Room, classrooms and seminar rooms, faculty offices, a large gymnasium, a dance studio, racquetball and squash courts, and sport behavior laboratory. Additional faculty and staff offices are in E. Moore Hall, Stansbury Hall, the Natatorium, and the Shell Building.

For additional information, please contact the Graduate Coordinator, School of Physical Education, 274 Coliseum, P.O. Box 6116, West Virginia University, Morgantown, WV 26506-6116. Telephone (304) 293-3295 x 5210.

Graduate Degrees in Physical Education

Physical Education M.S., Ed.D.

Graduate Faculty

† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.

Professors

†Carl P. Bahneman, Ph.D. (U. Pitt.). Teacher behavior, Administration.
†Andrew H. Hawkins, Ph.D. (Ohio St. U.). Graduate coordinator, Teacher education.
†Lynn Houser, Ph.D. (U. Pitt.). Associate dean. Teacher preparation.
Associate Professors
†Dallas D. Branch, Jr., Ph.D. (Ohio U.). Program coordinator, Sport management.
Sport management, Sport marketing.
Floyd Jones, Ph.D. (U. Pitt.). Pedagogy cognitions, At-risk preadolescents and summertime learning deficiencies.
Bruce Wilmoth, M.S. (Brigham Young U). Teacher preparation.

Assistant Professors
Linda Burdette, M.S. (WVU). Teacher preparation.
John C. McGrath, M.S. (Bemidji St. Co.). Teacher preparation.
†Laura Treanor, Ed.D. (VPI). Teacher preparation, Student teacher, Pedagogical kinesiology.
†Sandra K. Vanin, Ed.D. (WVU). Teacher preparation, Adapted physical education, Wellness/fitness programs for adults with special needs.

Program
Graduate studies in physical education leading to a doctor of education are available in two major areas: sport psychology and teacher education. The following are admission criteria for students to be admitted with regular status to the Ed.D. in those areas.

Application Deadline
Application procedures must be completed by March 1 for the M.S. or Ed.D. programs of the year in which the applicant intends to begin their program. The application for graduate school, official transcript(s), and application fee must be submitted to the Office of Admissions and Records. Upon receipt of the application, transcripts, and above admission criteria, the student's credentials are reviewed by an appropriate screening committee. Students who seek a graduate assistantship should apply by March 1. Information and applications for graduate teaching and research assistantships can be obtained from Carol Straight, School of Physical Education, Records Office, P.O. Box 6116, Morgantown, WV 26506-6116.

Doctor of Education
Admission Criteria
• Undergraduate grade-point average of 3.0 from an approved institution.
• Master’s degree grade-point average of 3.0 from an approved institution (3.5 minimum for sport psychology).
• Minimum Graduate Record Examination score of 1000 (verbal/quantitative) or 1500 (verbal/quantitative/analytical); 1050 (verbal/quantitative) for sport psychology; or Miller Analogies Test score of 55.
• TOEFL score of 550 (international applicants).
• Three letters of reference.
• Writing sample (two- to three-page) summary of your professional background, professional aspirations, research experience (sport psychology).
**Doctoral Committee and Examination**  Once the student is admitted to the program, the student—in concert with the advisor—selects a doctoral committee. It is this committee’s responsibility to aid the student in planning the total program. During the process of completing the program, the student is expected to fulfill a residency requirement specified by the committee.

As the student completes the course work, application can be made to complete the final comprehensive examination. This examination consists of scholarly tasks designed to function as a comprehensive learning experience. The examination will be constructed by the student’s doctoral committee. Students who do not successfully complete this examination may be permitted to attempt the examination one more time pending an appeal and subsequent sanction of the student’s doctoral committee. There must be a time period of at least six months between the first and second examinations.

**Candidacy**  Upon successful completion of the final comprehensive examination, the student may present to the doctoral committee a prospectus of the dissertation. If the opinion of the committee is such that the student may proceed with the dissertation, the student is admitted to candidacy.

**Oral Defense**  Upon the completion of the dissertation, the candidate will appear before the doctoral committee for purposes of orally defending the study. Successful defense of the dissertation results in the awarding of the degree. All requirements must be completed within five years after admission to candidacy.

**Master of Science Admission Criteria**

- Undergraduate grade-point average of 2.75 for regular status (3.0 minimum grade-point average for sport psychology major).
- Graduate Record Examination score of 1000 (verbal/quantitative) or Miller Analogies Test score of 50. (sport psychology and sport management only).
- TOEFL score of 550 (international applicants).
- Three letters of reference.
- Personal interview (when possible).
- One- to two-page statement on background and professional goals (sport psychology).
- Resume and two-page autobiography (sport management).

**Athletic Coaching Education**

This major is designed to develop the skills and knowledge necessary to be an athletic coach. The medical, legal, growth and developmental, psychosocial, biophysical, and technical aspects of coaching are emphasized.

**Athletic Training**

Completion of the M.S. program with NATA certification permits the graduate to pursue a wide range of employment at the secondary, collegiate, professional, clinical, or corporate levels. The graduate major in athletic training offers a one-year program, a two-year program and, West Virginia state certification.

All of the above programs include clinical experience.

Both the one-year and the two-year programs are designed for individuals who are NATA certified or certification eligible. Courses are intended to augment the student’s academic background and further enhance clinical skills. All applicants must comply with WVU requirements for graduate study and the requirements of the athletic training program.
The West Virginia state certification program is designed for teachers already holding a professional endorsement in a major field. Students must complete a core of courses at the graduate level, complete required undergraduate courses, and make application to the WV Department of Education for certification. This program requires a minimum of 37 credit hours. Certification enables teachers to work as a state certified athletic trainer in WV public schools.

**Sport Psychology**
Students admitted into the sport psychology major may select either the 36 credit hour thesis option or the 48 credit hour internship option.

**Sport Management**
The sport management major requires 39 credit hours, including a six-hour internship. Applicants must send all application materials to the program coordinator by March 1. The selection process for the 15 applicants who are accepted into the program is conducted during the spring semester. A personal interview is a part of the selection process. Applicants will be notified of their selection by May 1.

**Teacher Education**
Students are admitted to physical education/teacher education for work leading to the master of science degree if they hold a baccalaureate degree, are certified or certifiable to teach physical education in the public schools, have a 2.75 undergraduate grade-point average, and satisfy prerequisites in the courses for which they register. The physical education/teacher education program requires one year of study and field experience.

**Provisional Admission**
Students who do not meet the 2.75 grade-point average requirement are admitted as provisional graduate students if their GPA is above 2.50; they are required to attain a 3.0 grade-point average in the first 12 hours of advisor-approved course work in order to be reclassified as a regular graduate student. In order to receive the degree, the student must have a minimum average of 3.0 in all course work leading toward the degree and satisfy all department and University requirements.

**Athletic Coaching Education**
320. Coaching Education Administration. 3 Hr. This course examines the fundamental areas necessary to be knowledgeable about administering athletic programs.

350. Sport Movement Analysis. 3 Hr. The physics of sports which is concerned with the mechanics of motion, including kinematics, dynamics, momentum, energy and power, and the efficient use of the human body and sport equipment to achieve high levels of performance.

360. Sports Safety. 3 Hr. To provide students with the knowledge and skill necessary to provide a safe environment for athletes while they are participating in sports and in an emergency to help sustain life until medical help arrives.

385. Coaching Internship. I, II, S. 1-6 Hr. Students will complete a contract detailing terms of the learning experience. The levels of coaching include but are not limited to elementary schools, little league, secondary schools, and collegiate levels.

388. Coaching Techniques. I, II, S. 1-6 Hr. Students will complete contract detailing terms of coaching technique topic relevant to their individual coaching experience.

900. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). The continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

930. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). Theses tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Athletic Training (ATTR)
318. Anatomy Laboratory. S. 3 Hr. PR: ATTR 219 or equivalent. Cadaver laboratory experience involving an anatomical analysis of the trunk and extremities.

323. Athletic Training Practicum. I, II, S. 1-6 Hr. PR: Consent. Designed to provide experience in various practical situations in athletic training and other related areas.

324. Issues in Athletic Training. S. 3 Hr. PR: Consent. Designed to analyze, in-depth, various issues and policies in athletic training relevant to training room administration, protective equipment, liability in athletics, and other selected topics.

325. Advanced Rehabilitation Techniques. II. 3 Hr. PR: ATTR 340 or equivalent. Students will gain an understanding of the current rehabilitation protocols and will become proficient in various techniques involving manual therapy and isokinetics devices.

340. Advanced Orthopedic Assessment. II. 3 Hr. PR: ATTR 222 or equivalent. Students will learn additional assessment techniques, enabling them to further refine their injury evaluation skills.

350. Medical/Surgical Aspects of Athletic Training. I. 3 Hr. Variety of current medical and surgical procedures commonly performed on athletic populations.


397. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

Physical Education/Teaching (PET)
300. Workshop in Physical Education. I, II, S. 1-15 Hr.

305. Professional Issues in Physical Education. S. 3 Hr. PR: Completion of 24 graduate hours or consent. Designed to examine current professional issues in physical education and the impact of these issues on the professional’s life.

315. Research Methodology in Physical Education. I, S. 3 Hr. PR: Graduate standing or consent. Application of historical, descriptive, and experimental research strategies and designs to physical education.

336. Instructional Methods for Physical Education. I, S. 3 Hr. PR: PET 315 or consent. Designed to provide physical educators with the methodological skill necessary to comply with Public Law 94-142 (Education for All Handicapped Children Act.) The research justification for the methodological approaches examined will be emphasized.
338. Operant Principles for Physical Education. II, S. 3 Hr. PR: PET 315 or consent. Designed for the use and evaluation of operant principles in the development and control of motor behavior in physical education. Applications will be made to traditional group and individually prescribed instructional systems in physical education.

344. Pedagogical Kinesiology. I, S. 3 Hr. Qualitative analysis of fundamental motor skills and sport-specific performances; discussion of research, application of self-directed experiments, and presentations of selected research papers. (Offered fall and every third summer.)

346. Curriculum in Physical Education. I, S. 3 Hr. PR: PET 315 or consent. Designed to examine the factors affecting curriculum development. Emphasis on research in the changing curriculum, and the selection and sequencing of developmentally appropriate activities for early, middle, and adolescent childhood.

366. Motor Development. I, S. 3 Hr. PR: PET 315 or consent. Designed to examine developmental motor skill acquisition across the entire life span. Hereditary and environmental factors unique to the motor-skill development of the maturing individual will be emphasized.

368. Infant/Early Childhood Motor Development. II, S. 3 Hr. PR: PET 315 and PET 366 or consent. Examination of motor development during infancy and early childhood focusing on physical education’s interactive role with the developmental process. Emphasizing current developmental research related to the area.

370. Middle Childhood/Adolescent Motor Development. II, S. 3 Hr. PR: PET 315 and PET 366 or consent. Examination of motor development during middle childhood and adolescence focusing on physical education’s interactive role with the developmental process. Emphasizes current developmental research related to the area.

371. Motor Development in Special Populations. II, S. 3 Hr. PR: PET 315 and PET 366 or consent. Designed to examine the motor developmental patterns of various special population groups focusing on physical education’s interactive role with the developmental process. Current developmental research related to the area will be emphasized. (Offered every third summer.)

381. Principles of Effective Teaching. S. 3 Hr. Research based principles of effective teaching as they relate to physical education. Students will examine and evaluate their own teaching practices through a series of reflective assignments.

383. Physical Education Supervision Tech. S. 3 Hr. Effective supervision practices for the perspective physical education directing teacher.

385. Master Teaching Practicum. I, II, S. 3 Hr. PR: PET 336, PET 338, PET 346 and PET 366. Application of a wide range of prerequisite course competencies in an actual physical education class for which the student has complete instructional responsibility. Self-evaluation skills of the master teacher candidate are emphasized.


394. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)


430. Diversity Issues in PET. 3 Hr. A synthesis of research and literature covering a wide range of social/political issues related to diversity and inclusion in physical education such as gender equity, developmental disabilities, and multiculturalism.
440. Pedagogical Kinesiology: Research. 3 Hr. An analysis of research and its application to designing effective motor skill analysis programs for prospective teachers of physical education.

445. Physical Education/Teaching Curriculum Development/Evaluation. 3 Hr. A historical and philosophical analysis of curriculum theory related to the preparation of physical education teachers with an emphasis on current models, content standards, curricular design, and evaluation, as well as the curriculum accreditation.

446. Advanced Measurement in Physical Education. II, S. 3 Hr. PR: PET 315. Designed to extend and apply the basic concepts of measurements and statistical evaluation to physical education.

450. Research on Teaching. 3 Hr. An introduction to research on teaching in physical education with an emphasis on the cognitive process that underlie learning and instruction.

460. Management Processes in Physical Education. II. 3 Hr. PR: Graduate standing or consent. Designed to explore analytically the situational, relational processes between the administrator of physical education school programs and the teacher of physical education, the physical education facility, and the physical education planned learning environment.

465. Professional Physical Education Resource Seminar. I. 3 Hr. PR: Graduate standing. (Required for all doctoral students.) Designed as an introductory seminar for doctoral professional physical educators. Discussion, debate, and position statements on critical issues facing the physical education profession.

480. Dissertation/Thesis Seminar. I, II, S. 3 Hr. PR: Graduate standing and PET 315. (Required for all doctoral students.) Designed to critically analyze the graduate student’s dissertation or research proposal.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of physical education teaching. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading may be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

495. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. Graduate Seminar. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

497. Research. I, II, S. 1-15 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

498. Thesis or Dissertation. I, II, S. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)
Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. for graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her department’s Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.

Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). The tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Sport Studies (SS)

Sport Broadcasting. I. 3 Hr. PR: Graduate standing or consent. The collegiate and professional sport environment in radio and television; elements of radio/television production; ratings and marketing/sales techniques.

Research Methodology in Physical Education. I, S. 3 Hr. PR: Graduate standing or consent. Application of historical, descriptive, and experimental research strategies and designs to physical education. (Also listed as PET 315.)

Sport Marketing Research Methods. I. 3 Hr. PR: Graduate standing or consent. Application of the scientific method to sport marketing; emphasis on evaluating and conducting survey research in sport marketing; marketing project includes consumer behavior research in sport settings.

Individual Interaction in Sport and Physical Activity. I, S. 3 Hr. PR: SS 315. Designed to acquaint the student with the reciprocal relationships between sport and physical activity and the societies and culture out of which sport emerges.

Psychology of Sport and Physical Activity. I, S. 3 Hr. PR: SS 315. Psychological effects and implications of man’s participation in sport and physical activity. Emphasis is on the personality and behavior and motivational dynamics of sport involvement.

Group Influences in Sports. I. 3 Hr. PR: SS 320 and SS 340. The manner and degree to which individuals are affected by involvement in sport and group interactions.

Paciolan Computer Systems. I, II. 3 Hr. PR: Sport management majors only. Computer Laboratory; emphasis on general ledger (budgeting), support group (fund raising), and ticketing software of the PSI sport computer system.

NCAA Compliance and Current Issues. I. 3 Hr. An in-depth analysis of compliance issues impacting collegiate administrators and the NCAA.

Sport Finance. II. 3 Hr. PR: Graduate standing or consent; majors only. Financial operations and economic impact of scholastic, intercollegiate, and professional sport administration; concepts of budgeting, auditing, reporting, and computer use; current developments in the field.

Internship-Sport Management. I, II. S. 1-6 Hr. Sport management on-site working relationship with a sport organization to gain practical “hands-on” experience in a collegiate athletic organization, professional sport franchise, or variety of sport-related businesses.

Internship-Sport Behavior. I, II. S. 1-6 Hr. Sport behavior supervised experience in various aspects of sport psychology teaching, research, and/or practice at on-campus or off-campus sites.

Advanced Topics. I, II. S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.
397. Research/Thesis. I, II, S. 1-15 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.

420. Psychological Sport Performance Enhancement. II. (Alternate years.) 3 Hr. An in-depth examination of commonly used interventions designed to maximize the performance of individual athletes and teams.

421. Counseling College Student-Athletes. II. (Alternate years.) 3 Hr. An exploration of psychosocial aspects of college student-athletes’ life experiences and commonly counseling concerns to include individual and systems intervention used to assist this at-risk group.

422. Exercise and Health Psychology. I. 3 Hr. Major theories and techniques of health behavior change and health behavior assessment especially with respect to exercise.

423. Psychological Aspects of Sport Injury. I. 3 Hr. Explores the psychosocial antecedents to athletic injury and factors related to the psychological experience and treatment of the injured athlete.


425. Educational Sport. II. 3 Hr. PR: STAT 311 and SS 465. The group dynamics of the sport situation for purposes of gaining insight into techniques and methods of modifying social behavior through physical education sport activities.

446. Advanced Measurement in Physical Education. II, S. 3 Hr. PR: SS 315. Extension and application of basic concepts of measurement and statistical evaluation to physical education.

450. Sport Marketing. I. 3 Hr. PR: Graduate standing. Advanced analysis of marketing sport enterprises; the marketing planning process and marketing information systems.

460. Sport Management Processes. II. 3 Hr. PR: Consent. Analysis of management processes utilized in sport businesses. A focus is on the planning, organization, leading, and evaluation processes that are unique to the sport industry. Discussion, debate, and position papers on these four management processes.

465. Professional Physical Education Resource Seminar. S. 3 Hr. PR: Graduate standing. Introductory seminar for doctoral professional physical educators. Discussion, debate, and position statements on critical issues facing the physical education profession. (Required for all doctoral students.)

480. Dissertation/Thesis Seminar. I, II, S. 3 Hr. PR: Graduate standing. Critical analysis of the graduate student’s dissertation or research proposal. (Required for all doctoral students.)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of sport studies. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


492. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

493. Special Topics. I, II, S. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

494. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.
495. *Independent Study*. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

496. *Graduate Seminar*. I, II, S. 1 Hr. PR: Consent. It is anticipated that each graduate student will present at least one seminar to the assembled faculty and graduate student body of his/her program.


498. *Thesis or Dissertation*. I, II, S. 2-4 Hr. PR: Consent. This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their students reports, thesis, or dissertations. (Grading may be S/U.)

499. *Graduate Colloquium*. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students not actively involved in course work or research are entitled, through enrollment in his/her departments, 799 or 899 *Graduate Colloquium*, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. Grading is S/U; colloquium credit may not be counted against credit requirements for master’s programs.
The Harley O. Staggers National Transportation Center was created through federal legislation to serve as a nucleus for transportation research, education, service, and technology transfer for West Virginia and the Mid-Atlantic region. Since its creation, faculty associated with the center have performed research projects, technology transfer events such as short courses, and undergraduate and graduate educational activities.

The center is located at West Virginia University in the Department of Civil and Environmental Engineering (CEE). Faculty from the departments of CEE, Mechanical Engineering, Industrial Engineering, Business and Economics, Forestry, Law, and Medicine have all participated in research through the center. Over the years, the objectives of the center have included the following:

1. To promote and coordinate transportation related research activities at West Virginia University for all modes; particularly in the areas of traffic engineering, transportation economics, planning, infrastructure management, highway design, transportation safety, environmental issues, and structures and materials.

2. To serve as technical and educational support to West Virginia agencies, legislature, municipalities, and private citizens (such as advising legislative committees and other constituencies on alternative transportation policies).

3. To conduct and support transportation related education activities through the Department of Civil and Environmental Engineering and other WVU academic departments. The centerpiece of these activities are the course offerings and degree programs.

4. To conduct and support technology transfer activities. Such activities include short courses, dissemination of research reports, publication of journal articles, and participation in conferences and other professional meetings.

**Housing Information and Research Center**

The West Virginia University Housing Information and Research Center was established in 1981. The center’s primary mission is to serve the general public and professionals in the field of housing and energy by providing consultant services, education programs, and demonstrations on alternative housing and energy. The center is administered by the technology education program in the College of Human Resources and Education. For further information, call (304) 293-3803.
International Center for Disability Information (ICDI)

The International Center for Disability Information has three emphases, (a) Rehabilitation Research and Training Center, (b) Job Accommodation Network, and (c) Special Studies Involving Disability. This organization houses information databases on vocational rehabilitation, incidence-prevalence of job accommodations, and disability legislation. Faculty and staff are involved in research, training, and service activities. Students in assistantships and internships learn about rehabilitation research and practice.

The West Virginia Rehabilitation Research and Training Center was established in 1965 to carry out programmatic research in the area of disability. The Center's core emphasis is the application of information technology to enhance rehabilitation. Decision support systems are studied and developed to enhance the national rehabilitation service-delivery system. This program is funded by the National Institute on Disability and Rehabilitation Research (NIDRR) of the U.S. Department of Education.

The Job Accommodation Network is an international information service about job accommodations and the employability of people with functional limitations. This program is funded through the President's Committee on Employment of People with Disabilities (PCEPD) of the U.S. Department of Labor.

Special Studies Involving Disability includes projects on consumer needs assessment, program evaluation of vocational rehabilitation, and referral system for vocational rehabilitation providers. Such projects are funded by human-service organizations in various states and the Social Security Administration.

Multidisciplinary Studies

Multidisciplinary Studies (MDS) courses are those which analyze significant issues, problems, or themes by applying two or more disciplines to them; or which explore the theoretical and methodological relationship of two or more disciplines to each other; or which involve a combination of disciplines so as to preclude their being classified realistically as one of humanities, social science, or physical science.

Responsibility for approving MDS courses rests with the liberal studies program committee and the Faculty Senate. Each course has its own staff, drawn from the faculties of the schools and colleges of the University.

National Research Center for Coal and Energy

www.nrcce.wvu.edu

In collaboration with the faculty of West Virginia University, the WVU National Research Center for Coal and Energy identifies, develops, promotes, coordinates, supports, and conducts multidisciplinary energy and environmental research and service programs. The NRCCE accomplishes its mission through the efforts of faculty, professionals, students, and external collaborators working through organized program units, each of which serves the specialized needs of its sponsor and user community. The center is located on the Evansdale campus in a building that includes a multimedia meeting facility, an analytical laboratory, a high bay laboratory, and offices.

The center coordinates programs in excess of $10 million annually. Through its research and service programs, the center supports a number of master's and Ph.D. students. At the center, graduate students will find a limited number of service-related assistantships in the service programs. Research assistantships typically are handled by the academic departments that are responsible for conducting the NRCCE-related research programs. Students interested in learning about research opportunities with NRCCE should contact the academic department in which they plan to enroll to find out about the availability of NRCCE-funded assistantships in that department. To learn more about the types of research and
service activities coordinated by the center, students are encouraged obtain a copy of the NRCCE annual status report by contacting the NRCCE Technical Communications Division at (304) 293-2867 ext. 420, West Virginia University, National Research Center for Coal and Energy, P.O. Box 6064, Morgantown, WV, 26506-6064, or on the web at www.nrcce.wvu.edu.

Among some of the NRCCE programs are: the Appalachian Oil and Natural Gas Research Consortium, the Petroleum Technology Transfer Council, Industries of the Future—WV, Electric Industry Research Group, the National Alternative Fuels Training Consortium, the National Drinking Water Clearinghouse, the National Environmental Training Center for Small Communities, the National Onsite Demonstration Project, the National Small Flows Clearinghouse, the National Mine Land Reclamation Center, the West Virginia Water Research Institute, the National Environmental Education and Training Center, the Emissions Control By-products Consortium, and the Carbon Products Consortium.

Oak Ridge Associated Universities (ORAU)
www.nrcce.wvu.edu or www.orau.gov

Since 1957, students and faculty of West Virginia University have benefited from its membership in Oak Ridge Associated Universities (ORAU). ORAU is a consortium of 86 colleges and universities and a contractor for the U.S. Department of Energy (DOE) located in Oak Ridge, Tennessee. ORAU works with its member institutions to help their students and faculty gain access to federal research facilities throughout the country; to keep its members informed about opportunities for fellowship, scholarship, and research appointments; and to organize research alliances among its members.

Through the Oak Ridge Institute for Science and Education, the DOE facility that ORAU operates, undergraduates, graduates, postgraduates, as well as faculty enjoy access to a multitude of opportunities for study and research. Students can participate in programs covering a wide variety of disciplines including business, earth sciences, epidemiology, engineering, physics, geological sciences, pharmacology, ocean sciences, biomedical sciences, nuclear chemistry, and mathematics. Appointment and program length range from one month to four years. Many of these programs are especially designed to increase the numbers of underrepresented minority students pursuing degrees in science and engineering related disciplines. A comprehensive listing of these programs and other opportunities, their disciplines, and details on locations and benefits can be found in the ORISE Catalog of Education and Training Programs, which is available at www.orau.gov/orise/resgd.htm, or by calling either of the contacts below.

ORAU’s Office of Partnership Development seeks opportunities for partnerships and alliances among ORAU’s members, private industry, and major federal facilities. Activities include faculty development programs, such as the Ralph E. Powe Junior Faculty Enhancement Awards, the Visiting Industrial Scholars Program, and various services to chief research officers.

For more information about ORAU and its programs, contact Dr. Richard A. Bajura, ORAU councilor, for West Virginia University (304) 293-2867, or or contact Monnie E. Champion, ORAU Corporate Secretary, at (865) 576-3306; or visit the ORAU homepage www.orau.org.
Regional Research Institute  
www.rrri.wvu.edu

The Regional Research Institute is dedicated to multidisciplinary research on the economic and social development of lagging regions such as Appalachia in the United States. It focuses on theories and history of regional development, methods for studying regions, and policies for stimulating their development. The Institute creates learning opportunities and provides research support for faculty members and students. It is an internationally prominent center for the advancement of regional science—an interdisciplinary field that links economics, geography, planning, and other social sciences. Throughout its distinguished three-decade history, the Institute has been a separate unit, independent of any college. Currently, the Institute brings together twenty faculty associates drawn from nine departments in five colleges, a four-person regional science faculty, an extended network of scholars elsewhere in the United States and abroad, and an outstanding group of graduate and undergraduate students.

The Institute has a long-standing reputation for its many contributions to regional science. Regional scientists use quantitative methods and mathematical models to study economic and social phenomena in a regional setting. The Institute’s forte has been its pioneering research on methods for analyzing regions and its multidisciplinary approach to studying regional development. Visiting scholars and graduate students from abroad are an integral part of the Institute community. The Institute’s Web Book of Regional Science attracts thousands of hits per day from around the world.

The Institute provides research experience and training to students but offers no degree program. Its regional science faculty has long staffed the regional economics doctoral courses in economics, and its alumni are among the nation’s leading regional economists.

Graduate research assistants are nominated by their departments or by faculty associates. The Institute prefers to hire doctoral candidates who have completed one year of graduate study, but master’s candidates, undergraduates, and entering graduate students are considered. Most students are in economics, agricultural economics, or natural resource economics, but geography, history, law, and sociology students are regularly represented, too. The students have offices at the Institute and state-of-the-art computing equipment. As their educations progress, so do their roles in research projects. They learn skills, conduct and publish research, and present papers at conferences. The Institute has a well-established student tradition of writing articles or prize-winning papers while serving as research assistants.

The Regional Research Institute is a National Science Foundation site for research experiences for undergraduates. Each year, 12 students, half from WVU and half selected nationally, spend their junior year at the Institute, conducting research with a faculty mentor and participating in the University’s honors program.

For further information about the Institute, contact the Regional Research Institute, West Virginia University, 511 North High Street, P.O. Box 6825, Morgantown, WV 26506-6825; telephone (304) 293-2897; fax (304) 293-6699; or e-mail RRI@wvnvm.wvnet.edu, or visit our web site at www.rrri.wvu.edu.

Technology Field Service  

The Technology Field Service Center was established in 1970. The primary mission of the center is to provide consultant personnel, development, and program design services for schools, businesses, and industries that have education and training needs in the technologies. The Center is administered by the technology education program in the College of Human Resources and Education. For further information call (304) 293-3803.
University Affiliated Center for Developmental Disabilities (UACDD)

www.uacdd.wvu.edu

The mission of the West Virginia University Affiliated Center for Developmental Disabilities (UACDD) is to enhance the quality of life of individuals of all ages with developmental and other disabilities so that they and their families can experience productive, independent, and totally integrated lives. The mission is accomplished by support provided in the following areas: preparation of personnel; services and supports, including community training and technical assistance; and dissemination of information and research.

This mission is based upon the philosophy that: (a) individuals with developmental and other disabilities have the right to productive, independent, and totally integrated lives; (b) family and community are the basis for independence and integration; (c) systems and services should be consumer-driven; and (d) a coordinated, interagency interdisciplinary focus is critical to enhancing the quality of life of individuals with developmental and other disabilities.

The Center’s mandate is to serve, through academic excellence, as a state resource center for developmental and other disabilities and to: (a) provide interdisciplinary professional educational experiences including preservice training for students for positions in the field of developmental and other disabilities, and outreach training for individuals currently employed or involved in the field of developmental and other disabilities; (b) provide high quality services for persons of all ages with substantial disabilities and their families; (c) provide technical assistance to persons whose work relates to the field of developmental and other disabilities, including service providers, parents, agencies, and other organizations at the local, state, and national levels; (d) engage in research and inquiry that will contribute to the understanding and amelioration of developmental and other disabilities; and (e) disseminate information to audiences on effective practices and programs, training techniques, and research findings relevant to the field of developmental and other disabilities. This Center is funded by the U.S. Department of Health and Human Services/Administration on Developmental Disabilities/Administration on Children and Families.

WVU Extension Service

www.wvu.edu/~exten/

The WVU Extension Service, part of an educational network of 105 land-grant universities, takes the helping hand of West Virginia University directly to thousands of West Virginians in communities scattered across the state. Through its Extension Service, the University provides a “mini campus” in each of the state’s 55 counties. The work at these locations addresses a wide variety of community issues via a nontraditional mix of learners, faculty, staff, and volunteers.

Drawing on the strengths of WVU’s many academic disciplines, Extension educators target communities’ social, economic, environmental, and technical problems. Some Extension educators work out of buildings on WVU’s traditional campuses, such as those located in Morgantown. But many Extension faculty work out of offices in WVU Extension’s county settings, such as those generally located in or near each county’s governmental seat. Working daily with local residents, Extension faculty find their lives often intertwine with the issues that confront their local communities. They are committed to helping people find answers that work. As they solve problems along with local citizens—individually and in groups—Extension faculty and staff translate WVU’s research and knowledge into action.
When graduate and undergraduate students take part in this action, they find the WVU Extension Service to be a fertile, flexible provider of a variety of internship, work-study, and volunteer experiences. Extension educators may involve students in some or in all phases of their educational projects—research, design, delivery, and evaluation. Depending on the project, students may have hands-on experience with video production, Web site development, distance education, publication design and production, television production, curriculum design and development, and classroom teaching.

However, students may not be familiar with the diversity of experiences available to them through the WVU Extension Service. Students may not equate the name "WVU Extension Service" with educational programs on and off campus. Often, those who do recognize the name generally are familiar only with a segment of Extension’s multifaceted programs.

Extension programs have roots in many career fields. The list includes agriculture, business administration, child development, computer science, communications, environmental science, engineering, counseling and guidance, curriculum design, health education, home economics, journalism, and safety. Regardless of their academic disciplines, today’s students may find rich learning experiences—and even rewarding careers—among Extension’s diverse educational programs. Whether on campus or off campus, WVU students are invited to work with the WVU Extension Service:

- As it helps volunteer firefighters learn to protect families and property. (For example, in one year 13,000 volunteers participated in Fire Service Extension’s fire suppression and rescue education programs throughout West Virginia.)
- As it helps children learn skills that help them build character and plan careers. (Annually, more than 20,000 youths “learn by doing” through 4-H projects and programs: another 20,000 special youth populations participate in school retention and enhancement programs.)
- As it helps individuals learn new ways to produce income. (For example, many West Virginians are learning direct marketing and other entrepreneurial skills. Some are participating in alternative product development projects. The multi-county endeavors include the aquaculture freshwater trout ventures, the pepper production and marketing program, and the commercial ginseng production pilot project.)
- As it trains volunteers to serve West Virginia’s communities and schools. (During one program year, approximately 4,900 adult and youth volunteers were trained to help young people. Others were trained to serve on local boards and committees. Still others were trained to deliver expertise in specific subject matter, including gardening, literacy, and health and safety issues.)
- As it helps farmers improve productivity. (Through integrated pest management, farmers are increasing their savings by learning to control crop pests with fewer pesticides. Through total resource management, soil testing, and other Extension programs, farmers are employing better production and management practices for livestock and produce.)
- As it helps landowners learn to use natural resources more wisely. (West Virginia’s natural resources are being protected as landowners use WVU Extension’s water quality and timber conservation strategies and as homeowners adopt composting, yard waste management, and recycling techniques.)
- As it helps families become more resilient and healthy. (For example, during one program year, more than 8,000 homemakers learned nutrition, food management, and food preparation skills. Families in all 55 counties are participating in WVU Extension skill-building programs that are helping them employ positive child care, family communication, and health care strategies.)
• As it helps managers and laborers improve relations and workplace safety. (Every year, laborers throughout the state learn their rights and responsibilities for positive negotiations through courses conducted by the Institute for Labor Studies and Research. West Virginia’s industries are increasing workers’ safety while saving health care and business dollars by consulting with Safety and Health Extension (SHE). SHE’s services include on-site safety audits and employee training in Occupational Safety and Health Administration (OSHA) guidelines.)

• As it helps local governments learn strategies to tackle economic and community development issues. (WVU Extension is helping communities plot their development for the next decade.)

• As it helps industries, manufacturers, and other businesses create and retain jobs for West Virginians.

WVU Extension programs are financed via a variety of funding combinations: federal appropriations and grants; state appropriations and grants; county commission, county school board and other local governmental appropriations; and private grants. Depending upon program priorities and funding, graduate and undergraduate internships, work-study appointments, and volunteer service positions may be available on the Morgantown campus and in any of the 55 counties. Program priorities and funding also determine the duration of appointments during regular semester and summer sessions.

For more information, contact the Office of the Associate Provost and Director, WVU Extension Service, 817 Knapp Hall, P.O. Box 6031, Morgantown, WV 26506-6031, (304) 293-5691.
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How do I receive information regarding the Community Medicine Programs?(Contact Linda A. Lilly, Program Assistant I for Educational Programs at lilly@hsc.wvu.edu or phone at 293-0725)

Mission Statement

The mission of the Department of Community Medicine is to prevent ill health and promote well-being, primarily in West Virginia. In accomplishing this mission, the Department will teach health professionals and community groups, conduct and share the knowledge gained from research, and offer clinical and programmatic consultation and service.
Welcome Message from Chair

Description of the Department of Community Medicine

The Department of Community Medicine is a multi-disciplinary department providing instruction, research, service, and outreach aimed at understanding and promoting the health of individuals and general and special populations in a broad array of environments. The chairperson is assisted by associate chairs for administration, educational programs, and planning and development. Three standing committees serve the Department: Planning and Development, Promotion and Tenure, and Space Planning and Utilization. The range of expertise and interests is defined by the divisions, faculty, staff and interrelationships of the department.

The divisions include the following:

- **Education Programs** - the MPH, MD-MPH and MS-CHPR graduate programs; the Evidence-based Medicine program; the Occupational Medicine Residency program; the School Health undergraduate program; and the Continuing Education program-serve undergraduate, graduate, and medical students, and professional practitioners. Seven standing committees serve the education programs: Admissions and Academic Standards, Advisory, Continuing Education, Curriculum, Evaluation and Assessment, Planning and Development, and Practicum.

- **Clinical Programs** - the Institute of Occupational and Environmental Health (IOEH) Occupational Medicine Residency program, Clinical Occupational Medical Care clinics, and Community Occupational and Environmental Health Services programs.

- **Research and Community/Public Service Programs** - research and service conducted by faculty and professional staff in the Prevention Research Center and its Women's Cardiovascular Health Network and Office of Drug and Alcohol Information Service (ODAIS); the Office for Social Environment and Health Research (OSEAHR) and its geographic information system (GIS) capability; the Office of Health Services Research (OSHR) and its statewide and regional Diabetes programs; the Community Health Promotion Specialists (CHPS) Program of the Community Health Promotion (CHPR) educational program; the research and community service programs of the Institute of Occupational and Environmental Health (IOEH); and the Wellness and Alternative Medicine Programs.

- **Departmental Administration** - financial services, secretarial/clerical services, grants/contracts management, and information management. One standing division committee serves the Department: Administrative Policies and Practices.

- **Biostatistical Consultation** - consultation for research scientists in the Health Sciences Center, and instruction in Biostatistics within the Department's educational programs.

- **The Center on Aging** (COA), with its units for education, research, clinical services, and community service and outreach, is closely allied with the Department of Community Medicine. The Center's Education Unit offers undergraduate and graduate certificate programs in Gerontology. COA faculty appointments to date are in the Department of Community Medicine.
Dear Students, Alumni, Faculty and Practice Community.

The Master of Public Health Program is scheduled for an accreditation site visit by the Council on Education for Public Health (CEPH) on November 27-28, 2000. Written third-party comments will be accepted by CEPH until 30 days before the on-site visit. Please send comments to: Patricia P. Evans, Executive Director, Council on Education for Public Health, 800 Eye Street, NW, Suite 202, Washington DC, 20001-3710.

The Educational Programs of the Department of Community Medicine, WVU School of Medicine, include the Master of Public Health (MPH) program and the Community Health Promotion Master of Science (MS) degree program. The two programs work together to serve the public health work force in the state of West Virginia and the surrounding area.
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