West Virginia University
Graduate Catalog 2002-2004

College of Business and Economics
College of Creative Arts
College of Engineering and Mineral Resources
College of Human Resources and Education
Davis College of Agriculture, Forestry, and Consumer Sciences
Eberly College of Arts and Sciences
Perley Isaac Reed School of Journalism
School of Dentistry
School of Medicine
School of Nursing
School of Pharmacy
School of Physical Education

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.

The West Virginia University Graduate Catalog 2002-2004 is a general source of information about course offerings, academic programs and requirements, expenses, rules, and policies. In order to reach the goals and fulfill the mission of the University, the courses, requirements, and regulations contained herein are subject to continuing review and change by the West Virginia Higher Education Policy Commission, the WVU Board of Governors, University administrators, and the faculties of the schools and colleges. The University, therefore, reserves the right to change, delete, supplement, or otherwise amend the information, course offerings, requirements, rules, and policies contained herein without prior notice. The indicia depicted are registered trademarks of West Virginia University. Copyright © West Virginia University, 2002.
# West Virginia University Calendar 2002-2003

## Fall Semester 2002

- **Wednesday, Thursday, Friday, August 14, 15, 16**: New Student Orientation
- **Friday, August 16**: General Registration
- **Monday, August 19**: First Day of Classes
- **Monday, August 19**: Late Registration Begins
- **Friday, August 23**: Last Day to Add Courses and Make Changes
- **Monday, September 2**: RECESS—Labor Day
- **Saturday, September 7**: Day of Special Concern (Rosh Hashannah)
- **Monday, September 16**: Day of Special Concern (Yom Kippur)
- **Friday, October 4**: Mid-Semester
- **Tuesday, October 8**: Mid-Semester Reports Due
- **Friday, October 25**: Last Day to Drop a Class
- **Tuesday, November 5**: RECESS—Election Day
- **Saturday, November 23 through Sunday, December 1**: RECESS—Thanksgiving Break
- **Thursday, December 5**: Last Day to Withdraw
- **Monday, December 9 through Saturday, December 14**: Final Exams
- **Friday, December 27**: Degree Conferring Date (no ceremonies)

## Spring Semester 2003

- **Wednesday, Thursday, Friday, January 8, 9, 10**: New Student Orientation
- **Friday, January 10**: General Registration
- **Monday, January 13**: First Day of Classes
- **Monday, January 13**: Late Registration Begins
- **Friday, January 17**: Last Day to Add Courses and Make Changes
- **Monday, January 20**: RECESS—Martin Luther King's Birthday
- **Friday, February 7**: West Virginia University Day
- **Friday, February 28**: Mid-Semester
- **Tuesday, March 4**: Mid-Semester Reports Due
- **Tuesday, March 11 through Sunday, March 23**: RECESS—Spring Break
- **Friday, March 28**: Last Day to Drop a Class
- **Thursday, April 17**: Day of Special Concern (Passover)
- **Friday, April 18**: Holiday of Special Concern (Easter)
- **Thursday, May 1**: Last Day to Withdraw
- **Friday, May 2**: Last Day of Classes
- **Monday, May 5**: Final Exams
- **Monday, May 12**: Grade Reports for all Graduates Due in Dean's Office
- **Tuesday, May 13**: Dean's Reports on Graduates Due in ARC
- **Saturday, May 17**: Alumni Day
- **Sunday, May 18**: Commencement

## Summer Session I 2003

- **Tuesday, May 20**: Registration
- **Tuesday, May 20**: First Day of Classes
- **Wednesday, May 21**: Late Registration Begins
- **Friday, May 23**: Last Day to Add Courses and Make Changes
- **Monday, May 26**: RECESS—Memorial Day
- **Friday, June 13**: Last Day to Drop a Class
- **Thursday, June 26**: Last Day to Withdraw
- **Friday, June 27**: Last Day of Classes
- **Friday, June 27**: Final Exam

## Summer Session II 2003

- **Tuesday, July 1**: Registration
- **Tuesday, July 1**: First Day of Classes
- **Wednesday, July 2**: Late Registration Begins
- **Friday, July 4**: RECESS—Independence Day
- **Monday, July 7**: Last Day to Add Courses and Make Changes
- **Friday, July 25**: Last Day to Drop a Class
- **Thursday, August 7**: Last Day to Withdraw
- **Friday, August 8**: Last Day of Classes
- **Friday, August 8**: Final Exams
- **Friday, August 15**: Degree Conferring Date (no ceremonies)

*See [www.wvu.edu/~calendar/index.htm](http://www.wvu.edu/~calendar/index.htm) for the 2003-2004 calendar.*

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West Virginia University Graduate Catalog

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West Virginia Higher Education Governance*

Robert E. Wise Jr., Governor

West Virginia Higher Education Policy Commission

John R. Hoblitzell, Charleston, Chair
Shawn R. Williams, Clarksburg, Vice Chair
J. Thomas Jones, Huntington, Secretary
Mary Clare Eros, Shepherdstown
Elliot G. Hicks, Charleston
Ron D. Stollings, Madison

Kathleen H. Goodwin, Ripley, Secretary of Education and the Arts
J. Michael Mullen, Charleston, Chancellor of Higher Education
David L. Stewart, Charleston, Superintendent of Schools

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Roy S. Nutter Jr., Morgantown, Faculty Representative
Paul R. Martinelli, Morgantown, Classified Staff Representative
Jeremy A. Posey, Morgantown, Student Representative

*Corrected as of February 15, 2002.

West Virginia University is governed by the West Virginia Higher Education Policy Commission and the WVU Board of Governors.

West Virginia University is a member of the North Central Association of Colleges and Schools. The University’s educational programs are accredited by the North Central Association and by the appropriate accreditation agencies for professional programs.

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 non-discrimination policy may be sent to the director, Affirmative Action Office/Equal Employment Opportunity Programs, West Virginia University.—Office of the President.
Frequently Contacted Offices

**Academic Programs**  
Provost and Vice President for Academic Affairs and Research  
West Virginia University  
P.O. Box 6203  
Morgantown, WV 26506-6203  
Phone: (304) 293-5701  Fax: (304) 293-7554  
www.wvu.edu/~acadaff

**Admissions and Records, Catalogs**  
West Virginia University  
P.O. Box 6009  
Morgantown, WV 26506-6009  
Phone: (304) 293-2121 or 1-800-344-WVU1  
Fax: (304) 293-3080  
www.wvu.edu/prospective

**Graduate Programs**  
Office of Graduate Education  
West Virginia University  
P.O. Box 6203  
Morgantown, WV 26506-6203  
Phone: (304) 293-7173  Fax: (304) 293-3670  
www.wvu.edu/~graduate

**Housing Administration**  
Director, Housing Administration  
West Virginia University  
P.O. Box 6430  
Morgantown, WV 26506-6430  
Phone: (304) 293-4491  Fax: (304) 293-4825  
www.wvu.edu/prospective

**Scholarships, Work-Study, and Veterans Educational Assistance**  
Student Financial Aid Office  
West Virginia University  
P.O. Box 6004  
Morgantown, WV 26506-6004  
Financial Aid Phone: (304) 293-5242  Fax: (304) 293-4890  
Scholarships Phone: (304) 293-4126  Fax: (304) 293-4890  
www.wvu.edu/~finaid/

**Student Life**  
Dean, Student Life  
West Virginia University  
P.O. Box 6411  
Morgantown, WV 26506-6411  
Phone: (304) 293-5611  Fax: (304) 293-7028  
www.wvu.edu/~studlife
West Virginia University Administration

President's Cabinet
President, David C. Hardesty Jr.
Provost and Vice President for Academic Affairs and Research, Gerald E. Lang
Chief of Staff (Interim), Margaret Phillips
Vice President, Administration, Finance, and Human Resources, Scott C. Kelley
Vice President, Institutional Advancement (Interim) and Executive Officer for Communications, Carolyn Curry
Vice President, Health Sciences, and Dean, School of Medicine, Robert M. D'Alessandri
Vice President, Student Affairs, Kenneth D. Gray
Executive Officer and General Counsel (Interim), M. Roberta Brandt
Executive Officer for Social Justice, Jennifer A. McIntosh
Associate Provost for Curriculum and Instruction, Russell K. Dean
Associate Provost for Extension and Public Service, Lawrence S. Cote
Associate Provost for Academic Personnel, C.B. Wilson
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Associate Provost for Research, John D. Weete
Associate Provost for Academic Programs, Rosemary R. Haggett
Associate Provost for Finance (Interim), Elizabeth P. Reynolds
Associate Vice President and Dean of Student Affairs, Herman L. Moses
Associate Vice President for Student Affairs, Finance, Amir H. Mohammadi
Executive Director and CEO, Blanchette Rockefeller Neurosciences Institute, J. Ernest Villafranca
Associate Vice President of Finance, Health Sciences, James K. Hackett
Associate Vice President for Health Sciences, W. Robert Biddington
Associate Vice President for Rural Health, Hilda Heady
Associate Vice President for Health Sciences, Charleston Division (Interim), Norman D. Ferrari III
Regional Vice President and President of WVU Potomac State College, Mary E. Rittling
Regional Vice President and President of WVU Institute of Technology, Karen R. LaRoe
Regional Vice President and President of WVU at Parkersburg, Erik J. Bitterbaum
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Executive Vice President, West Virginia University Alumni Association, Stephen A. Douglas
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Chair, Faculty Senate, Roy S. Nutter Jr.
Special Assistant to the President and Provost, Virginia J. Petersen
Executive Assistant to the President, Sara A. Master
Special Assistant to the President, David Miller

Deans
College of Business and Economics, Jay Coats
College of Creative Arts, Bernard Schultz
College of Engineering and Mineral Resources, Eugene V. Cilento
College of Human Resources and Education, William L. Deaton
College of Law, John W. Fisher III
Davis College of Agriculture, Forestry, and Consumer Sciences/Agricultural and Forestry Experiment Station, Cameron R. Hackney
Eberly College of Arts and Sciences, M. Duane Nellis
Extended Learning, Sue Day-Perroots
Perley Isaac Reed School of Journalism, Christine Martin
School of Dentistry, James J. Koelbl
School of Medicine, Robert M. D'Alessandri, M.D.
School of Nursing, E. Jane Martin
School of Pharmacy, George R. Sprotto
School of Physical Education, Dana D. Brooks
Student Affairs, Herman L. Moses
University Libraries, Frances O'Brien
Directors
AAO/EEO Program, Jennifer McIntosh
Academic Computing, Don E. McLaughlin
Accounting and Financial Systems, John L. Williams
ADA Compliance, Barbara T. Judy
Admissions and Records, Cheng Khoo
Aerospace Studies, Col. Eric Childress
Alumni Association, Stephen L. Douglas, executive vice president
Athletics, Edward M. Pastlioni
Blanchette Rockefeller Institute of Neuroscience, J. Ernest Villafranca
Budget Planning, Narvel G. Weese
Bureau of Business and Economic Research, Tom S. Witt
Business Services Office, Geraldine M. Ireland
Career Services Center, Robert L. Kent
Carruth Center for Counseling, Catherine A. Yura
Center for Black Culture and Research, Katherine Bankhole
Center for Chinese Business, William B. Riley Jr.
Center for Writing Excellence, Laura Brady
Center on Aging, Janet Williams, Interim
Concurrent Engineering Research Center, Ramana Reddy
Dining Services, Jeffrey DeMoss
Environmental Health and Safety Office, Roger L. Pugh
Financial Aid, Brenda S. Thompson
Graduate Education, Robert Stitzel
Health Sciences, Robert Biddington
Human Resources, Myrtho Blanchard
Information Technology and Customer Service, Sid Morrison
Institute for Public Affairs, Robert J. Dilger
Institute for History of Technology and Industrial Archeology, Emory Kemp
Institute of Occupational Environmental Health, Alan M. Ducatman
Institutional Analysis and Planning, Kathleen Bissonnette
Internal Auditing, William R. Quigley
International Programs, Dan Weiner
Mary Babb Randolph Cancer Center, Eddie Reed
Military Science, Lt. Col. Robert Leonhard
Mountainlair, Michael A. Ellington
National Research Center for Coal and Energy, Richard Bajura
News and Information Services, Rebecca Lofstead
Office of Research and Tax Accounting, Lisa A. Mitchell
Parents Club, Sabrina Cave
Physical Plant, Lee D. Comer
Physical Plant HSC, Gary B. Miller
Printing Services, Richard Beto
Procurement Services, Ed Ames
Public Safety, Robert E. Roberts
Publications Services, Angela M. Caudill
Regional Research Institute, Randall W. Jackson
Research Corporation, Andrew Fort Cockburn
Research Facilities Office, James R. Shaub
Resident Faculty Leaders, David Stewart
Sponsored Programs, Alan B. Martin
Student Health Services, Edwin J. Morgan
Student Recreation Center, David H. Taylor
Technology Transfer, Vacant
Telecommunications and Network Services, Timothy P. Williams
Television Productions, John E. Duwall
Undergraduate Academic Services Center, Richard Robbins
University Affiliated Center for Developmental Disabilities, Ashok Dey
University Honors Program, Keith Garbutt
Visitors Center, Danica Ann Gorby
WVU Press, Patrick W. Conner
Women’s Studies, Barbara J. Howe
Distinguished Professors

Ravi Achrol, K-Mart Corporation Chair of Marketing
James B. Brick, Dr. Edmund B. Flink Chair of Internal Medicine
John F. Brick, Hazel Ruby McQuain Chair of Neurological Research
Forest J. Bowman, Jackson and Kelly Professor of Law
Nigel N. Clark, George B. Berry Chair of Engineering
Franklin D. Cleckley, Arthur B. Hodges Professor of Law
Patrick Conner, Eberly College Centennial Professor of English
Bernard R. Cooper, Claude W. Benedum Professor of Physics
Julio Davalos, Claude W. Benedum Professor for Outstanding Teaching
Anthony DiBartolomeo, Hazel Ruby McQuain Chair of Rheumatology and Arthritic Diseases
Robert DiClerico, Eberly Family Professor for Outstanding Teaching
Charles R. Disalvo, Woodrow A. Potesta Professor of Law
Barry A. Edelstein, Eberly Family Professor of Psychology
Ali Feliachi, Power Professorship in Engineering
Frank Gagliano, Claude W. Benedum Professor of Theatre
Keith Garbutt, Eberly Family Professor for Outstanding Teaching
Mark Gibson, Margaret Sanger Chair of Family Planning and Reproductive Physiology
Rakesh K. Gupta, GE Plastics Professor of Materials Engineering
Sidney L. Harring (Visiting), Anna Deane Carlson Professor in the Social Sciences
Trevor M. Harris, Eberly Family Professor of Geography
Robert Hoeldtke, Charles E. Compton Chair of Nutrition
Thomas Kammer, Eberly College Centennial Professor of Geology
Richard Layne, Grace Kinney Mead Chair of Geriatrics
Kennon A. Lattal, Eberly College Centennial Professor of Psychology
Ronald L. Lewis, Stuart and Joyce Robbins Chair in History
John Linberg, Jane McDermott Shott Chair in Ophthalmology
Robert M. Markley, Jackson Professor of English
Robert S. Maust, Louis F. Tanner Distinguished Professor of Public Accounting
James McGraw, Eberly Family Professor of Biology
Brian McHale, Eberly Family Professor of American Literature
Kathleen E. McNerney, Armand E. and Mary W. Singer Professor in Humanities
Thomas P. Meloy, Claude W. Benedum Professor of Mineral Processing
William H. Miernyk, Claude W. Benedum Professor of Economics, Emeritus
Syd S. Peng, Charles T. Holland Professor of Mining Engineering
Eddie Reed, Laurence and Jean DeLynn Chair of Oncology
Hayne W. Reese, Centennial Professor of Psychology, Emeritus
Patricia Rice, Eberly Family Professor for Outstanding Teaching
Terry L. Rose, Hogan Chair of Life Insurance
Carl Rotter, Eberly Family Professor for Outstanding Teaching
Joseph Scotti, Eberly Family Professor for Outstanding Public Service
Mohindar Seehra, Eberly Family Professor of Physics
Kenneth Showalter, C. Eugene Bennett Chair of Chemistry
Donley Studlar, Eberly Family Professor of Political Sciences
Terry Wimmer, Shott Chair of Journalism
Yuesheng Xu, Eberly Family Professor of Mathematics
John Zaniewski, Asphalt Technology Professor of Civil and Environmental Engineering
Established in 1867, West Virginia University is the state’s only research, doctoral degree-granting, land-grant university. WVU provides high-quality programs of instruction, offering 168 degree programs at the undergraduate, graduate, and first-professional levels, including the state’s only law school. WVU fosters basic and applied research and scholarship and engages in and encourages other creative and artistic work. A wide range of health science programs are taught at the WVU Robert C. Byrd Health Sciences Center through schools of medicine, dentistry, nursing, and pharmacy, including allied health programs and graduate programs in basic health sciences.

WVU combines the breadth of academic opportunities offered by a major research institution with the atmosphere of a small school. The undergraduate student/faculty ratio is 20:1. Enrollment in one of the University’s 13 colleges and schools offers students the warmth and friendliness of a small academic community. The University encourages diversity and promotes social justice in all of its activities.

The downtown campus is linked to the Evansdale campus and the Robert C. Byrd Health Sciences Center by the Personal Rapid Transit (PRT) system, which uses automated, electric-powered cars that operate on a concrete-and-steel guideway. The PRT permits quick and easy access to major locations within the University and downtown Morgantown.

The diversity of our student body is evident in the Fall 2001 enrollment of 22,774 students, with all 55 counties of West Virginia, 49 states, and nearly 100 other countries represented. WVU has produced 25 Rhodes Scholars, 15 Truman Scholars, 21 Goldwater Scholars, 2 British Marshall Scholar, and 2 Morris Udall Scholars.

Only ten other state universities share WVU’s complex mission as a land-grant, research-oriented, public university with a comprehensive health sciences center. The term “land-grant” derives from the Congressional act of 1862 that gave federally owned land to each state, to be sold for funds to establish colleges offering programs in agriculture and engineering. Since its founding in 1867, WVU has developed into the center of graduate and professional education, research, and extension programs in West Virginia. Coal and energy are a major focus of University research.

WVU campuses combine traditional and modern architectural styles; nine full buildings, a portion of White Hall on the downtown campus, and two buildings at Coopers Rock are listed on the National Register of Historic Places. Many of these original buildings, including Stalnaker Hall, have been restored and renovated.

WVU programs and services are accessible throughout West Virginia. Regional campuses include West Virginia University at Parkersburg, Potomac State College of West Virginia University, and West Virginia University Institute of Technology. WVU operates the Charleston Division of the Robert C. Byrd Health Sciences Center and the Wheeling Division of the School of Medicine. In addition, there are six Extended Learning Regional Centers at Charleston, Clarksburg, Parkersburg, Potomac State College, Shepherd College, and West Liberty State College.

WVU operates eight experimental farms in Hardy, Jefferson, Monongalia, Monroe, and Preston counties; five experimental forests in Monongalia, Preston, Randolph, and Wetzel counties; a geology camp in Greenbrier County; and the state 4-H Camp and a museum of mid-19th century life at Jackson’s Mill.

The Mission of West Virginia University

Founded in 1867, West Virginia University is the land-grant, doctoral degree-granting research university in the state of West Virginia. As such, the institution occupies a unique position within the state.

West Virginia University’s primary mission is to provide high-quality programs of instruction at the undergraduate, graduate, and professional levels; to stimulate and foster both basic and applied research and scholarship; to engage in and encourage other creative and artistic work; and to bring the resources of the University to all segments of society through continuing education, extension, and public service activities.

Opportunities to conduct pioneering research and scholarship help attract high quality faculty and students. Students and faculty work together to create exciting and productive paths for investigation and development. WVU nurtures these symbiotic interactions to build intellectual, social, and economic development for all of West Virginia.

WVU’s special responsibility is to seek out, challenge, educate, and help create opportunities for those West Virginia citizens who can benefit from its programs, especially those who have demonstrated high achievement or who possess excellent potential.
West Virginia University recognizes that diversity enriches the institution and the society it serves. The University is committed to social justice and to practicing the principles of equality of opportunity and affirmative action.

The Range of University Activity

Currently, WVU, including the regional campuses of Potomac State College of West Virginia University, West Virginia University at Parkersburg, and West Virginia University Institute of Technology, enrolls approximately 30,000 students. WVU has an annual budget in excess of $565 million.

University Libraries

The West Virginia University Libraries contain over 1.4 million volumes and 225,000 microforms. Some 25,000 volumes are added each year, and 7,500 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, Forestry, and Consumer Sciences; 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 250,000 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 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 on the ground floor of the Downtown Library Complex 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.

Disability Services

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.

**Instruction**

Degrees are awarded at the baccalaureate, master’s, doctoral, and professional levels. The University offers 168 degree programs through the departments/divisions of 13 colleges and schools:

- The College of Business and Economics, including the Divisions of Accounting, Business Administration, and Economics and Finance.
- The College of Creative Arts, including the Divisions of Art, Music, and Theatre and Dance.
- The College of Engineering and Mineral Resources, including 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 College of Human Resources and Education, including the Departments of Advanced Educational Studies; Counseling, Rehabilitation Counseling, and Counseling Psychology; Educational Theory and Practice; and Speech Pathology and Audiology.
- The College of Law.
- The Davis College of Agriculture, Forestry, and Consumer Sciences including the Divisions of Animal and Veterinary Sciences, Family and Consumer Sciences, Forestry, Plant and Soil Sciences, and Resource Management.
- The Eberly College of Arts and Sciences, including the School of Applied Social Sciences (Public Administration, Social Work, and Sociology and Anthropology); the Departments of Biology, Chemistry, Communication Studies, Economics, English, Foreign Languages, Geology and Geography, History, Mathematics, Philosophy, Physics, Political Science, Psychology, Religious Studies, and Statistics; and programs in Africana Studies, Biochemistry, Environmental Geoscience, Forensic Identification, Industrial Mathematics and Statistics, International Studies, Liberal Arts and Sciences, Native American Studies, Slavic Studies, and Women’s Studies.
- The Perley Isaac Reed School of Journalism, including sequences in Broadcast News, News-Editorial, and Public Relations.
- The School of Dentistry, including the Departments of Dental Hygiene, Endodontics, and Orthodontics.
- The School of Medicine, including the Departments of Neurobiology and Anatomy, Anesthesiology, Behavioral Medicine and Psychiatry, Biochemistry and Molecular Pharmacology, Community Medicine, Exercise Physiology, Family Medicine, Microbiology, Immunology and Cell Biology, Neurology, Neurosurgery, Obstetrics and Gynecology, Occupational Therapy, Ophthalmology, Orthopedics, Otolaryngology, Pathology (Medical Technology), Pediatrics, Pharmacology and Toxicology, Physical Therapy, Physiology and Pharmacology, Public Health, Radiology, Surgery, and Urology, the HSC branch campus at Charleston, and the division at Wheeling.
- The School of Nursing.
- The School of Pharmacy.
- The School of Physical Education.

The University conducts graduate studies in Morgantown and at five off-campus centers and continues to develop telecommunication resources to expand its off-campus graduate instruction.

**Research and Scholarship**

Research, scholarship, or creative activity of distinction is expected within every school or college of the University. Indeed, most of the advanced research and scholarship carried out in West Virginia finds its home at West Virginia University. The assessment of the quality both of research and teaching is given heavy weight in tenure, promotion, and other personnel decisions affecting faculty members.

The University supports and is supported by numerous institutes for the promotion of interdisciplinary studies and research. These units include the National Research Center for Coal and Energy, the Regional Research Institute, the Mary Babb Randolph Cancer Center, the Center on Aging, the Institute for Public Affairs, the Center for Women’s Studies, the
Center for Economic Research, the Harley O. Staggers National Transportation Center, the Energy and Water Research Center, the Appalachian Hardwood Center, the Concurrent Engineering Center, the Institute of Occupational Health and Safety, the Center for Constructed Facilities, the Center for Black Culture and Research, and others.

Service

By virtue of its service mission as a land-grant institution and its position as the major center of research and development in West Virginia, the University has a responsibility to work with business and government leaders to promote the economic development of West Virginia. Through credit and non-credit educational programs and working partnerships with industry, government, and public schools, the University plays an important role in all geographic regions in West Virginia.

WVU contributes to the development and enhancement of West Virginia’s economic, educational, social, and health status through its programs of instruction and research and through its programs of outreach. To serve the State and its people, the University offers instructional and service programs in every county through the West Virginia University Extension Service. Additionally, the West Virginia University Agricultural and Forestry Experiment Station sponsors applied and basic research throughout West Virginia, directly benefiting industries critical to the state. The West Virginia University Health Sciences Center (HSC) serves the people of all 55 counties of West Virginia through direct patient care both at its campuses and at outreach clinics located throughout the state. The HSC maintains a cancer information service, a drug information service, and a poison control center. It provides extensive support services for rural physicians, including a free telephone consultation program, specialty care support, monthly educational opportunities, and computerized access to resources in the Health Sciences Center Library. The health professionals of the HSC conduct basic research focusing on the specific needs of West Virginians.

Potomac State College of West Virginia University

Potomac State College of West Virginia University, situated in West Virginia’s Eastern Panhandle in the town of Keyser, provides students with liberal arts and sciences and pre-professional studies in agriculture, business and economics, criminal justice studies, education, engineering, forestry, journalism, medical technology, music, nursing, pharmacy, physical therapy, social work, and veterinary medicine. Career-technical programs at Potomac State, which lead to an associate in applied science degree, include: agriculture and horticulture; business technology including general business, accounting, and marketing; child care; computer information systems including microcomputer applications, programming, Internet, and network specialists; law enforcement and corrections; electronics technology; occupational development; executive and medical secretarial; and technical studies. A certificate is offered in criminal justice studies. As a residential campus of WVU, Potomac State College program offerings transfer to university/college parallel programs or provide immediate access to a variety of careers. The college, which celebrated its Centennial in 2001, serves as the cultural hub and educational leader of the five-county Potomac Highlands Region and attracts students from across the state, the nation, and the world. Phone: 1-800-262-7332; on-line: www.psc.wvu.edu.

West Virginia University Institute of Technology

The West Virginia University Institute of Technology is WVU’s southernmost regional campus. Located in Montgomery, WVU Tech serves the region and the state by preparing students at the associate’s, baccalaureate, and master’s levels for careers in the basic and applied sciences (e.g., engineering, business, technology, and the health, life, and physical sciences). WVU Tech serves as the sole preparer of vocational-technical teachers in the state, and prepares students through the community college division for technically oriented occupations. It not only provides for community education needs in the region, but also addresses the statewide and regional needs for delivery of engineering and technical programs through extension offerings, continuing education, and consultative activities of the faculty. WVU Tech currently offers certificates and associate’s degrees in 15 fields, baccalaureate degrees in 26 fields, and a master’s degree in engineering. WVU in Morgantown and WVU Tech, along with the other regional campuses, are working together to use technology to expand offerings available to students in the southern part of the state. Phone: 1-800-554-TECH; on-line: www2.wvutech.edu.
West Virginia University at Parkersburg

As a regional higher education center for a seven-county service area in West Virginia’s Mid-Ohio Valley, West Virginia University at Parkersburg delivers community-based educational programs that meet the broad educational goals of area residents. Established in 1961, WVU Parkersburg offers programs in development studies, general education, and specialized and technical training. Its offerings consist of a blend of one- and two-year career and academic programs and selected baccalaureates. Career programs include certificates in industrial maintenance, surgical technology, technical studies, and welding. Associate in applied science degrees are available in business technology, computer and information technology, criminal justice, engineering technology, environmental technology, industrial maintenance, journalism, manufacturing processes, nursing, occupational development, paramedic science, technical studies, welding management technician, and welding skills technology. Transfer programs include the associate in arts and the associate in science degrees in business administration, computer science, data processing, engineering, and pre-professional sciences. WVU Parkersburg also offers a bachelor of science degree in business administration and a bachelor of arts in elementary education. Many of WVU Parkersburg’s program offerings transfer easily to university/college parallel programs. Phone: 1-800-WVA-WVUP; on-line: www.wvup.wvnet.edu; e-mail: wvupinfo@wvup.wvnet.edu.

Commitment to Social Justice

West Virginia University’s role as the doctoral degree-granting, research, land-grant university in the state of West Virginia gives the institution a special responsibility as a leader in the area of social justice. The pursuit of truth underlying the University’s mission focuses attention on issues of diversity, power, and perspective, so that students, faculty, and staff may study and work in a climate of academic freedom and social responsibility, developing the skills, knowledge, and self-esteem necessary for participation as world citizens.

Equal opportunity is a fundamental goal in a democratic society, and WVU shares the responsibility for achieving that equity. The institution is committed, therefore, to ensuring that all persons, including women; people of color; persons with disabilities; gays, lesbians, and bisexuals; veterans; and persons of different religions, sexual orientation, ages, and international, ethnic, and economic backgrounds benefit from the many opportunities the institution provides.

In keeping with this responsibility, the members of the academic community are expected to demonstrate civility and mutual respect for all persons; understanding and appreciation for all persons; to express that perspective in every dimension of the institution’s life and mission; and to work cooperatively, representing not only the interests of their own groups but also those of the wider community.

The importance of WVU’s social justice program goes beyond the benefits that accrue to any one person or group, to the strengthening of the University itself and the enhancing of its ability to accomplish the mission with which it has been entrusted by the people and the State of West Virginia.

Government and Organization of WVU

Effective July 1, 2001, the West Virginia Board of Governors is vested by law with the authority for the control and management of the University. The board includes twelve lay members, one faculty member, one staff member, and one student member. The University president, appointed by the Board of Governors, is the chief executive officer of the University.

The West Virginia Higher Education Policy Commission is responsible for policy development and other statewide issues. The commission consists of seven members appointed by the governor, the secretary of education and the arts, and the state superintendent of schools.

The Faculty Senate is the vehicle for faculty participation in the governance of the University. It is a legislative body with original jurisdiction over all matters of academic interest and educational policy that concern the entire University or affect more than one college or school. The senate’s decisions are subject to review and approval by the president and the Board of Governors. Senators are elected by members of the University faculty to represent their colleges and other constituencies. Each senator represents twenty members of the University faculty. The senate is presided over by an elected chair.

Three faculty members serve on the Vice Presidents’ Advisory Committee for Promotion and Tenure. The president meets regularly with the cabinet and monthly with the Faculty Senate Executive Committee, the Staff Council, and Student Administration. The University Faculty Assembly includes the president as presiding officer, professors, associate professors, assistant professors, instructors holding appointments on a full-time basis, and other persons engaged in full-time professional activities. The assembly meets once a year.
West Virginia University has a tradition of strong student administration that represents student opinion to the administration and faculty. Student administration has three main units: the executive branch, the board of governors, and the judicial board. Students also serve on University-wide committees and on the Mountainlair Advisory 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 relations, or other areas that affect their jobs.

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 classification. Laborer’s Local 814 is the only recognized union at the University by agreement through the Memorandum of Accord.

**Morgantown Area**

Greater Morgantown has 27,000 permanent residents; Monongalia County, 79,000. WVU is the largest single employer in the county. On the east bank of the Monongahela River, which flows north to Pittsburgh, Morgantown is situated on rugged terrain in the Appalachian highlands. The altitude varies from 960 feet above sea level in Morgantown to 2,100 feet at nearby Cooper’s Rock. The area’s temperate climate has four distinct seasons of about equal length. Morgantown averages forty inches of precipitation a year. Autumn is beautiful when the leaves turn red, orange, and yellow. A north-south interstate highway (I-79) is one mile west of Morgantown. U.S. 19 and U.S. 119 pass through Morgantown in a north-south direction. Interstate 68, an east-west highway, links I-79 at Morgantown to I-81 in the Cumberland/Hagerstown, Maryland, region.

Because of WVU’s resources, the Morgantown area is a major research center in the Appalachian region. Five federal agencies have research facilities in the area: Department of Health and Human Services (Appalachian Laboratory for Occupational Safety and Health), Forest Service (Forestry Sciences Laboratory), National Energy Technology Laboratory of the Department of Energy, Natural Resource Conservation Service (West Virginia headquarters), and the National Institute for Occupational Safety and Health.

**Housing and Residential Education**

The University owns and operates nine residence halls with a capacity of approximately 3,500. All single, first-year students (including transfer students with freshman class status) are required to live in University housing. Exceptions include students living at home with parents within commuting distance, students age 21 or older, married students, and students with children. The Assignments Office, G-140 Lyon Tower, (304) 293-2811, provides information about on-campus, undergraduate housing. The Department of Housing also operates apartment complexes. Although primarily for graduate students, the Medical Center Apartments accommodate juniors, seniors, and students age 21 or older, based on availability. Information about University-owned apartments is available by calling (304) 293-5840; on-line: www.hr1.wvu.edu/resed.

**Office of Academic Computing**

The Office of Academic Computing is a service unit of the WVU Office of Information Technology (WVU-OIT). Academic Computing provides support for academic and research computing and instructional technology throughout West Virginia University. This support includes, but is not limited to, training, technical consulting, research support, and planning in the academic applications of information technology. Academic Computing operates computer labs on the downtown and Evansdale campuses. These labs provide students, faculty, and staff access to computing resources including word processing, spreadsheet, database, and graphics software, e-mail, and the Internet. They also provide access to selected instructional software programs for specific courses. Additionally, the Office of Academic Computing supports the application and integration of technology into the instructional program of the University. This support includes technical assistance regarding classroom technology, the development of computer-based instructional materials and systems, the Instructional Technology Resource Center, and the operation of a multimedia distribution system. Call (304) 293-2900 or check the web site http://www.access.wvu.edu to get more information about the Office of Academic Computing, its services, and programs.
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 coursework beyond the baccalaureate, even though minimum coursework 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 coursework, 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 (www.iawvu.edu:8888) version of the current graduate catalog when beginning graduate study.

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 West Virginia Higher Education Policy Commission, 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 13 schools and colleges of the University and by some inter-unit committees. West Virginia University has been placed in the highest tier in the Carnegie Classification of Institutions of Higher Education-Doctoral/Research Extensive University.

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 16 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 Student Council. 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. Generally, nine-month graduate faculty members, once they have agreed to either chair or serve on a master’s or doctoral student’s committee, should make every effort to fulfill this obligation even during those periods when they are not under contract, e.g., summer terms.

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 Higher Education Policy Commission 9. Exception to any of the above must be approved by the University Graduate Council.

Faculty Pursuing Advanced Degrees

No faculty member holding a tenured or tenure-track position at the rank of assistant professor or above in a program unit may be admitted to a graduate degree program offered through that unit. Only those individuals in other ranks or in non tenure-track positions can simultaneously pursue a degree in their own unit. Faculty holding 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 Higher Education Policy Commission, Board of Governors, 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 Acceptance
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 an official transcript with a baccalaureate degree indicated.

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 been inactive for two years must reapply and be readmitted. The application fee is assessed.
Health Sciences Center

The Admissions and Records Office at the WVU Health Sciences Center is responsible for admission to the dentistry, medicine, nursing, and pharmacy schools. The WVU Health Sciences Center Catalog contains complete information about these programs. If you have additional questions, you may write to: Admissions and Records, 1170 Health Sciences Center North, P.O. Box 9815, Morgantown, WV 26506-9815; phone: (304) 293-3521.

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.

Transfer Students

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 coursework.

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.

International Student Admission

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.
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.
- Application service fee.
- The official results of the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). TOEFL or IELTS results must be sent directly to WVU by the testing service.
- 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 academic record and certificates/diplomas.

The items above should be sent to Admissions and Records, West Virginia University, P.O. Box 6009, Morgantown, West Virginia 26506-6009. All material must be received by the application deadline. If possible, all application materials should be submitted at one time (TOEFL or IELTS scores and official transcripts from United States institutions should be requested so that all material arrives at WVU close to the same date). Incomplete applications can not 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.

Required Academic Credentials

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 the secondary school.

West Virginia University requires that original academic documents or certified copies of the original academic documents from non-United States institutions be submitted. The required documents include the official academic record (showing course titles, dates taken, and grades received), and diploma(s) or certificate(s) showing the degree awarded. These documents must be in the original language of issue. Official English translations must be included. Translations must be literal, word-for-word translations and must indicate actual grades received, not an interpretation of the grades.

Documents received by WVU become the property of WVU and cannot be returned to the applicant. It is therefore recommended that students who receive only one original copy of credentials submit certified copies with the 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.

English Language Proficiency

All applicants whose first language is not English must provide proof of English language proficiency. WVU uses the Test of English as a Foreign Language (TOEFL) and the International English Language Testing System (IELTS) as measures of English language proficiency. A score of 213 on the computer-based TOEFL or 550 on the paper-based TOEFL or 6.5 on the IELTS is the minimum required of all such applicants. Applicants must make arrangements to take the TOEFL/IELTS well in advance of the desired date of enrollment at WVU. Information about registration for the TOEFL can be obtained by writing to: 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/IELTS results. However, applicants only having a master’s degree from an accredited U.S. college or university must still provide acceptable TOEFL or IELTS scores.
Financial Documents and Student Visa

International students requiring a form I-20 or IAP-66 for student or exchange visa must provide certification of adequate financial resources in U.S. dollars. 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.

Intensive English Program

In some cases, it may be possible to consider applications for students who lack adequate TOEFL/IELTS 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/IELTS 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 or an IELTS score of 6.5. 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.

Transferring Within the 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.

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 an accredited 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 from an accredited college or university 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 from an accredited college or university 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 coursework and maintain this average as long as enrolled. (See p. 23, “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 coursework 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 coursework 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 coursework 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 coursework 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.

All credit hours taken since admission as a provisional graduate student or to be applied to a degree count in the 18 credit-hour limit, i.e., undergraduate or graduate credit, P/F, S/U, graded courses, credit by senior petition, and transfer credit.

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 coursework 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.

Graduate students are not permitted to take more than 16 hours in any one term and no more than 12 hours in the total of the two summer enrollment periods. Credit overloads must be approved for students by their college. 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 coursework 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 coursework 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 799 Graduate Colloquium will satisfy this University requirement.

Enrollment and Registration
Extended Learning/Off-Campus Study

West Virginia operates seven regional centers located at Beckley, 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, dean of the Extended Learning Office, and by the associate provost for academic programs. 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/~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., 799 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 and 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 Higher Education Policy Commission policies and corresponding policies, rules, and regulations developed by the West Virginia University Board of Governors. 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, WVU Office of Research (304) 293-2867; e-mail: bajura@wvunrcce.nrce.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.

### Academic Information

#### Degree Programs Offered by WVU

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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.

College of Law
Law ........................................................................ J.D.

Davis College of Agriculture, Forestry, and Consumer Sciences
Agricultural and Environmental Education ... B.S.Agr. M.S.
Agricultural and Resource Economics ...................... M.S.
Agricultural Sciences ........................................... Ph.D.
Agriculture, Forestry, and Consumer Sciences ........ 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.
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. M.F.A.
Foreign Languages ........................................ B.A. M.A. M.F.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.
Liberal Studies ............................................. M.A.L.S.
Mathematics .............................................. B.A., B.S. 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., B.S. M.A. Ph.D.
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.

**Perley Isaac Reed School of Journalism**

Journalism ................................................................. B.S.J. ............... M.S.J.

**School of Dentistry**

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

**School of Medicine**

Anatomy ................................................................................ M.S. ............ Ph.D.
Applied Exercise Science ............................................... M.S. ............... Ph.D.
Biochemistry (Medical) ....................................................... M.S. ............... Ph.D.
Community Health Promotion ........................................ M.S.
Exercise Physiology ......................................................... B.S. ................. M.S.
Medical Technology .......................................................... B.S. .................. M.S.
Medicine ................................................................................ M.D.
Microbiology and Immunology ........................................ 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.

**School of Nursing**

Nursing .............................................................. B.S.N. .................. M.S.N. ............. D.S.N.

**School of Pharmacy**

Pharmaceutical Sciences ................................................ M.S. ............... 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.

**Grades**

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 System
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.
P pass (cannot be counted for graduate degree credit—see below)
X auditor (no grade and no credit)
S satisfactory
U unsatisfactory (computed as an F)
UF unforgivable F

Pass-Fail Grading
Pass-fail grading is not applicable to the coursework for a graduate degree. A graduate student may register for any course (100-499) 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.

Satisfactory-Unsatisfactory Grading
Courses graded satisfactory or unsatisfactory (S/U) are approved by the associate provost for academic programs. Approved requests are forwarded to the Office of Graduate Education and the Office of Admissions and Records.

Grade-Point Average Calculations
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 coursework 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.
West Virginia University Policy on the Family Educational Rights and Privacy Act

The Family Educational Rights and Privacy Act of 1974 is a federal law which states: (a) that a written institutional policy must be established; and (b) that a statement of adopted procedures covering the privacy rights of students be made available. The law provides that the institution will maintain the confidentiality of student education records.

West Virginia University accords all the rights under the law to students who are declared independent. No one outside WVU shall have access to nor will WVU disclose any information from students’ educational records, without the written consent of students except to personnel within WVU and the West Virginia Higher Education Policy Commission; to persons or organizations providing students’ financial aid; to accrediting agencies carrying out their accreditation function; to persons in compliances with judicial order; to organizations conducting studies for, or on behalf of, education agencies of institutions for the purpose of developing, validating, or administering predictive testing student aid programs, and improving instruction; and to persons in an emergency in order to protect the health or safety of students and or other persons. All these exceptions are permitted under the act.

The act also permits disclosure of information from students’ educational records, without the written consent of students, to parents of a dependent student of such parents, as defined in Section 152 of the Internal Revenue Code of 1954, as amended. West Virginia University intends to consider all students as “dependent” for purposes of disclosure of information to parents unless the students specifically notify in writing the WVU Office of Admissions and Records that they are not a “dependent” of their parents for federal income tax purposes. Students need to give such written notification only once.

The West Virginia University Policy on the Family Educational Rights and Privacy Act explains in detail the procedures to be used for compliance with the provisions of the act. Copies of the policy can be found in the offices of all deans and directors. The policy also is printed in the Student Handbook and annually in the Daily Athenaeum. The offices of the deans and directors can inform students as to the locations of all education records maintained on students by West Virginia University.

Official Transcripts

Each copy of an official transcript costs $6.00, payable by check or money order. Because of demand, it may take two to three weeks to process an application for a regular transcript at the close of a semester or summer session. At other times, it is the policy of WVU to process all regular transcript requests within 48 hours of receipt of the request.

If you owe money or have some other financial obligation to any unit of the University, you forfeit your right to claim a transcript of your record or your diploma until these financial obligations have been met.

When you apply for a transcript, you must furnish your last date of attendance and your student number. Be sure to indicate the full name under which you were enrolled. Requests for transcripts must be made in writing to the Office of Admissions and Records. We cannot accept telephone requests because of the risk of the security of your record.

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 mid-semester 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.
- 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 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.

Absences
Importance of Class Attendance
At WVU, class attendance contributes significantly to academic success. Students who attend classes regularly tend to earn higher grades and have higher passing rates in courses. Excessive absences may jeopardize students’ grades or even their ability to continue their courses.

Attendance Policies
Instructors must set attendance policies that are appropriate for the goals and instructional strategies of their courses. Instructors may include attendance records in determining the final course grade. All attendance policies that affect students’ grades must be announced in writing within the first week of class. Moreover, instructors are responsible for keeping accurate enrollment records, and for keeping accurate attendance records when attendance is used in grading. Attendance policies thought to violate the statement on student attendance should be discussed with the instructor, then with the department chair, and finally the college dean, if necessary.
Class Absences Students who are absent from class for any reason are responsible for all missed work and for contacting their instructors promptly, unless the instructors’ policies require otherwise. However, instructors cannot require documentation of student illness from any medical provider as part of an attendance policy, since medical conditions are confidential and frequently not verifiable.

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. Deadlines are published in the University Schedule of Courses each semester. If you follow all established University procedures and withdraw before the published deadline, you will receive a W on your transcript. The grade-point average is not affected in any way by this mark. 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.

Withdrawal

Withdrawal From Individual 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.

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.

Withdrawal 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 processed by the Office of Admissions and Records. 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.

Re-Enrollment After Withdrawal

After you withdraw from WVU in two consecutive semesters (excluding summer sessions), you may not register for further work without approval of the dean of the college or school in which you want to register, subject to conditions set by that dean.
Academic Integrity and 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.

Responsibilities

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.

Academic Dishonesty Defined

WVU 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 is defined in terms of proscribed acts. Students are expected to understand that such practices constitute academic dishonesty regardless of motive. Those who deny deceitful intent, claim not to have known that the act constituted plagiarism, or maintain that what they did was inadvertent are nevertheless subject to penalties when plagiarism has been confirmed. Plagiarism includes, but is not limited to: submitting, without appropriate acknowledgement, a report, notebook, speech, outline, theme, thesis, dissertation, or other written, visual, or oral material that has been copied in whole or in part from the work of others, whether such source is published or not, 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 or 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 furnishing the results of research projects or experiments for the inclusion in another’s work without proper citation.
   f. Knowingly furnishing false statements in any University academic proceeding.
Procedure for Handling Academic Dishonesty Cases

Academic dishonesty includes plagiarism; cheating and dishonest practices in connection with examinations, papers, and projects; and forgery, misrepresentation, and fraud. 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.

Step 1. Instructor’s Level
1. **Instructor’s Notice** An instructor who suspects a student of dishonest practices may meet with the student to discuss the evidence and may drop the matter without making a formal accusation and without imposing a penalty.

   An instructor may not find guilt or impose a penalty without a written charge that describes the evidence against the student. Within 15 calendar days of discovering clear evidence of an offense, an instructor who wishes to charge a student with academic dishonesty must personally deliver written notice of the charges or send the notice by certified U.S. mail to the student’s local and permanent addresses.

2. **Student’s Response** A student who elects to respond must do so in writing no later than 15 calendar days after the mailing or personal delivery of the instructor’s written notice. The student may respond by admitting or denying guilt, by offering counter evidence, or by describing extenuating or mitigating circumstances that might affect the instructor’s judgement of the severity of the offense.

3. **Instructor’s Decision** Within five calendar days of the student’s response or after the opportunity for response has passed (whichever comes first), the instructor must reach a decision and send written notice of the decision to the student (and, if guilt is found, to others named below).

   a. **Charge withdrawn** An instructor who believes that the evidence is not sufficient to establish guilt should immediately notify the student of this decision in writing, thus closing the case.

   b. **Penalty imposed** An instructor who is convinced that the student is guilty and wishes to impose an academic penalty must summarize the evidence justifying the penalty in a written notice to the student. The notice must also inform the student of the right to petition the dean within 30 calendar days. Copies of the notice must be sent to the dean of college or school offering the course, the dean of the college or school in which the student is enrolled, and the Office of Judicial Programs. The maximum penalty an instructor may impose is an unforgivable F in the course. The Office of Judicial Programs will notify Admissions and Records to enter an unforgivable F, which cannot be removed from the student’s transcript unless the decision is reversed. If the student repeats the course and a new grade is entered, the unforgivable F will still remain on the transcript.

   The instructor may exclude the student from further participation in the course, but is discouraged from doing so unless the student has admitted guilt in writing. The instructor may impose lesser penalties, including (but not limited to) a reduced grade on the work or examination in question, assignment of remedial work, or a reduced grade (including a forgivable F). The instructor may also recommend to the dean of the college offering the course that additional penalties be imposed.

Step 2. Dean’s Level
A student may petition the dean on two grounds, which may be presented at the same time or separately within the 30-day time limit. A student may (I) ask the dean to review the conduct of the case for adherence to correct procedures; (II) challenge the finding of guilt or the severity of the penalty; or (III) do both.

1. **Procedural Review** A student who believes that the instructor failed to follow correct procedures at Step 1 may petition the dean of the college or school in which the course is offered to conduct a review of the procedures. The student must submit the petition in writing, specifying the procedural errors, within 30 days of the instructor’s written notice.

   Within 15 calendar days of receiving the student’s petition, the dean or the dean’s designee must:

   a. Notify the instructor that a procedural review is being conducted at the student’s request and give the instructor an opportunity to reply.
b. Decide, after reviewing the available information, whether any procedural errors were made and whether such errors affected the outcome of the case.

c. Send written notice of the decision and its rationale to the student, instructor, and dean of the college in which the student is enrolled, and the Office of Judicial Programs.

   A dean or dean’s designee who decides that the outcome was affected may (I) direct the instructor to reopen the case and to correct the error(s) within a specified period of time or (II) overturn the instructor's decision and nullify the penalty, in which case the dean must see that the student’s record is amended. If the dean or dean’s designee decides that the outcome was not affected, the instructor’s decision stands.

2. **Appeal**
   A student who wishes to challenge the instructor’s finding of guilt or the severity of the penalty may appeal to the dean of the college or school in which the course is offered. The appeal must (I) be made in writing within 30 calendar days of the instructor’s written notice; (II) state specific grounds for any claim that the finding of guilt was unwarranted or the penalty unjust; and (III) specify the desired remedy.

   Within 15 calendar days of receiving the student’s appeal the dean or dean’s designee must:
   a. Notify the instructor that the student is appealing and specify whether the finding of guilt, the severity of the penalty, or both will be reviewed.
   b. Solicit from the instructor and the student evidence and arguments relevant to the issues.
   c. Make this material available to both the student and the instructor.
   d. Arrange a meeting of the instructor, the student, and the dean or dean’s designee. (A person from within the University may accompany the student to the meeting and may consult with the advise but not speak on behalf of the student or otherwise participate directly in the discussion unless given explicit permission by the dean or dean’s designee.
   e. Decide, based on the available evidence, whether to uphold the decision being challenged.
   f. Send written notice of the decision, with summary minutes of the meeting and a rationale for the decision to the student, instructor, dean of the college or school in which the student is enrolled, and Office of Judicial Programs.
   g. See that the student’s record is amended if necessary.

3. **Additional Penalties**
   The dean or dean’s designee may impose penalties beyond those imposed by the instructor if the instructor recommends such action or if the dean’s understanding of the case in the context of other misconduct by the student suggests that additional penalties are warranted. The dean or dean’s designee may consider such action only after completing any procedural review or appeal requested by the student or after opportunities have passed for the student to initiate a review or appeal (that is, after it is clear that the instructor’s decisions will stand).

   Within 15 calendar days of this time, the dean or dean’s designee must:
   a. Notify the student that additional penalties are being considered.
   b. Give the student an opportunity to provide additional evidence or argument that might affect a decision about the appropriate penalty and to answer any questions by the dean or dean’s designee.
   c. Decide, based on the available evidence, whether to impose any additional penalties.
   d. Send written notice of the decision, including a summary of the evidence of the decision, including a summary of the evidence and a rationale for the decision, to the student, instructor, dean of the college or school in which the student is enrolled, and Office of Judicial Programs.
   e. See that the student’s record is amended if necessary.

**Step 3. University Committee Level**

   A student or instructor may petition the Committee on Students Rights and Responsibilities on two grounds, which may be presented at the same time or separately within 30 calendar days of receipt of the dean’s decision. A petitioner may (I) ask the committee for a procedural review; (II) challenge decisions made at Step 2; or (III) do both. Those petitioning the committee must do so in writing through the Office of Judicial Programs.
1. **Procedural Review** The student or the instructor may ask the committee to conduct its own review of the procedures followed in Steps 1 and 2.
   
   a. The petition must (I) name the dean or instructor who is believed to have made the error(s); (II) describe the alleged procedural error(s); (III) specify how the error(s) affected the outcome of the case or otherwise harmed the student or the cause of justice; and (IV) include copies of all documentation and correspondence about the case.
   
   b. On receipt of the petition, the committee chair, in consultation with the Office of Judicial Programs, will convene a panel of two faculty members and one student who will decide by majority vote whether to conduct the review. No member of this panel may serve on any other panel in connection with the same case. If the panel denies the petition, the procedural case is closed when written notice of the denial and its rationale has been sent to the student, instructor, dean of the college or school offering the course, dean of the college or school in which the student is enrolled, and the Office of Judicial Programs.
   
   If a majority of the panel agrees that a review is warranted, they must (I) give the student, instructor, and dean a reasonable opportunity to answer any questions the panel may have; (II) decide, based on a review of the any such errors affected the outcome of the case; and (III) send written notice of the decision, with summary minutes of the meeting and a rationale for the decision to the student, instructor, deans of the college or school offering the course and the college or school in which the student is enrolled, and the Office of Judicial Programs.
   
   c. A panel that decides by majority vote that the outcome was affected by error(s) may (I) direct the dean or instructor to reopen the case and to correct the error(s) within a specified period of time or (II) overturn the finding of guilt and nullify the penalty. In either course of action, the panel must provide the rationale for the decision.
   
   d. The dean of the college or school offering the course must see that the student's record is amended if necessary.

2. **Appeal** The student or instructor may challenge the decision(s) of Step 2. (If the dean upheld the instructor's finding or penalty, then the student is appealing the instructor's decision, not the dean's.)
   
   a. The petition must (I) specify the decision being appealed; (II) name the person whose decision is being appealed; (III) specify grounds for any claim that the finding of guilt was unwarranted or the penalty unjust; (IV) specify the desired remedy; (V) provide additional evidence or line or argument not previously introduced that might affect the outcome of the case; (VI) include copies of all documentation and correspondence about the case.
   
   b. On receipt of the appeal, the committee chair, in consultation with the the Office of Judicial Programs, must convene a panel of three faculty and two student members, chaired by one of the faculty members. This panel may decide by majority vote whether to conduct a hearing. If the panel decides that no hearing is warranted, the appeal is denied and the case is closed when written notice of the denial, including the rationale, has been sent to the student, instructor, dean of the college in which the course is offered, dean of the college in which the student is enrolled, and the Office of Judicial Programs.
   
   If the panel deems a hearing is warranted, the Office of Judicial Programs must, in a timely manner, arrange a hearing to accommodate the schedules of the student, instructor, and dean, as well as any other parties involved, all of whom must be notified in writing of the date, time, and place of the hearing, as described below.
   
   I. The administrative procedure is not adversarial; the formal rules of evidence do not apply.
   
   II. Witnesses may be called by any of those involved.
   
   III. The person bringing the appeal and the person whose decision is under appeal may be accompanied by an advisor from within the University who may consult with but not speak on behalf of the advisee or otherwise participate directly in the proceedings unless given explicit permission by the chair of the panel.
   
   IV. A written record of the hearing must be prepared in the form of summary minutes with relevant attachments and must be provided to those involved upon written request. In addition, a tape recording of the hearing must be made a part of the permanent record.
V. Within seven calendar days of the hearing the panel must decide by majority vote, based on the available evidence whether to uphold the decision(s) under appeal and must send written notice of the decision, specifying the numerical vote, to the student, instructor, dean of the college or school offering the courses, dean of the college or school in which the student is enrolled, and Office of Judicial Programs. The dean of the college offering the course must see that the student’s record is amended if necessary.

VI. If the panel overturns the decision(s) of Step 2, whether by charging the finding of guilt or by imposing, reinstating, or modifying a penalty, the panel’s notice must summarize the evidence they considered and provide a rationale for the decision.

VII. In an appeal by a student, the panel may not impose a penalty more severe than that imposed or upheld by the dean at Step 2; in an appeal by an instructor, the panel may not impose a penalty more severe than that imposed by the instructor at Step 1.

Step 4. President’s Level
The student or the instructor may appeal decisions of the University Committee on Student Rights and Responsibilities to the president or president’ designee. Such appeals must (I) be made in writing within 30 calendar days of notice of the decision of the Committee on Student Rights and Responsibilities; (II) state specific grounds for any claim that the committee’s decision was faculty or unjust; and (III) specify the desired remedy. On receipt of the appeal, the president or president’s designee will decide whether or not to hear the appeal. The decision of the president or of the president’s designee is final.

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.

Coursework Requirements for Master’s Degrees
Graduate Council policy requires that students in a master’s program must complete a minimum of 24 hours of coursework 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

**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 Information Technology Customer Support. All theses and dissertations will be microfilmed and their abstracts published through ProQuest (formerly 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 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).

1. Submit your thesis or dissertation electronically on the world wide web using the appropriate checklist at www.libraries.wvu.edu/theses/submitchecklist.htm One electronic copy in approved computer-generated form must be submitted on-line to the WVU ETD archive.

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, P.O. Box 6069. Download, print, and complete your ETD submission packet, available on-line at the above-mentioned checklist. Print copies are available from the University Libraries or your college graduate coordinator.
   - Completed and signed ETD submission signature form.
   - Submission fees: dissertations $65.00; theses $55.00. Cash, check, or money order payable to West Virginia University Libraries.
   - Completed and signed ProQuest master’s thesis or doctoral dissertation agreement form.
   - Printed copy of title page.
   - Printed copy of abstract (dissertations: 350-word limit, theses: 150-word limit).
   - Copyright fee: $45.00 check or money order payable to West Virginia University Libraries (copyright is optional but recommended).
   - Completed and signed Survey of Earned Doctorates (doctoral students only).
   - Problem reports may be submitted for a $10.00 fee. (ProQuest submission is optional, fees apply as indicated above).
   - Fees may be subject to change.

Contact Information

WVU Libraries, Acquisitions Department, P.O. Box 6069, 1549 University Avenue, Morgantown, WV 26506-6069, (304) 293-4040 x4025, or by e-mail at John.Hagen@mail.wvu.edu.

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 Degrees—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 coursework 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 University-wide minimal determination of acceptance to candidacy, and it is at this point that the five-year to completion rule begins. Individual degree programs may require additional requirements such as the acceptance of a prospectus, a grant exercise, or other form of student evaluation. 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 programs.

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. Re-examination 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. One committee member (but not the chair) may “attend” by audio or video conference, but should be available electronically during the entire time of the defense. 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 Master’s Degree Requirements

1. Shortly after admission to the program (usually within the first nine to 12 semester hours of coursework), an advisory committee is formed and the committee and the student produce a plan of study.

2. The student completes requisite coursework 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.

Summary of Doctoral Degree Requirements

1. Shortly after admission to the program (usually within the first nine to 12 semester hours of coursework), an advisory committee is formed and the committee and the student produce a plan of study.

2. The student completes requisite coursework and other program requirements, satisfying also the stipulated residency requirement.

3. The student takes the language examination (if applicable).

4. The 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.
**Fees Regulations**

All West Virginia University fees are subject to change without notice. A nonrefundable special service fee of $50 must accompany the application for admission to graduate studies. All fees are due and payable to the Office of Revenue and Loan Services on the days of registration. Arrangements with the Office of Revenue and Loan Services for payment from officially accepted scholarships, loan funds, grants, or contracts shall be considered sufficient for acceptance of registration. All students are expected to register on days set apart for registration at the beginning of each semester or summer session of the University. No student will be permitted to register at the University after the eighth day of a semester or the fourth calendar day of the summer sessions or a single summer session. Days are counted from the first day of registration. Any student failing to complete registration on regular registration days is subject to a late registration fee.

Registering 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.

It is the policy of WVU 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**

Fees for credit hours for off-campus students are the same as those charged students enrolled in on-campus courses. Off-campus students do not pay the *Daily Athenaeum* fee, the Radio Station Fee, or the Mountainlair Construction Fee. However, they must pay $33.00 per credit hour for each off-campus course, television course, and Internet course.

**Laboratory Fees**

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

**Music Fees**

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.

**Fees per Credit Hour for Graduate Studies**

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**Notes**

† Nine credit hours are considered the usual maximum at WVU.

*Special fees include Mountainlair ($60); *Daily Athenaeum* ($7); radio station ($5); health, counseling service, and programs ($122); transportation ($60); student affairs ($37); athletic ($52); technology fee ($40); recreation fee ($90); and library fee ($25).
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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Fees per Credit Hour for Master of Public Health Program

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Additional Fees for Pharmacy

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Notes
† Nine credit hours are considered the usual maximum at WVU.
*Special fees include Mountainlair ($60); Daily Athenaeum ($7); radio station ($5); health, counseling service, and programs ($122); transportation ($60); student affairs ($37); athletic ($52); technology fee ($40); recreation fee ($90); and library fee ($25).
Doctorate in Pharmacy

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Other Fees
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Application for admission (law or graduate studies) .................................. 50
Diploma replacement .................................................................................. 35
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) ............................................................... 40
(Charged to students who do not register on the registration days set forth in the University calendar.)
Late penalty fee .......................................................................................... 40
Student identification card replacement ..................................................... 20
Official transcript ........................................................................................ 6
Official letter (statement of degree/grade-point average) ............................ 6
Course descriptions ...................................................................................... 5
Priority service on any of above ................................................................. 10

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 Higher Education Policy Commission 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.

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.
Refund of Fees

A student who officially withdraws from the University or goes from full-time to part-time status within the refund period is eligible for a refund of tuition and fees. Every effort is made to process refunds within 30 days. If a graduate assistantship 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).

To withdraw from the University 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.

* 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.

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 that, full credit for courses may be granted if the student has passing grades at the time of departure.

Students withdrawn due to catastrophic illness or death will be provided a refund as approved by the dean of Student Life or his or her designee.

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 and Spring Semesters (16-week session)</th>
<th>Summer Term (6-week session)</th>
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<tbody>
<tr>
<td>Refund Period</td>
<td>Percentage</td>
</tr>
<tr>
<td>1st week</td>
<td>90%</td>
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<tr>
<td>2nd week</td>
<td>90%</td>
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<tr>
<td>3rd week</td>
<td>70%</td>
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<td>4th week</td>
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<td>5th week</td>
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<tr>
<td>6th week</td>
<td>50%</td>
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<tr>
<td>7th-16th week</td>
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<table>
<thead>
<tr>
<th>Summer Term (3-week session)</th>
<th>Summer Term (2-week session)</th>
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<tbody>
<tr>
<td>Refund Period</td>
<td>Percentage</td>
</tr>
<tr>
<td>Day 1 and 2</td>
<td>90%</td>
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<tr>
<td>Day 3 and 4</td>
<td>70%</td>
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<tr>
<td>Day 5 and 6</td>
<td>50%</td>
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<tr>
<td>Day 7 through 15</td>
<td>0%</td>
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<tr>
<th>Summer Term (1-week session)</th>
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<tbody>
<tr>
<td>Refund Period</td>
<td>Percentage</td>
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<tr>
<td>Day 1</td>
<td>90%</td>
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<tr>
<td>Day 2</td>
<td>70%</td>
</tr>
<tr>
<td>Day 3 through 5</td>
<td>0%</td>
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</tbody>
</table>

Cost of an Academic Year's Work

The Student Financial Aid Office estimates that the total cost of attending WVU for a nine-month academic year is $12,645 for single 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.

Identification Card

An identification card is issued to each full-time student when fees are paid in full. Certain part-time students can be eligible for an identification card when the appropriate fees are paid. It admits the owner to certain University athletic events, various activities of student administration, Health Service, and Mountainlair. Confiscation will result from misuse. The University reserves the right to refuse reissuance of an identification card.

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.
Graduate Teaching Assistants, in order to fulfill their teaching obligations, must be appointed by no later than the end of the second week of classes. Since Graduate Research Assistantships are primarily funded by grants and other third party sources, and since the arrival of these funds at the university often does not coincide with the beginning of an academic semester, University policy is that the deadlines for GRA appointments is not later than the end of the fifth week of classes. Exceptions to these deadlines generally will not be made unless extenuating circumstances exist. Requests for late appointments must be made in writing from the hiring unit, and counter-signed by the College/School Dean, and be sent to Associate Provost Russell Dean.

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, health service, recreation center, technology, library, 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 the 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.

Any student who has a full-time graduate assistantship may not be employed for more than 100 hours per regular semester beyond the assistantship without the permission of the Office of the Provost’s. The 100-hour rule allows units to hire a graduate student for incidental hourly work that is not normally associated with the assistantship, such as tutoring, grading, ticket collections at sports events, etc. without seeking permission prior to hiring the student. In cases where a unit wishes to hire a graduate assistant in an hourly position beyond the 100 hours during a regular semester, permission (in writing) must be sought from the student’s home academic unit(s) (department, college) and the Provost’s Office. The memo should describe why the hiring is critical for the particular individual involved and how the assignment will reinforce that student’s academic program.

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.

Advising Center Assistant

Assistantships are available through the Undergraduate Academic Services 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 2001-2002 was at the rate of $740 per month which amounts to $3,332 for a semester, $6,664 for nine months, and $8,885 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 $17,500-$23,700 for 12 months which includes tuition and fee charges living expenses, etc.) 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.

3. Graduate assistants who have worked for a non-academic unit (e.g., NRCCE) in both the Fall and Spring semesters may have their Summer session(s) tuition waived provided that they work in that unit on an hourly basis for up to 37.5 hours per week. However, these students are not permitted to work more than 20 hours per week in the Fall or Spring if they receive another assistantship. The non-academic unit must reimburse the cost of the tuition waiver at the rate of in-state tuition to central administration.

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 2001-2002 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 2001-2002 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.
Residency Policy

Section 1 of this policy bulletin contains general information regarding its scope and dates of adoption.

Section 2. Classification for Admission and Fee Purposes

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.

Section 3. Residence Determined by Domicile

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.

3.2 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.

3.3 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.
Section 4. Dependency Status

4.1 A dependent student is one who is listed as a dependent on the federal or state income tax return of his or 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 or she lives or to whom he or 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 non-resident 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.

Section 5. Change of Residence

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 or 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 evidenced 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 2 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 reclassification.

Section 6. Military

6.1 An individual who is on full-time active military service in another state or foreign country or is 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.

Section 7. Aliens

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.

Section 8. Former Domicile

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 or 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.
Section 9. Residency Decisions/Appeals

Following is the process for initially determining residency for tuition purposes and how students appeal if they disagree with those decisions. Initial residency decisions are made at the admission level. Any questionable decisions are referred to the designated institutional official who determines whether the student meets the residency requirements or additional information is needed to make the decision. If additional information is needed, the student is requested to submit further documentation. If a student feels he or she has been improperly classified as a non-resident for tuition purposes, he or she should request an application for classification as a resident student at West Virginia University. To request this application write: Residency Officer, Office of Admissions and Records, P.O. Box 6009, Morgantown, WV 26506-6009, or call (304) 293-2121.

Once this application and supporting documents are received, a decision is made by the designated institutional official. If the student meets the requirements as outlined by the Board of Trustees Policy Bulletin #34, the student is granted residency for the upcoming semester. If the student does not meet the necessary requirements, the student is denied in-state residency. If denied, the student has the option of appealing the decision to the WVU Council on Residency. The council consists of faculty and student representatives, whose number shall be at least three. The student representative(s) shall be appointed by the president of West Virginia University Student Administration while the faculty representative(s) shall be selected by the University Faculty Senate. The student contesting a residency decision shall be given the opportunity to appear before the institutional committee on residency appeals.

If the council overturns the initial denial, the student becomes a resident for the semester in question. Should the council uphold the original denial, the student has the option of appealing to the president of WVU. The president, again, may either uphold the original denial or overturn the decision of the council.

Residency appeals shall end at the institutional level.
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.

Plan for Numbering Courses

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 Developmental and community college certificate courses (does not require WVU Faculty Senate approval) and undergraduate professional development courses (courses that are designed for professional development and require students to possess a high school diploma but the course would not count toward graduation).

Courses 100 Freshman/Lower Division: Intended primarily for freshmen although they may be taken by upper-division students if needed to complete degree requirements.

Courses 200 Sophomore/Lower Division: Intended primarily for sophomores. These courses may have 100 or 200-level prerequisites.

Courses 300 Juniors/Upper Division: Intended primarily for juniors. These courses may have extensive prerequisites or be limited to specific majors.

Courses 400 Seniors/Upper Division: Intended primarily for seniors and selected graduate students. These courses are typically limited to advance undergraduates within a particular major or degree program and selected graduate students. No more than 40 percent of the credits counted for meeting requirements for a graduate degree can be at the 400 level.

Courses 500 Undergraduate Seniors and Master’s Level: Courses intended for advanced undergraduate and graduate students. Seniors may enter via petition/special permission. Undergraduates in any class carrying a 500-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(s).

Courses 600 Master’s Level: Courses intended for master’s degree students (no undergraduates permitted).

Courses 700 Master’s and Doctoral Degree Level: Courses intended for doctoral students, and advanced master’s students (no undergraduates permitted).

Courses 900 Professional Development: Courses intended for professional development and require students to possess a bachelor’s degree, but the courses do not count toward graduation and are not applicable towards a graduate degree. Grading is S/U only. NOTE: Graduate degree credit-hour requirements must include at least 60 percent at the 500 level and above.

Abbreviations Used in Course Listings

I a course given in the first (fall) semester
II a course given in the second (spring) semester
I, II a course given each semester
I and II a course given throughout the year
Yr a course continued through two semesters
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.
Graduate Level Common Course Numbers and Descriptions

590/690/790. Teaching Practicum. I, II, S. 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. Grading will be S/U.

591/691/791. Advanced Topics. I, II, S. 1-6 hr. PR: Consent. Investigation in advanced topics which are not covered in regularly scheduled courses.

592/692/792. Directed Study. I, II, S. 1-6 hr. Directed study, reading, and/or research.

593/693/793. Special Topics. I, II, S. 1-6 hr. A study of contemporary topics selected from recent developments in the field.

594/694/794. Seminar. I, II, S. 1-6 hr. Special seminars arranged for advanced graduate students.

595/695/795. Independent Study. I, II, S. 1-6 hr. Faculty-supervised study of topics not available through regular course offerings.

696/796. 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 or her program.

697/797. 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.

698/798. 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 students’ reports (698), theses (698), or dissertations (798). Grading may be S/U.

699/799. Graduate Colloquium. I, II, S. 1-6 hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in his or her department’s 699/799 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his or 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 masters’ programs. Registration for one credit of 699/799 graduate colloquium satisfies the University requirement of registration 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 coursework other than thesis credit is standard and a minimum of 30 total hours is also standard.
Degrees Offered

- Master of Business Administration
- Master of Arts, Doctor of Philosophy in Economics
- Master of Science in Industrial Relations
- Master of Professional Accountancy

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 AACSB International (http://www.aacsb.edu), 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.

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 econometrics; and specialize in two fields of study from financial, international, labor, monetary, natural resource, public, and regional economics. 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. Coursework 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 in industrial relations provides a flexible, interdisciplinary education for the student desiring a career in human resources management and industrial relations. All undergraduate majors are acceptable. Elective 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, econometrics, and areas of specialization.

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. Coursework 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 coursework. 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
†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 Professors
*Bonnie W. Morris, Ph.D. (U. Pitt.). CPA. Accounting information systems, Informational technology, Expert systems and artificial intelligence, Internal auditing.

Assistant Professor

Economics
Professors
†Ronald J. Balvers, Ph.D. (U. Pitt.). Financial economics, Macroeconomic theory.
†Clifford B. Hawley, Ph.D. (Duke U.). Labor economics, Microeconomic theory, Econometrics.
†Kern O. Kymn, Ph.D. (U. Chicago). General theory, Mathematical economics, Econometrics.
†Patrick C. Mann, Ph.D. (Ind. U.). Utility economics, Industrial organization.
†Tom S. Witt, Ph.D. (Wash. U.—St. Louis). Econometrics, Energy economics, Regional economics.

Adjunct Professors
†Victor K. Chow, Ph.D. (U. Ala.). Corporate finance, Portfolio management, Microeconomics.

Associate Professors
†Subhayu Bandyopadhyay, Ph.D. (U. Md.). International trade, International finance.
†Sudeshna Bandyopadhyay, Ph.D. (U. Md.). Labor economics.

Assistant Professor
John Vilasuso, Ph.D. (U. Conn.). International finance, Macro.
Finance

Professors
†Victor Chow, Ph.D. (U. Ala.). Corporate finance, Portfolio management.
†William B. Riley, Ph.D. (U. Ark.). Investments, Capital markets.
†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.
†Karen C. Denning, Ph.D. (U. Pitt.). Corporate finance, Speculative markets, Economic regulation.
†Terry L. Rose, Ph.D. (U. of Ill.). Insurance, Risk management.
†Paul J. Speaker, Ph.D. (Purdue U.). Financial institutions, Modeling, Uncertainty.

Assistant Professor

Management and Industrial Relations

Professors
†Jack A. Fuller, Ph.D. (U. Ark.). Heuristic decision making, Production planning and control, Systems analysis and design.
†Ali H. Mansour, Ph.D. (U. Ga.). Management information systems, Management science, Production operations management.

Associate Professors

Assistant Professors
Martha Andrews, Ph.D. (Fla. St.). Compensation, Organizational behavior.
Virginia Frankekleist, Ph.D. (U. of Pitt.). Management information systems.

Marketing

Professors
*Cyril M. Logar, D.B.A. (Kent St. U.). Health-care marketing, Strategic marketing and planning, Marketing research.
†Thomas Ponzurick, D.B.A. (Memphis St. U.). Health care and services marketing, International marketing, Strategic marketing research.

Associate Professors
†Karen R. France, Ph.D. (U. Pitt.). Health care and service marketing, Consumer research, Advertising strategy.
Accountancy, Professional

Robert S. Maust, Director, Division of Accounting
E-mail rsmaust@mail.wvu.edu
300 Business and Economics Building
(304) 293-7840 x7842
http://www.be.wvu.edu/grad/mpa/index.htm

Degree Offered

*Master of Professional Accountancy*

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 International—The Association to Advance Collegiate Schools of Business. WVU has the only separately accredited accounting programs in West Virginia. At the date of this printing, there are 92 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. coursework to ensure all CPA examination requirements will be met for their state. The web sites of the various Boards of Accountancy appear below.

In West Virginia, applicants for the CPA examination must have a bachelor’s degree and 150 semester hours of education completed by the date of application.

For more information on specific requirements to become a CPA in various states, visit these web sites:

- [http://www.state.wv.us/wvboa](http://www.state.wv.us/wvboa) West Virginia Board of Accountancy requirements to sit for examination and become a CPA in West Virginia.
- [http://www.nasba.org](http://www.nasba.org) National Association of State Boards of Accountancy for addresses/links to all state Boards of Accountancy for requirements to sit for examination and become a CPA by state.
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 or go to the web site at http://www.arc.wvu.edu.

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. 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. Half of the courses each term are taught on Monday and Wednesday evenings and the other half on Tuesday and Thursday afternoons to provide the opportunity for part-time employment for full-time students and part-time study for full-time employees.

No thesis is required in the program, but communication skills are emphasized in all courses. Extensive use is made of information technology 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.

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 M.P.A. 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 at the Charleton Area Medical Center, Memorial Division.

M.P.A. Course Offerings

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 511</td>
<td>Financial Accounting Theory and Practice</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 512</td>
<td>Mergers and Acquisitions</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 521</td>
<td>Information Technology Auditing</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 522</td>
<td>Electronic Commerce and Internet Security</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 541</td>
<td>Income Taxes and Business Decisions</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 551</td>
<td>Assurance Services and Professional Standards</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 561</td>
<td>Governmental and Not-for-profit Accounting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 571</td>
<td>Accounting/Business Consulting</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 591</td>
<td>Personal Financial Advising</td>
<td>3</td>
</tr>
<tr>
<td>ECON 591</td>
<td>Economics for Decision Makers</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Note: Students who have not completed Accounting Systems (ACCT 311, 3 hours) and Law for the CPA (BLAW 420, 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 http://www.be.wvu.edu/grad/mpa/index.htm.

Accounting (ACCT)

322. Accounting Systems. 3 Hr. PR: ACCT 321 and BCOR 320. 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.

441. Income Tax Accounting. 3 Hr. PR: ACCT 311 or ACCT 331. Overview and survey of Federal income tax principles for individuals and simple corporations with emphasis on gross income, exemptions, deductions, capital gains and losses, and tax credits.

442. Income Tax Accounting. 3 Hr. PR: ACCT 441. 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.


493 A-Z. Special Topics. 1-6 Hr. PR: Consent. Special topics relevant to accounting. (Maximum of 9 semester hours in any or all courses numbered 493 offered by the College of Business and Economics may be applied toward bachelor’s and master’s degrees.)

511. Financial Accounting Theory and Practice. 3 Hr. PR: Consent. 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.

516. 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.

521. 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.

522. 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.

538. 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.

541. Income Taxes and Business Decisions. 3 Hr. PR: Consent. Advanced federal income tax problems with emphasis on tax planning for business decisions and tax research methodology.

551. 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.

561. 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.

571. 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.

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

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

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

695. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
Degree Offered

Master of Business Administration

The master of business administration program is accredited by the AACSB. It is offered as a full-time, day-class program in Morgantown and as a part-time program in Beckley, Bluefield, Charleston, Elkins, Lewisburg, Morgantown, Parkersburg, Ravenswood, Shepherdstown, Wheeling, and Bridgeville, PA. 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 oriented 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 coursework 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 master’s 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, presented in the following format.

Business Environment (Summer Session)
BADM 511. Economic and Business Environment. 3 Hr.
BADM 512. Law, Ethics, and Diversity. 3 Hr.

Development of Organization Skills (Fall Session)
BADM 521. Global Environment. 2 Hr.
BADM 523. Management Science. 3 Hr.
BADM 524. Financial and Managerial Accounting. 4 Hr.
BADM 525. Marketing Environment. 2 Hr.
BADM 526. Marketing and Business Research. 2 Hr.

Implementation, Control, and Change (Spring Session)
BADM 531. Operations Management. 2 Hr.
BADM 532. Business Finance. 4 Hr.
BADM 533. Global Marketing Strategy. 4 Hr.
BADM 534. Information Systems. 3 Hr.
BADM 535. Organizational Behavior. 2 Hr.

Planning and Strategy (Summer Session I and II)
BADM 541. Management Strategy. 2 Hr.
BADM 542. Seminar on Financial Planning. 2 Hr.
BADM 543. Seminar on Leadership. 2 Hr.

BADM 552. *Global Accounting and Finance*. 2 Hr.

BADM 553. *Service Learning*. 2 Hr.

**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, Elkins, Lewisburg, Morgantown, Parkersburg, Ravenswood, Shepherdstown, Wheeling, and Bridgeville, Pa.

**Semester—Planning/Environment**

BADM 511. *Economic and Business Environment*. 3 Hr.

BADM 611. *Information Technology*. 2 Hr.

BADM 612. *Managerial and Team Skills*. 3 Hr.

**Semester 2—Organizing Skills**

BADM 621. *Business Research*. 3 Hr.

BADM 622. *Financial Statements Analysis*. 3 Hr.

**Semester 3—Implementation and Change**


BADM 632. *Corporate Finance and Regulation*. 4 Hr.


**Semester 4—Control and Evaluation**


**Semester 5—Planning and Strategy**


BADM 653. *Global Planning and Strategy*. 4 Hr.

BADM 654. *Advanced Topics Seminar*. 2 Hr.
Business Administration (BADM)

511. Economic and Business Environment. 3 Hr. A survey of micro-and macro-economic markets in the U.S. economy. Includes a consideration of how the U.S. system interacts with the larger global economy.

512. Law, Ethics, and Diversity. 3 Hr. An overview of the impact of legal, societal, and ethical considerations on business decision-making and strategic planning.

521. Global Environment. 2 Hr. Insight into the major current global economic and business issues, challenges, and opportunities facing the United States and the rest of the world; acquaints students with the dynamic forces that will shape the future.

522. Business Statistics. 2 Hr. Survey of major statistical methods used in business and economic research including descriptive statistics, probability, sampling distributions, hypothesis testing, estimation, linear regression, times series, and forecasting.

523. Management Science. 3 Hr. Quantitative course utilizing and building upon applied mathematical skills in solving managerial business problems and decision making situations.

524. Financial and Managerial Accounting. 4 Hr. Accounting principles underlying financial statements and their evaluation for planning, decision making, and control.

525. Marketing Environment. 2 Hr. Introduction to the marketing environment with emphasis on the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational objectives.

526. Marketing and Business Research. 2 Hr. Examination of primary research techniques including sampling theory, qualitative methodologies, data collection, and analysis. Emphasis placed on consumer research.

531. Operations Management. 2 Hr. Acquaints students with a variety of production methods, concepts, and mathematical techniques which are employed for the improvement of systems efficiency and effectiveness.

532. Business Finance. 4 Hr. Deals with the financial management of commercial firms. Topics include how assets should be managed, what assets should be purchased, and how these purchases should be financed.

533. Global Marketing Strategy. 4 Hr. Emphasizes the formulation of both global and domestic marketing strategies and the development of analytical and decision-making capabilities. Research projects and simulations will be used to illustrate specific business situations.

534. Information Systems. 3 Hr. Basic information systems and basic application tools are covered as well as their application to pertinent health science topics.

535. Organizational Behavior. 2 Hr. Provides students with an understanding of the behavior of individuals, groups, and formal organizations. Emphasis in employee performance satisfaction and in applying theories of human behavior to solving problems in organizational administration.

541. Management Strategy. 2 Hr. Considers the business organization as a whole from a general management perspective on strategy making. Provides analytical tools and frameworks used for identifying and analyzing key strategic issues facing firms today.

542. Seminar on Financial Planning. 2 Hr. Detailed review of the planning areas: budgeting, insurance, investment, credit management, retirement, and estate planning.

543. Seminar on Leadership. 2 Hr. The nature of leadership in complex organizations. Students discuss the purpose of leadership, examples of leadership skills, and the methods used by influential leaders in society.

551. Global Strategic Management. 2 Hr. Designed to give insight into the current economic, business and political issues, challenges, and opportunities facing the world—to acquaint students with strategies, trends, and forces that shape the 21st century.

552. Global Accounting and Finance. 2 Hr. Introduces fundamentals of global financial management for corporations. Currency risk is explored in the short and medium term framework and exposure management strategies are considered.
553. **Service Learning.** 2 Hr. Topics included in this course are federal employment law, job analysis, HR planning, recruitment/selection, performance appraisal, and compensation.

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

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

611. **Information Technology.** 2 Hr. Uses lectures, case analysis, and hands-on exercises to explore information technology in business. The course focuses on IT management and on software tools used in business decision-making.

612. **Managerial and Team Skills.** 3 Hr. Introduces, develops, and enhances managerial skills for complex organizations. Explores managerial philosophies, one’s own managerial style, and the dynamics of working groups and teams.

613. **Business Strategic Environment.** 3 Hr. Explores the impact of the external environment of a business on its profitability and success. Multi-disciplinary approach which synthesizes macro-economic, business strategy, and marketing perspectives.

614. **Health Services Management.** 3 Hr. This course offers students an introduction to environmental issues, organizational structures, and financial control mechanisms that affect the healthcare management process.

615. **Applied Business and Economics Statistics.** 3 Hr. Survey of major statistical methods used in business, economic, and medical research including descriptive statistics, probability, sampling distributions, hypothesis testing, estimation, linear regression, time series, and forecasting.

621. **Business Research.** 3 Hr. Develops skills in data-driven, fact-based decision making; develops the ability to critically evaluate research proposals and studies which rely on business research; provides a basic understanding of reading and conducting empirical research.

622. **Financial Statements Analysis.** 3 Hr. Provides an overview of the current financial reporting process. Includes discussion of the respective reporting vehicles, financial statements, and the alternatives available which affect the reporting process.

623. **Planning and Organization.** 4 Hr. Integrating first year experience. Attention is placed on the relationship between the individual firm and the forces of the global economy; market research and strategy; and a simulated implementation of the business plan.

624. **Economic Decision-Making.** 2 Hr. A microeconomic survey of markets designed to prepare students for further work in the area of health economics.

625. **Financial Statements.** 2 Hr. Examines financial management and accounting concepts and techniques applicable to health care organizations, including financial accounting and financial statement analysis.

626. **Health Economics.** 4 Hr. The context of health care; the use of economic methods to understand the organization of the industry and the behaviors of its participants (consumers, producers, and regulators.)

627. **Organization Behavior in Health Services.** 2 Hr. Examines behavioral issues confronted in health care organizations. Addresses both managerial and employee perspectives and explores such issues as power sharing, motivation, decision making, empowerment, change, and organizational renewal.

631. **Managerial Economics.** 3 Hr. Provides a solid foundation of economic understanding for use in managerial decision-making. Topics covered include supply, demand, markets, pricing practices, and firm strategies in contestable markets.

632. **Corporate Finance and Regulation.** 4 Hr. Examines the capital decisions of the firm and the regulatory environment of corporate entities. This includes a review of the major funding sources for the firm and for individual projects undertaken by the firm.
633. Leadership. 3 Hr. Topics include leadership concepts and practices designed to motivate and support an organization’s workforce. Students discuss principles of leadership and explore how these principles affect traditional human resource management topics.

634. Health Services Marketing. 2 Hr. This course offers students an introduction to marketing concepts and tools and an understanding of how to use these tools in analyzing and addressing health-care marketing issues.

635. Database Management 1 Hr. Covers basic database design concepts for relational databases in a personal computer environment. Students get hands-on experience designing and using tables, queries, reports, and forms.

636. Managerial Accounting. 3 Hr. Builds upon the financial management and accounting concepts with new topics in valuation, capital budgeting, performance measurement, working capital management, and capital structure in health services.

637. Organizational Processes and Medical Ethics. 4 Hr. Behavioral and ethical issues confronted in health service organizations. Explores the changing organizational landscapes, group and team processes, organizational and medical ethics, and organizational change.

641. Management Science and Operations. 4 Hr. Applied mathematical course in solving business problems and decision making issues from a general managerial perspective with particular emphasis on the operations management area of the organization.

642. Managerial Cost Accounting. 2 Hr. An introduction to internal accounting techniques used by an organization’s managers when they are faced with planning, directing, controlling, or decision-making in their organizations.

643. Working Capital Management. 2 Hr. Relates the long-term strategy to the short-term requirements of the firm. Topics include cash management, inventory management, receivables management, leasing, and the distribution of gains to shareholders.

644. Legal Environment and Ethics. 2 Hr. An overview of the legal system and the legal and ethical issues relevant to business decision-making, planning, and the interface between business, government, and society.

645. Corporate Control. 4 Hr. Builds upon accounting and finance foundations by applying the methods and techniques to various health-care related cases.

646. Management Science and Health Services. 3 Hr. A quantitative course utilizing and building upon applied mathematical skills in solving managerial business problems and decision-making situations in a health service environment.

647. Market Strategies and Health Services. 3 Hr. The application of marketing concepts to problems in health services management. Uses a computer simulation requiring sound creation, analysis, and implementation of marketing plans with a strong emphasis on thinking and analytical skills.

651. Financial Planning. 2 Hr. Discussion of individual financial situations in the following areas: budgeting, insurance coverage, investment planning, credit management, retirement planning, and estate planning.
652. Marketing Strategy. 2 Hr. Application of marketing concepts to a simulated business environment to understanding a market driven organization and to develop and implement marketing strategies and plans which integrate and employ sound marketing principles.

653. Global Planning and Strategy. 4 Hr. Explores the various strategic planning options available to companies in order to compete in the global marketplace.

654. Advanced Topics Seminar. 2 Hr. Focuses on topics of current interest in business and economics to meet student and programmatic needs.

655. Health Services Strategy. 3 Hr. Course on strategic management and planning with a focus on the formulation, implementation, and evaluation of strategic decisions in health-care organizations.

656. Law and Medicine. 2 Hr. An overview of general principles of law applicable to the delivery of financing in health care and an analysis of specific applications to those principles.

657. Seminar: Not for Profit Issues. 3 Hr. Advanced topics seminar covering up-to-date issues in the not-for-profit sectors of health services.

690. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of business law. 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.)

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

695. Independent Study. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.

Business Law (BLAW)

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

594. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

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

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

692. Directed Study. 1-6 Hr. PR: Consent. Directed study, reading, and/or research.

693. Special Topics. 1-6 Hr. PR: Consent. A study of contemporary topics selected from recent developments in the field.

695. Independent Study. 1-6 Hr. PR: Consent. Faculty-supervised study of topics not available through regular course offerings.
Economics
William Trumbull, Director, Division of Economics and Finance
420 Business and Economics Building
http://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 at the end of the semester in which the GPA fell below 3.0. Such a student, placed on probation, who fails to raise his or her cumulative GPA to 3.0 by the end of the semester succeeding that in which his or 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 coursework taken in any semester, a third failure on either a microeconomic theory or macroeconomic theory 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 coursework completed must be at the 700 level. To qualify for the M.A. degree, graduate students in economics must earn a grade of B- or better in economics 701 and 702, 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:

- **ECON 701 Advanced Microeconomic Theory 1** ................................................................. 4
- **ECON 702 Advanced Macroeconomic Theory 1** .......................................................... 3
- **ECON 721 Mathematical Economics** ............................................................................ 3

**Statistics Requirement**

- **STAT 331 Sampling Methods** ....................................................................................... 3
- **ECON 425 Applied Econometrics** ............................................................................... 3

*or* for students who consider going into the Ph.D. program, these two courses may be replaced by:

- **ECON 725 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.
- **Non-thesis alternative:** In lieu of a thesis, the requirements for the M.A. are met by completion of two 700-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 (listed previously) 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. The emphases are as follows.

**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 155. 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 coursework 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 700-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 700 level is required for all candidates for the Ph.D. degree in economics.

Courses

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>ECON 701 Advanced Microeconomic Theory 1</td>
<td>4</td>
</tr>
<tr>
<td>ECON 702 Advanced Macroeconomic Theory 1</td>
<td>3</td>
</tr>
<tr>
<td>ECON 709 Research Design and Methodology</td>
<td>1</td>
</tr>
<tr>
<td>ECON 711 Advanced Microeconomic Theory 2</td>
<td>4</td>
</tr>
<tr>
<td>ECON 712 Advanced Macroeconomic Theory 2</td>
<td>3</td>
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<tr>
<td>ECON 721 Mathematical Economics</td>
<td>3</td>
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<tr>
<td>ECON 725 Econometrics 1</td>
<td>3</td>
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<tr>
<td>ECON 726 Econometrics 2</td>
<td>3</td>
</tr>
<tr>
<td>ECON 727 Seminar in Econometrics</td>
<td>3</td>
</tr>
<tr>
<td>ECON 791A Advanced Topics</td>
<td>3</td>
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</tbody>
</table>

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 coursework 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 797, 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 coursework 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 504  IR Theory and Strategy
  ILR 508  Organizational Change and Renewal
  ILR 530  Compensation Issues
  ILR 562  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 coopera-
tion 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 155. In addition to the economics Ph.D. core, students are required
to take the following courses:
  ECON 722  Advanced Mathematical Economics
  MATH 441  Applied Linear Algebra
  MATH 451, 452  Introduction to Real Analysis
  (MATH 451 and 452 may be replaced by MATH 567, 568.)
  MATH 357  Calculus of Variations
  MATH 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
493 A-Z. Special Topics. 1-6 Hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

Economic History
481. American Economic History. 3 Hr. PR: ECON 220. Central issues in the development of the American economy.

781. Economic History. 3 Hr. Examination of the methods of research and issues in economic history of the United States.

782. Seminar in Economic History. 3 Hr. PR: Consent.

Economic Development
465. Economic Development. 3 Hr. PR: ECON 202. The problems, changes, and principal policy issues faced by non-industrialized countries.

Energy and Environmental Economics
783. Energy Economics. 3 Hr. PR: ECON 701. 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.

784. Environmental Economics. 3 Hr. PR: ECON 783. 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.

Financial Economics (FIN)
591 A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

600. Seminar in Finance. 3 Hr. PR: Consent.


602. Corporate Financial Administration. 3 Hr. PR: Consent. A study of theoretical concepts of corporate financial administration and the application of these concepts to real world case studies.

620. Capital Budgeting. 3 Hr.

630. Money and Capital Markets. 3 Hr.

660. Bank Management. 3 Hr. PR: BCOR 340 and PR or CONC: FIN 305. (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 460 with the addition of a research paper.)
690. *Teaching Practicum.* 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.)

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

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

696. *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.

697. *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.)

699. *Graduate Colloquium.* 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

797. *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.)

798. *Thesis or Dissertation.* 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.)

**International Economics**


751. *International Trade.* 3 Hr. PR: ECON 701. Contemporary theories of international trade; analysis of current problems in world trade.

752. *International Macro-Economics.* 3 Hr. PR: ECON 702. Current theories and policies concerning balance of payments, international capital movements, and foreign exchange, and their relation to the macro economy.

**Labor Economics**


771. *Advanced Labor Economics 1.* 3 Hr. PR: ECON 701. 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
731. Monetary Economics 1. 3 Hr. PR: ECON 702. 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.

732. Monetary Economics 2. 3 Hr. PR: ECON 731. Further topics in monetary economics.

Public Economics
441. Public Economics. 3 Hr. PR: ECON 202. 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.

741. Public Economics 1. 3 Hr. PR: ECON 701. 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.

742. Public Economics 2. 3 Hr. PR: ECON 741. Continuation of public economics.

Public Regulation and Control
441. Public Economics. 3 Hr. PR: ECON 202. 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.


446. Transportation Economics. 3 Hr. PR: ECON 202. 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.

745. Industrial Organization. 3 Hr. PR: ECON 701 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.

746. Public Regulation of Business. 3 Hr. Economic analysis of regulation of specific industries such as public utilities.

Quantitative Economics
325. Applied Business and Economic Statistics. 3 Hr. PR: ECON 225 or STAT 211. Continuation of ECON 225. 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.

421. Introduction to Mathematical Economics. 3 Hr. PR: ECON 202 and (MATH 150 or MATH 155 or MATH 156.) 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.

425. Introductory Econometrics. 3 Hr. PR: ECON 202 and (ECON 225 or STAT 211.) Analysis of economic models using basic econometric methods. Specification, computation, and interpretation of linear regression.

721. Mathematical Economics. 3 Hr. PR: Consent. Mathematics used in economics.

725. Econometrics 1. 3 Hr. PR: ECON 721. Mathematical statistics, including probability, mathematical expectation, distributions. Linear regression, ordinary least squares, and simple extensions. Students will use a computer to analyze data.
726. Econometrics 2. 3 Hr. PR: ECON 726. 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.

727. 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.

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

Regional Economics

461. Regional Economics. I. 3 Hr. PR: ECON 202. 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.

462. Urban Economics. 3 Hr. PR: ECON 202. 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.

761. Advanced Regional Economics. 3 Hr. PR: ECON 701 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.

762. Advanced Urban Economics. 3 Hr. PR: ECON 701. 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.

763. Spatial Economics. 3 Hr. PR: ECON 701 or consent. Spatial dimension incorporated into the study of economic activity; spatial competition, market area analysis, locational equilibrium analysis, general spatial equilibrium.

764. Seminar in Regional Economics. 3 Hr. PR: Consent.

Other Economics Courses

495. Independent Study. 1-6 Hr. PR: Consent. Faculty-supervised study of topics not available through regular course offerings.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

709. Research Design and Methodology. 1-3 Hr. PR: Consent. 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.

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

797. 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.)
Industrial Relations
Randyl Elkin, Coordinator, Industrial Relations
119 Business and Economics Building
http://www.be.wvu.edu/grad/msir.index.htm

Degrees Offered

**Master of Science in Industrial Relations**

**Industrial Relations Area of Emphasis 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. Coursework can be structured to prepare students for doctoral studies in industrial relations, economics, management, or law.

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.

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.

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. http://www-cba.gsu.edu/goals/
Academic Common Market

The master of science in industrial relations program 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 in-state (resident) rates. http://www.sreb.org.

Admission

The master of science in industrial relations is interdisciplinary in nature and no specific undergraduate major is required. Coursework 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 coursework. 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 a non-business undergraduate major must apply for July 1 admission. Students with a business undergraduate major must apply for August admission. The application deadline is March 31. 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 ILIR. The ILIR 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.
## Industrial Relations Degree Program

<table>
<thead>
<tr>
<th>Courses</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>ILR 501 Accounting/Economics/Finance</td>
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<tr>
<td>ILR 502 Industrial Labor Relations Management and Marketing</td>
<td>3</td>
</tr>
<tr>
<td>ILR 503 Critical Thinking and HR Research Methods</td>
<td>3</td>
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<tr>
<td>ILR 504 Industrial Relations Theory and Strategy</td>
<td>3</td>
</tr>
<tr>
<td>IRL 505 Employment Law</td>
<td>3</td>
</tr>
<tr>
<td>ILR 506 Performance Management and Training</td>
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<tr>
<td>ILR 507 Conflict Management Processes</td>
<td>3</td>
</tr>
<tr>
<td>ILR 508 Organizational Change and Renewal</td>
<td>3</td>
</tr>
<tr>
<td>ILR 509 Staffing and Selection</td>
<td>3</td>
</tr>
<tr>
<td>ILR 520 Human Resource Information Systems</td>
<td>3</td>
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<tr>
<td>ILR 521 Managing the Culturally Diverse Workforce</td>
<td>3</td>
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<tr>
<td>ILR 522 International Industrial Relations</td>
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<tr>
<td>ILR 530 Compensation Issues</td>
<td>3</td>
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<tr>
<td>ILR 534 Work Group Dynamics and Leadership</td>
<td>3</td>
</tr>
<tr>
<td>ILR 537 Practicum in Industrial Interviewing</td>
<td>3</td>
</tr>
<tr>
<td>ILR 540 Arbitration Theory and Practice</td>
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<td>ILR 543 Negotiation Strategy</td>
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<td>ILR 544 Benefits</td>
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<td>ILR 545 Equal Employment Opportunity Problems</td>
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<td>ILR 548 Strategic Management for Human Resources</td>
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<tr>
<td>ILR 698 MSIR Internship</td>
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</tbody>
</table>

### Typical Course Scheduling

Select one elective each semester or term.

#### Summer II

*501 Accounting/Economics/Finance

*502 IR Management and Marketing

*543 Negotiation Strategy

520 Human Resources Information Systems

#### Fall

505 Employment Law

507 Conflict Management Processes

509 Staffing and Selection

*534 Work Group Dynamics and Leadership

544 Benefits

562 Collective Bargaining and Labor Relations

#### Spring

506 Performance Management and Training

508 Organizational Change and Renewal

*522 International Industrial Relations

530 Compensation Issues

*540 Arbitration Theory and Practice

545 Equal Employment Opportunity

#### Summer Session I

548 Strategic Management for Human Resources

*689 MSIR Internship

*Designed for entering students that do not have an undergraduate background in business and economics. Total program credit requirements for non-business related undergraduates majors are 48 credit hours; for business-related undergraduates the required credit hours are 42.

*Elective

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West Virginia University Graduate Catalog
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)

360. Survey of the Employment Relationship. 3 Hr. PR: Consent. Overview of employee and labor relations; management techniques, teams, labor-management relations, employment law, benefits, compensation, education and training programs, and current issues.

462. 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.

501. 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.

502. Industrial Labor Relations Management and Marketing. 3 Hr. Overview of management and marketing functions as they apply to human resource and industrial relations area. Designed for students without a business educational background. Focus on concepts, practices, and ideas.


505. Employment Law. 3 Hr. PR: ILR 462. Survey of the legal principles guiding the employer-employee relationship. Examines laws regulating hiring, job opportunity, discrimination, affirmative action, sexual harassment, wages, benefits, privacy right, health, safety, employment at will, layoffs, and termination.

506. Performance Management and Training. 3 Hr. PR: ILR 462. Development of individual employees in an organization; performance evaluation, discipline of problem employees, identifying training needs, and design and delivery of training programs.


508. Organizational Change and Renewal. 3 Hr. PR: ILR 462. 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.

509. Staffing and Selection. 3 Hr. PR: ILR 462. Theoretical, practical, and legal issues involved in staffing and selection in organizations; human resource planning, recruiting, employment testing, statistical analysis, legal issues, and selection methods.
510. **Human Resources Economics.** 3 Hr. PR: Consent. Consideration of the conditions of employment and unemployment at both macro and micro levels under varying degrees of competition, including the process of labor force preparation, labor market data, and policy.

520. **HR Information Systems.** 3 Hr. PR: ILR 462. Use of computers for human resource management; HRIS planning, development and implementation, evaluating existing software; development of a database unique to human resource management.


522. **International Industrial Relations.** 3 Hr. PR: ILR 462. Analyzes the human resource and labor relations practices of firms and economies as they relate to the global market; basis of international business, legal/governmental environmental, labor movements, and industrial relations practices.

530. **Compensation Issues.** 3 Hr. PR: ILR 462. 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.

532. **American Trade Unionism.** 3 Hr. PR: ILR 462. 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 as a government.

533. **Seminar: Quality of Work Life.** 3 Hr. PR: ILR 462. 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.

534. **Work Group Dynamics and Leadership.** 3 Hr. PR: ILR 462. Small group or individual research on topics related to leadership and group dynamics in the work environment including training and other human relations programs.

537. **Practicum in Industrial Interviewing.** 3 Hr. PR: ILR 462. Experiential learning of industrial interviewing techniques covering legal and technical aspects of employment interviewing and other types of interviewing.

540. **Arbitration Theory and Practice.** 3 Hr. PR: ILR 462 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.

543. **Negotiation Strategy.** 3 Hr. PR: ILR 462. Theory and practice of both principled negotiations and position bargaining; extensive role play and technique building exercises for individual and team negotiations; detailed preparation methods for all types of personal and professional negotiations.

544. **Benefits.** 3 Hr. PR: ILR 462. 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.

545. **Equal Employment Opportunity.** 3 Hr. PR: ILR 462. 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.
548. Strategic Management for Human Resources. 3 Hr. PR: ILR 462. Stages and types of strategies; formulation and implementation of strategies; human resource aspects of planning and strategic assessment; extensive case analysis and team projects.

562. Collective Bargaining and Labor Relations. 3 Hr. PR: ILR 462. 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.

590. Teaching Practicum. 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.)

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

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

594. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

689. MSIR Internship. 3 Hr. PR: Consent. 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.

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

693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

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

696. 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.

697. 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.)

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 Creative Arts, composed of the Divisions of Art, Music, and Theatre and Dance, 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, performances, 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 four theatres, two recital halls/recording studios; scenery, painting, drawing, design, costume, printmaking, sculpture, ceramic, puppet, 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 prepares 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 x3148
- Director of graduate studies in music, Division of Music at (304) 293-5511 x3196
- Chair, Division of Theatre and Dance at (304) 293-2020 x3120

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 February 15 and October 15, for music March 1, and for theatre April 1.

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.
† Bernard Schultz, Ph.D. (U. Pitt.). Dean and director, Art history, Italian renaissance, Modern art, Art theory.

Associate Professors
* Victoria Ferguson, 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.

Research Assistant Professors

Instructor

Music

Professors
† John Beall, Ph.D. (U. of Rochester, Eastman Schl. of Mus.). Composition, Theory.
† James E. Miltenberger, D.M.A. (Eastman Schl. of Mus.). Piano, Piano repertoire, Jazz.
† Augusto Pagliuca, M.M. (New England Conserv.) Voice.
† William Skidmore, M.M. (U. Ill.). Coordinator of strings, Cello, Chamber music.
† Connie Sturm, Ph.D. (U. Ok.). Piano, Group piano, Piano pedagogy.
† Virginia Thompson, D.M.A. (U. Iowa). Horn, Chamber music.
† Molly Weaver, Ph.D. (U. Mich.). Coordinator, Music education.
† Don G. Wilcox, M.A. (Cal. St. at Long Beach). Director of bands. Coordinator, Conducting.
* Cecilia Wilson, Ph.D. (Case West. Res. U.). Director of musicology, Nineteenth century music, Orchestration.
Associate Professors
†Cynthia Anderson, M.M. (Manhattan Sch.). Oboe, Theory.
†David Bess, Ph.D. (WVU). Undergraduate studies, Instrumental education.
*John E. Crotty, Ph.D. (Eastman Sch. of Mus.). Coordinator, Theory-composition, Theory, Analysis.
†David Bess, Ph.D. (WVU). Undergraduate studies, Instrumental education.
†Janet Robbins, Ph.D. (Ohio St. U.). General music education.
†Paul Scea, M.M. (U. of Iowa). Theory, Jazz.

Assistant Professors
†Mary Ferer, Ph.D. (U. of Ill.). Music history.
†Kathleen Shannon, D.M.A. (U. of Fla.), Director of choral activities. Choral music education, Conducting.
Paschal Younge, Ph.D. (WVU). World music, Theory.

Adjunct Assistant Faculty
Jeanne Frieben, M.M. (Duquesne U.). Guitar

Theatre Professors
M. Kathryn Wiedeusch, M.A. (WVU). Dance.

Associate Professors

Assistant Professors
Jay Malarcher, Ph.D. (LSU). Theatre history/criticism.

Visiting Assistant Professor
Troy Snyder, M.F.A. (UNCG). Scene design.
Art
Christopher Hocking, Graduate Advisor, Division of Art
419-A Creative Arts Center
http://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 (two years and a minimum of 30 credit hours; 36 is recommended); and to a master of fine arts with emphasis in visual art (three years and a minimum of 60 credit hours; 72 is recommended). 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 third semester of study or upon the completion of 30 to 36 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 to 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 or graduate project. 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 to 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 prior written approval of the division chairperson.

Admission and Portfolio
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 address below 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, three letters of recommendation and a statement of purpose. The portfolio for admittance in the studio programs or art education 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, and/or appropriate visual materials. Applicants should take care to select slides of recent and representative work for inclusion in the portfolio. 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 application, transcripts and fee, together with 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.

Studio Programs
Master Of Fine Arts is 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 three-year program is:
Degree Requirements: Three-Year Program

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Studio Art Concentration Courses</td>
<td>36</td>
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<tr>
<td>Studio/Academic Electives</td>
<td>6</td>
</tr>
<tr>
<td>Teaching Practicum</td>
<td>3</td>
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<tr>
<td>Graduate Seminar</td>
<td>3</td>
</tr>
<tr>
<td>Art History</td>
<td>6</td>
</tr>
<tr>
<td>Graduate Exhibition and Thesis</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Studio/Academic Electives</td>
<td>3</td>
</tr>
<tr>
<td>Cognate Subjects</td>
<td>9</td>
</tr>
<tr>
<td><strong>Recommended Total</strong></td>
<td><strong>72</strong></td>
</tr>
</tbody>
</table>

Graduate credits in art history must be at the 500 level (graduate) and are in addition to courses taken or required at the undergraduate level.

Graduate exhibition and thesis (ART 600) will include organized graduate seminars, committee meetings, and exhibition preparation discussions.

For the fulfillment of M.F.A. degree requirements, the student must have a combined undergraduate and graduate minimum total of 118 credit hours in studio art, 18 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 present their work in a full graduate faculty review at the end of their third semester. This review is a qualifying examination in which the student is evaluated in order to proceed in the program and to conduct thesis work. At the end of the fourth semester of full-time study all students are required to submit a statement of intention to indicate the direction and implementation of their research. The graduate art faculty recommends those students who may be required to hold a graduate exhibition.

**Transfers**  In addition to the application materials listed, transfer students must ask to transfer graduate work completed elsewhere. Transcripts must accompany the written request. The acceptance of 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 to 15 hours per semester. All students accepted into the M.F.A. program are usually required to spend six full-time semesters (excluding summer sessions) in residence. Concentrations for the M.F.A. include ceramics, graphic design, intermedia, painting, printmaking, and sculpture.

**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 a minimum of 30 hours with a recommended total of 36. The exact course of study is determined through consultation with the student’s advisor and Graduate Committee.

Degree Requirements: Two-Year Program

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Studio Art Concentration Courses</td>
<td>9</td>
</tr>
<tr>
<td>Studio/Academic Electives</td>
<td>6</td>
</tr>
<tr>
<td>Art Education or Approved Studies</td>
<td>12</td>
</tr>
<tr>
<td>Art 402 Master’s in Art Education Project</td>
<td>3</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Practicum or Graduate Seminar</td>
<td>3</td>
</tr>
<tr>
<td>Cognate Subjects</td>
<td>3</td>
</tr>
<tr>
<td><strong>Recommended Total</strong></td>
<td><strong>36</strong></td>
</tr>
</tbody>
</table>

Each student is required to complete a graduate project. The graduate art faculty recommends those students who may be required to hold a graduate exhibition.
Master Of Arts in Art History

Undergraduate prerequisites for regular admission: 15 hours of approved art history courses (equivalent to WVU ART 105, 106, 200-level courses.) 12 hours approved from history, anthropology, philosophy, aesthetics, and humanities. Reading knowledge of at least one language other than English, (second-year equivalent): German, French, or Italian. Or a B.A. in an area of substantial humanistic research, plus a foreign language.

M.A. Degree Requirements: Two-Year Program

Art History ................................................................. 21
Master’s Thesis (400 level) ........................................... 3
Cognate Subjects* ..................................................... 6
Total ................................................................. 30

*Cognate Subjects (recommended: history, philosophy, religious studies, humanities, anthropology, English language and literature, journalism, public administration).

Master Of Arts In Studio Art

The studio art concentration allows students to study ceramics, painting, printmaking, graphic design, inter-media, and sculpture. This course of study requires a baccalaureate degree in art or its equivalent for admission. Preparation should include 12 hours of art history, 45 hours of studio art related to professional needs, and 36 hours of general education. The suggested distribution of studies is as follows:

M.A. Degree Requirements: Two-Year Program

Studio Art Concentration Courses 18
Art History* ...................................................... 6
Studio/Academic Elective or Graduate Seminar** ............. 3
Graduate Exhibition and Thesis ..................................... 3
Total ................................................................. 30
Studio Academic electives ........................................... 3
Cognate Subjects ....................................................... 3
Recommended Total .................................................. 36

The graduate art faculty recommends those students who may be required to hold a graduate exhibition.

*Graduate credits in art history must be at the 500-level (graduate) and are in addition to courses taken or required at the undergraduate level.

**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.

Requirements

The student must complete the stated degree requirements in order to graduate. 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)


513. Graduate Painting. 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.

523. Graduate Graphic Design. 1-15 Hr. (May be repeated for credit.) PR: Consent. Integration of current and historic resources leading to the development of design projects while working within the independent and existing courses. Areas of special interest include the book arts and electronic multi-media.

524. Graduate Graphic Design/Professional Practice. 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.

526. Graduate Sculpture. 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 theory, historic foundations, and technical proficiency to establish a coherent comprehension of the medium.

530. Graduate Printmaking. 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 comprehension technical processes, designed to establish a rigorous comprehension of the medium. Areas of specialization include lithography, intaglio, relief, serigraphy, and electronic media.

532. Graduate Photography. 1-15 Hr. (May be repeated for credit.) PR: Consent. Engages the essential issues and developments of contemporary photography, from traditional to digital photo processes, theoretical and pictorical foundations, and technical proficiency designed to afford a coherent aesthetic vision in the medium.

534. Alternative Media. 1-15 Hr. (May be repeated for credit.) PR: Consent. Engages the primary issues and developments of alternative and interdisciplinary media such as installation, video, performance art, or other media along with the critical foundation and technical proficiency to establish a comprehensive utilization of chosen forms.

540. Graduate Ceramics. 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 include both functional and sculptural ceramics.

545. Art History: Greek and Roman. 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 context of this time period will be considered.

546. Art History: Medieval. 3 Hr. PR: Consent. The arts of Europe from c. 312 to c. 1350. The theoretical, historical, and literary contexts will be established. Architecture, sculpture, painting, and portable arts will be included.

547. Art History: Northern Renaissance. 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.

548. Art History: Italian Renaissance. 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.

549. Art History: Baroque. 3 Hr. PR: Consent. Art of the late 16th through the early 18th centuries, of both Northern and Southern Europe. Issues of historical context, and theoretical interpretation will be emphasized.

550. Art History: Nineteenth Century. 3 Hr. PR: Consent. European and American Art from the late 18th through 1900. Issues of theory, historical context, and literary foundation will be considered.

551. Art History: Modern. 3 Hr. PR: Consent. The revolutionary experience of visual art, from its foundation in 19th-century European movements through the modern era. Critical theory and historical context will be stressed.
552. *Art History: American.* 3 Hr. PR: Consent. The arts in the United States from the Colonial to the Modern era placed upon factors which define American art and the critical foundations for the works.

553. *Art History: Contemporary.* 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.

554. *Art Theory.* 3 Hr. PR: Consent. Examination of the development and tradition of the literature of Western art theory and its relationship to artistic practice.

555. *Women in Art.* 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.

556. *Twentieth Century Architecture.* 3 Hr. PR: Consent. History of 20th-century architecture. Focuses on development of the international style and recent challenges to this modernist aesthetic.

557. *Modern Art Theory.* 3 Hr. PR: Consent. Course will examine the development of modern art theory and its relationship to artistic practice. Emphasis will be placed on the critical and theoretical examination of modernism and post modernism.

565. *Graduate Studies: Art Education.* 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.

590. *Teaching Practicum/Professional Practice.* 3 Hr. PR: Consent. 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. Preparation for establishing professional practice as a studio artist will be addressed.

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

595. *Independent Study: Graduate Studio.* 1-15 Hr. PR: Consent. (May be repeated for credit.) Intensive self-directed research involving special projects in studio production. Areas of study include, but are not limited to painting, drawing, intermedia, printmaking, sculpture, ceramics, and design.

600. *Graduate Exhibition and Thesis.* 3-6 Hr. PR: Consent. (May be repeated for credit.) Research will be directed towards the production of a solo exhibition and a written thesis which documents the processes and philosophical principles of the artwork.

601. *Art History Thesis.* 3 Hr. PR: Consent. Topic selected by student in consultation with art history faculty. Research must indicate familiarity with primary and secondary sources and regard for evidence of art historical research, methodology, and criticism.

602. *Master’s in Art Education Project.* 3-9 Hr. PR: Consent. This course is designed to develop the master’s project in art education. The in-depth project must be approved by the advising committee.

693 A-Z. *Special Topics.* 1-6 Hr. PR: Consent. A study of contemporary topics selected from recent developments in the field.

694 A-Z. *Seminar.* 1-6 Hr. Seminars arranged for advanced graduate students.

695. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. *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.

697. *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.)

699. *Graduate Colloquium.* 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.
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, jazz pedagogy, or conducting.

**Admission**

Applicants to the program leading to the degree of master of music must the 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, their level of attainment in a principal performance area. 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. A recording maybe submitted in cases where travel makes an audition impractical. Each degree option has established standards which must be met for admission. 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) average, and after any previous undergraduate deficiencies or other conditions have been satisfied, such students may be accepted as degree students.

Music Education Options

The M.M. music education degree is designed to cultivate continued development of professional competence beyond the baccalaureate degree. High levels of musicianship and pedagogical expertise are integrated into a comprehensive program of study. Unique to the degree in music education are four degree options that enable students to pursue individual interests and talents.

At the core of each of the 30-hour degree options is coursework that immerses students in the foundations and research of music education, performance studies, music history, and music theory. Depending on the degree option a student selects, coursework and culminating projects are tailored to emphasize a specialization in either performance, research, or teaching.

Requirements

Music Education

Field Study Option

This degree option emphasizes teaching and includes opportunities to integrate performance studies and research, with a school-based field study that demonstrates application of knowledge and skills from graduate study as a culminating project.

Courses Hrs.
MUSC 783 Foundations of Music Education ................................................................. 3
MUSC 784 Introduction to Research in Music Education ............................................. 3
Advanced seminars in music education, methods, workshops, directed studies .......... 6
(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)
One graduate-level theory course and one music history course .............................. 5-6
(theory courses: Music 460-462, 463, 464, 465-466, 468, 761, 762, 763, 764
history courses: Music 470-476, 591K, 670)
MUSC 500 or 700 Performance ................................................................. 4
Master’s Field Study ........................................................................................ 4
Music Electives .......................................................................................... 4-5

Recital Option

This degree option emphasizes performance studies and includes opportunities to integrate research and teaching with a representative public recital that demonstrates advanced performance competence as a culminating project.

Courses Hrs.
MUSC 783 Foundations of Music Education ................................................................. 3
MUSC 784 Introduction to Research in Music Education ............................................. 3
Advanced seminars in music education, methods, workshops, directed studies .......... 6
(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)
One graduate-level theory course and one music history course .............................. 5-6
(theory courses: Music 460-462, 463, 464, 465-466, 468, 761, 762, 763, 764
history courses: Music 470-476, 591K, 670)
MUSC 500 or 700 Performance ................................................................. 8
Master’s Recital ........................................................................................ 2
Music Electives .......................................................................................... 2-3
Thesis Option
This degree option emphasizes research and includes opportunities to integrate performance and teaching with an original thesis that demonstrates advanced research and writing competence as a culminating project.

Courses
MUSC 783 Foundations of Music Education ................................................................. 3
MUSC 784 Introduction to Research in Music Education .............................................. 3
Advanced seminars in music education, methods, workshops, directed studies ........ 6
(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)
One graduate-level theory course and one music history course ............................ 5-6
(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)
MUSC 500-700 Performance ....................................................................................... 4
Master’s Thesis .......................................................................................................... 4
Music Electives .......................................................................................................... 4-5

Certification Option
This degree option is designed for persons who obtained an undergraduate degree in music other than music education. Coursework (including student teaching) leads to a professional certificate (K-12 music, West Virginia) and is combined with a master’s degree in music education, with the generation of a professional portfolio as a culminating project. Students begin the program with a series of undergraduate courses that are necessary for certification. This block of undergraduate courses ranges from 0 to 21 credits depending on the students’ previous coursework. The graduate classes required for this option follow.

Courses
MUSC 783 Foundations of Music Education ................................................................. 3
MUSC 784 Introduction to Research in Music Education .............................................. 3
Advanced seminars in music education, methods, workshops, directed studies ........ 6
(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)
One graduate-level theory course or one music history course ............................... 3-4
(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)
MUSC 686 Instrumental Music Methods ................................................................. 3
MUSC 687 Choral Music Methods and Materials ....................................................... 3
MUSC 688 General Music Methods and Materials .................................................... 3
MUSC 500 or 700 Performance .................................................................................. 4
MUSC 492 Music Student Teaching Seminar ........................................................... 2

Performance
M.M. Traditional Performance Program
MUSC 700 Performance (major performance area) ................................................... 8
MUSC 771 Introduction to Music Bibliography ......................................................... 3
MUSC 689 Master’s Recital ....................................................................................... 4
One of the following ............................................................................................... 2
MUSC 689 Master’s Recital or
MUSC 736 Research Problems for Performers
One theory course and one music history course ..................................................... 5-6
(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)
Music electives ....................................................................................................... 7-8
### M.M., Conducting Program

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 700 Performance (major performance area)</td>
<td>8</td>
</tr>
<tr>
<td>MUSC 771 Introduction to Music Bibliography</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 689 Master's Recital</td>
<td>6</td>
</tr>
<tr>
<td>MUSC 710, 711 Conducting Seminars</td>
<td>6</td>
</tr>
<tr>
<td>MUSC 631, 632, or 633 Studies in Vocal/Instrumental Music</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 780 or 781 Studies in Choral/Instrumental Techniques</td>
<td>2</td>
</tr>
<tr>
<td>One Theory course with Analytical Component</td>
<td>3</td>
</tr>
<tr>
<td>One graduate-level theory course or one music history course</td>
<td>2</td>
</tr>
</tbody>
</table>

### M.M., Piano Pedagogy Program

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 700 Performance (major performance area)</td>
<td>8</td>
</tr>
<tr>
<td>MUSC 771 Introduction to Music Bibliography</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 689 Master's Recital</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 630 Studies in Keyboard Performance and Pedagogy</td>
<td>6</td>
</tr>
<tr>
<td>MUSC 392 Guided Studies (Teaching Internship)</td>
<td>4</td>
</tr>
<tr>
<td>One graduate-level theory course or one music history course</td>
<td>2-3</td>
</tr>
<tr>
<td>Music electives</td>
<td>4-5</td>
</tr>
</tbody>
</table>

### M.M., Jazz Pedagogy Program

- Prerequisite: Level 9 in the major performance area; Level 3 in piano; one year of jazz pedagogy/group or equivalent teaching experience.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 700 Performance (major performance area)</td>
<td>8</td>
</tr>
<tr>
<td>MUSC 731 Introduction to Music Bibliography</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 689 Master's Recital</td>
<td>2</td>
</tr>
<tr>
<td>MUSC 634 Studies in Jazz Performance and Pedagogy</td>
<td>6</td>
</tr>
<tr>
<td>One graduate-level theory course or one music history course</td>
<td>3</td>
</tr>
<tr>
<td>Music Electives</td>
<td>4-5</td>
</tr>
<tr>
<td>MUSC 797 Research</td>
<td>4</td>
</tr>
</tbody>
</table>

### M.M. Composition Program

- Prerequisite: Level 8 in the major performance area; Level 4 in piano; evaluation of previously completed compositions at a graduate major level.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 771 Introduction to Music Bibliography</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 660 Composition</td>
<td>6</td>
</tr>
<tr>
<td>MUSC 765 Transcription and Arranging</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 762 Pedagogy of Theory</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 764 Comp. Tech. in Contemporary Music or MUSC 761 Theory Topics</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 797 Research (Thesis)</td>
<td>4</td>
</tr>
<tr>
<td>Music electives must include two of the following:</td>
<td>9</td>
</tr>
<tr>
<td>MUSC 660 Composition (Electronic Music)</td>
<td></td>
</tr>
<tr>
<td>MUSC 763 Analytical Techniques</td>
<td></td>
</tr>
<tr>
<td>One graduate-level theory course or one music history course</td>
<td></td>
</tr>
</tbody>
</table>
Music History
Prerequisite: 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.

Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 771 Introduction to Music Bibliography</td>
<td>3</td>
</tr>
<tr>
<td>Music History, chosen from MUSC 470-475, 670</td>
<td>6</td>
</tr>
<tr>
<td>MUSC 591/791 Special Topics</td>
<td>6</td>
</tr>
<tr>
<td>Theory Elective</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 797 Research (Thesis)</td>
<td>4</td>
</tr>
<tr>
<td>Electives (at least four credits in music)</td>
<td>8</td>
</tr>
</tbody>
</table>

Music Theory
Prerequisite: Level 8 in the major performance area; Level 4 in piano.

Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 771 Introduction to Music Bibliography</td>
<td>3</td>
</tr>
<tr>
<td>One graduate-level theory course or one music history course</td>
<td></td>
</tr>
<tr>
<td>(theory courses: Music 460-462, 463, 464, 465-466, 468, 761)</td>
<td>3</td>
</tr>
<tr>
<td>history courses: Music 470-476, 591K, 670</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 763 Analytical Techniques</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 764 Compositional Techniques in Contemporary Music</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 762 Pedagogy of Theory</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 761 Theory Topics</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 797 Research (Thesis)</td>
<td>4</td>
</tr>
<tr>
<td>Electives (at least four credits in music)</td>
<td>8</td>
</tr>
</tbody>
</table>

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. Composition 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.

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 in Music Education

The doctor of philosophy curriculum in music education prepares students for careers as teachers in higher education. A main purpose of the program is to develop skilled and knowledgeable professionals who will challenge the present and enrich the future with significant contributions to the field through teaching, research, and service. Acceptance into the doctoral program is competitive. A prospective doctoral student in music education is required to have completed appropriate undergraduate and master’s degrees in music or their equivalent at institutions of recognized standing. Also, an applicant must provide evidence of excellence in teaching and musicianship demonstrated during at least three years of successful, full-time contractual K-12 music teaching. Applicants to the program leading to the doctor of philosophy must present necessary credentials for evaluation of previous training and experience to the Division of Music. These include transcripts showing 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.

**Coursework**

**Music Education Courses**
- Contemporary Techniques in Classroom Music
- Appalachian Music for the Classroom
- Music Making in Middle School/Junior High
- Music in Early Childhood
- Advanced Music Methods and Materials
- Advanced Choral Music Methods and Materials
- Advanced General Music Methods and Materials
- Choral Techniques
- Instrumental Techniques
- Historical Foundations of Music Education
- Foundations of Music Education
- Introduction to Research in Music Education
- Psychological Foundations of Music Education
- Special Topics
- Advanced Studies

Other Required Courses:
- Music History
- Music Theory/Composition
- Foreign Language
- Statistics
- Educational Psychology

**Cognate Courses**
- Anthropology
- Applied music
- Art history
- Audiology
- Computer science
- Curriculum and instruction
- Educational administration
- Educational foundations
- Educational psychology
- Elementary education
- Foreign language
- History
- Literature
- Music history
- Music theory/composition
- Philosophy
- Physics
- Psychology
- Secondary education
- Sociology
- Special education
- Statistics
- Theatre

**Elective Courses**
- Selected at the discretion of the student.

**Examinations**

**Written Qualifying**
- Each student must demonstrate the following areas of knowledge:
  - A broad knowledge in the fields of music history and music theory.
  - Appropriate knowledge in the cognate field.
  - In depth knowledge in the field of music education.

**Oral Qualifying**
- The student’s Examination Committee will administer a comprehensive oral examination integral with the written examinations; passage of all is the basis for formal admission to candidacy.

**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 an approved foreign language or satisfy a statistics requirement.
  2. Pass written qualifying examinations 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 a comprehensive oral qualifying examination.
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 considered final. The applicant’s committee may elect to discourage a second attempt if the first does not indicate probable success upon repetition.

Dissertation

The candidate must submit a dissertation produced at WVU under the direction of a major professor that demonstrates a high order of independent scholarship, originality, and competence in research, and that 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.

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.

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.

Doctor of Musical Arts

The primary objective of the Doctor of Musical Arts degree is the recognition of the highest achievement in music performance and teaching. The principal professional use of the degree is as a teaching credential in higher education.

The degree may be taken in performance and literature (with specialization in piano, organ, voice, percussion, flute, oboe, clarinet, bassoon, horn, trumpet, trombone, tuba, violin, saxophone, viola, cello, or double bass) or in composition. Historical and theoretical knowledge sufficient to support individualized interpretations for performers and original creative work for composers is expected, as are writing and speaking skills needed to communicate clearly and effectively. To assist the student in achieving these objectives, the course of study includes requirements in performance or composition, academic coursework, and research.

Admission

Acceptance into doctoral programs is competitive. Applicants to the program leading to the D.M.A. must present necessary credentials for evaluation of previous 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 director 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. Applicants 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.
Audition Requirements

Have a prepared list of your completed repertoire in hand for examination by the Audition Committee. On this list, using asterisks, indicate those numbers that you have performed from memory. Auditions are approximately 60 minutes of performance. Live auditions are strongly recommended, but tapes or other recorded formats can be considered when travel distance poses a hardship.

The following repertoire guidelines are intended to be flexible and to encourage diversity of individual interests, but they also provide a sense of expected scope. Offering repertoire from all the categories listed below is not mandatory at your audition, but you should certainly choose a program that contains stylistic variety and represents your own strengths. Works customarily performed from memory in public recitals should be performed from memory at your audition.

Organ
1. A pre-Bach work from such composers as Frescobaldi, Sweelinck, Scheidt, Pachelbel, Buxtehude, or Araho.
3. A major Romantic work from such composers as Reubke, Mendelssohn, Liszt, Franck, or Reger.
4. A major contemporary or modern work from such composers as Widor, Vierne, Langlais, Dupre, Jongen, Sowerby, Willan, etc.
5. A selection of your own choice.

Percussion
1. Marimba
   a. A major concerto, such as those by Milhaud, Kurka, or Rosauro.
   b. A contemporary Japanese composition, such as Tanaka, Two Movements for Marimba; or Miki, Marimba Spiritual.
2. Timpani
   a. A major work for timpani, such as the concerti of Kraft, or Kvistad.
   b. An etude or sonata, such as those of Carter, or Maves.
3. Multiple percussion or drum set
   a. A major work for multiple percussion—solo or chamber compositions; such as those of Dahl, Bergsma, or Kraft.
   b. The drum set piece may include a transcription of a solo from a drum set artist.
4. A selection of your own choice (preferably one major or several shorter compositions) in any of the areas of mallets, timpani, drum set, jazz vibes, ethnic percussion, or multiple percussion.

Piano
1. A major Baroque work, such as a group of Scarlatti sonatas, a suite by Bach, or one or more preludes and fugues from the well-tempered Clavier.
2. A complete sonata, variation set, or similar work by Beethoven or another Classical composer.
3. A major Romantic or Impressionist work.
4. Another work of your choice, preferably a major composition (or several shorter pieces) representative of twentieth-century style.
Voice
Have a prepared list of your previous vocal teachers and vocal coaches and a precise
statement of your present language background; foreign language study, diction, phonetics,
etc.
1. An Aria from an Oratorio; Handel, Haydn, or Mendelssohn.
2. One selection of your own choice; preferably a major operatic aria.
3. At least two selections from each of the four language categories:
   A. Italian
      1. 17th and 18th century
      2. Aria by Mozart
      3. 19th and 20th century opera
   B. German
      1. An Aria by Bach
      2. Lieder; Mozart, Schubert, Schumann, Brahms, Wolf, Mahler, Strauss
   C. French
      1. Art Songs; Debussy, Ravel, Faure, Poulenc
   D. English
      1. Early Songs; Purcell or Arne
      2. Contemporary American and British songs; such as Britten, Menotti, or Floyd

Strings
Audition repertoire should include at least one major concerto and one work from the
Baroque era.

Woodwinds, Brass
Audition repertoire for the D.M.A. in music performance should be chosen that allows the
candidate to demonstrate their current level of achievement.
Early in the application process potential students should contact the major teacher in
their area and discuss audition repertoire possibilities.

Curriculum The exact amount and nature of coursework 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. Satisfactorily pass 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 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.
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.

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)

460. Upper-Division Composition. I, II. 2 Hr. (May be repeated for credit.) PR: Two semesters MUSC 360, or consent based on scores submitted. Creative writing with emphasis on practical composition for performance.


462. Counterpoint. II. 2 Hr. PR: MUSC 264 or consent. Eighteenth-century counterpoint.

463. Analysis of 18th-19th Century Music. II. 3 Hr. PR: MUSC 264 or consent. Detailed study of the materials and structure of European music of the eighteenth and nineteenth-centuries. (Alt. yrs.)

464. Analysis of 20th-Century Art Music. II. 3 Hr. PR: MUSC 264 or consent. Detailed study of the materials and structure of western art music of the twentieth century. (Alternate years.)


468. *Jazz Harmony*. 2 Hr. PR: MUSC 264 and MUSC 286 or consent. Advanced jazz theory and harmony. Ear training, keyboard skills, chord voicing, and substitutions.

470. *European Music before 1500*. 3 Hr. PR: MUSC 271 or consent. A study of European sacred and secular monophonic and polyphonic traditions in their stylistic, historic, and social settings to the end of the fifteenth century.

471. *Music of the Sixteenth and Seventeenth Centuries*. 3 Hr. PR: MUSC 271 or consent. A study of European sacred and secular, instrumental and vocal traditions in their stylistic and social settings from c. 1500 to c. 1700.

472. *Music of the Eighteenth Century*. 3 Hr. PR: MUSC 271 or consent. A study of Western instrumental and vocal traditions in their stylistic, historic, and social settings from c. 1700 to c. 1800.

473. *Music of the Nineteenth Century*. 3 Hr. PR: MUSC 271 or consent. A study of Western instrumental and vocal traditions in their stylistic, historic, and social settings from c. 1800 to c. 1900.

474. *Music of the Twentieth Century*. 3 Hr. PR: MUSC 271 or consent. A study of Western instrumental and vocal traditions in their stylistic, historic, and social settings from c. 1900 to the present.

475. *History of Jazz*. 3 Hr. PR: MUSC 271 or consent. History and repertory of jazz from its Afro-American origins to 1975 with attention to its major exponents (including Joplin, Armstrong, B. Smith, Morton, Ellington, Gillespie, Parker, Davis, and Coltrane) and its evolving style.

476. *Women in Music*. I. 3 Hr. PR: MUSC 271 or consent. Critical examination of female musicians and their range of musical styles including composers, repertoire, performers, etc., from Medieval period through today; feminist methodology includes re-examination of history and gender theory. (Travel expense possible; see current syllabus.) (Alternate years.)

500 A-Z. *Secondary Performance: Bassoon*. I, II, S. 1 Hr. (May be repeated for credit.) Group or individual instruction in performance on bassoon, with emphasis on methods and materials for school music teachers.

561. *Graduate Theory Review*. 3 Hr. Review of undergraduate basic musicianship (writing, ear training, sight singing, and analysis) for incoming graduate students with deficiencies. Not open to undergraduates.

590. *Teaching Practicum*. 1-3 Hr.

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

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

594. *Seminar*. I, II. 1-6 Hr. Seminars arranged for advanced graduate students.

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

630. *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.

631. *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.

632. *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.


634. *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.

640. *Chamber Music: Brass*. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small brass ensembles.
641. Chamber Music: Guitar. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small guitar ensembles.

642. Chamber Music: Jazz. I, II. 0-3 Hr. (May be repeated for credit.) Performance in jazz ensembles, instrumental or vocal.

643. Chamber Music: Percussion. I, II. 0-3 Hr. (May be repeated for credit.) Performance in percussion ensembles.

644. Chamber Music: Percussion-Ethnic. I, II. 0-3 Hr. (May be repeated for credit.) Performance in percussion ensembles emphasizing music from non-Western cultures.

645. Chamber Music: Percussion-Gamelan. I, II. 0-3 Hr. (May be repeated for credit.) Performance in Gamelan ensembles.

646. Chamber Music: Percussion Steel Band. I, II. 0-3 Hr. (May be repeated for credit.) Performance in steel band ensembles.

647. Chamber Music: Piano. I, II. 0-3 Hr. (May be repeated for credit.) Performance in piano four-hand chamber music or performance by pianists in other ensembles.

648. Chamber Music: String. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small string ensembles.

649. Chamber Music: Voice. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small vocal ensembles.

650. Chamber Music: Woodwind. I, II. 0-3 Hr. (May be repeated for credit.) Performance in wind quintet and small woodwind ensembles.

651. Chamber Music: Other. I, II. 0-3 Hr. (May be repeated for credit.) Performance in small mixed ensembles.

660. Composition. I, II. 3 Hr. (May be repeated for credit.) PR: Consent. Primarily for candidates for graduate degrees in theory or composition.

670. 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.

679. 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.

680. Music In The Elementary School. 3 Hr.

681. Teaching Music Appreciation. 3 Hr.

682. Contemporary Techniques in Classroom Music. 3 Hr. PR: MUSC 382 or consent. Principles and practice of contemporary techniques in elementary and junior high school classroom music, including those of Orff and Kodaly.

683. Music Making in Middle School/Junior High. II. 3 Hr. PR: MUSC 380, and MUSC 381, and MUSC 382 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.

684. Music in Early Childhood. S. 3 Hr. PR: MUSC 380, and MUSC 381, and MUSC 382, 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.

685. Choral Conducting and Procedures. 3 Hr.

686. Instrumental Methods and Materials. 3 Hr. PR: Consent. 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.)

687. Choral Music Methods and Materials. 3 Hr. PR: Consent. 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.)
688. General Music Methods and Materials. 3 Hr. PR: Consent. 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.)

689. Master’s Recital. I, II, S. 2-4 Hr. PR: MUSC 499 (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.

690. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of music. 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.)

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

692 A-Z. Directed Study. I, II. 1-6 Hr. Directed study, reading, and/or research.

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

696. 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.

paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

698. 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.)

699. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework
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 coursework 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.)

700 A-Z. Performance: Bassoon. 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 ten to receive credit in MUSC
700.

704. Opera Theatre. I, II. 0-4 Hr. PR: MUSC 104 or consent. Continuation of MUSC 104. Performance
of major roles and advanced production techniques. Qualified students will undertake production-
direction projects under supervision.

710. Conducting. S. 3 Hr. PR: MUSC 202 or equivalent. Instrumental and choral conducting. Major works
are prepared and conducted through the use of recordings and music organizations.

711. Conducting Seminar. 3 Hr. PR: MUSC 710. Instrumental and choral conducting of major works under
the supervision of the conductor of a major ensemble.

730. Master Class in Applied Repertoire: Keyboard. I, II. 2 Hr. (May be repeated for credit.) PR: Consent.
Designed to give coverage through performance of the literature of the D.M.A. in keyboard.

730 A. Master Class in Applied Repertoire: Voice. I, II. 2 Hr. (May be repeated for credit.) PR: Consent.
Designed to give coverage through performance of the literature of the D.M.A. in voice.

730 B. Master Class in Applied Repertoire: Percussion. I, II. 2 Hr. (May be repeated for credit.) PR:
Consent. Designed to give coverage through performance of the literature of the D.M.A. in percussion.

730 C. Master Class in Applied Repertoire: Organ. I, II. 2 Hr. (May be repeated for credit.) PR: Consent.
Designed to give coverage through performance of the literature of the D.M.A. in organ.

730 D. Master Class in Applied Repertoire: Woodwind. I, II. 2 Hr. (May be repeated for credit.) PR:
Consent. Designed to give coverage through performance of the literature of the D.M.A. in a woodwind
instrument.
730 E. *Master Class in Applied Repertoire: String*. I, II. 2 Hr. (May be repeated for credit.) PR: Consent. Designed to give coverage through performance of the literature of the D.M.A. in a stringed instrument.

730 F. *Master Class in Applied Repertoire: Brass*. I, II. 2 Hr. (May be repeated for credit.) PR: Consent. Designed to give coverage through performance of the literature of the D.M.A. in a brass instrument.

730 G. *Master Class in Applied Repertoire: Piano*. I, II. 2 Hr. (May be repeated for credit.) PR: Consent. Designed to give coverage through performance of the literature of the D.M.A. in piano.

730 H-Z. *Master Class in Applied Repertoire*. I, II. 2 Hr. (May be repeated for credit.) PR: Consent. Designed to give coverage through performance of the literature of a specific D.M.A. Performance field.


733. *Choral Literature*. 3 Hr.

734. *Aesthetics of Music*. 2 Hr.

735. *Survey of Sacred Music*. S. 4 Hr. PR: MUSC 270 and MUSC 271 or equivalent. Study of music suitable to the liturgical year, including the historical background of the Jewish, Catholic, and Protestant liturgies.


737. *Ethnic Percussion*. II. 3 Hr. PR: MUSC 116 and MUSC 434 and MUSC 435; 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.

738. *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.

761. *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.

762. *Pedagogy of Theory*. I, II. S. 3 Hr. PR: MUSC 264 or consent. Consideration of various approaches to the teaching of theory.

763. *Analytical Techniques*. I, II. S. 3 Hr. Analytical techniques and their application to scholarship and performance, with emphasis on pre-twentieth-century styles.


765. *Transcription and Arranging*. I, II. 2 Hr. (May be repeated once for credit.) PR: MUSC 266 or equivalent. Major projects in scoring for orchestra, band, or wind ensemble.


772. *History of Notation 1*. II. 3 Hr. PR: Graduate standing. Detailed study in transcribing the musical manuscripts of the Middle Ages.

773. *History of Notation 2*. II. 3 Hr. PR: Graduate standing. Continuation of MUSC 772 covering the Renaissance period.


780. *Choral Techniques*. II. 2 Hr. PR: (MUSC 380 and MUSC 381 and MUSC 382) or equivalent. Advanced techniques and procedures involved in development of choral ensembles.

781. *Instrumental Techniques*. I. 2 Hr. PR: (MUSC 380 and MUSC 381 and MUSC 382) or equivalent. Advanced techniques and procedures involved in individual performance and instruction through lecture demonstrations by performance faculty.
782. **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.

783. **Music Education.** II. 3 Hr. PR: (MUSC 380 and MUSC 381 and MUSC 382) or equivalent. Survey and critical study of the total music education program.

784. **Introduction to Research in Music Education.** I. 3 Hr. PR: (MUSC 380 and MUSC 381 and MUSC 382) or equivalent. Methods and measures necessary for conduct and understanding of research in music education.

788. **Doctoral Recital.** I, II, S. 1-4 Hr. PR: MUSC 689 (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.

789. **Lecture Recital.** I, II. 2 Hr. PR: MUSC 771.

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

792 A-Z. **Directed Study.** I, II. 1-6 Hr. Directed study, reading, and/or research.

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

797. **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.)

900. **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 only.)

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**Theatre**

Margaret A. McKowen, Chair
307-A Creative Arts Center
E-mail: margaret.mckowen@mail.wvu.edu
http://www.wvu.edu/~theatre/index.htm

**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 or theatre design (scene, costume, and lighting). The program is fully accredited by the National Association of Schools of Theatre.

**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 to 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 M.F.A. acting program is an intensive three-year course of study designed to educate and train students for the professional theatre world and its related fields. The program offers conservatory-style actor training in all aspects of acting, voice/speech, and movement during the twenty-hour per week studio acting program (1:00 to 5:00 p.m., Monday through Friday). In addition to the studio program, students are required to complete coursework in theatre history, text analysis, criticism, and research methods.

Graduation from the program is contingent upon completion of the following:
- Three years of graduate courses and production work totaling at least 69 designated credit hours and three elective graduate credits.
- A production thesis including both a performance of a significant role or roles and a paper exploring aspects of the creation and performance of this role.
- Oral defense of this thesis project.
- A successful evaluation at the end of each year of study.
- An overall grade-point average of 3.0.

Design  The M.F.A. design program is an intense three-year course of study for students seeking professional preparation in scenic, costume, or lighting design.

Studio design courses, together with fully realized production experience offer expectations found in the real world.
- Three years of graduate courses and production work totaling at least 69 designated credit hours and additional elective credits.
- A production or research thesis.
- Oral defense of the thesis project.
- A successful evaluation at the end of each year of study.
- An overall grade-point average of 3.0.

M.F.A. in Acting Suggested Program

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<tr>
<td>THET 680 Dramatic Theory &amp; Crit.</td>
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<td>THET 600 Rehearsal/Performance</td>
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### Third Year

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### M.F.A. Scene Design and Technology Suggested Program

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<tbody>
<tr>
<td>THET 610 Research/Aesth. Crit.</td>
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<td>THET 621 Scenographic Tech.</td>
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<tr>
<td>THET 428 Scene Painting</td>
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<td>THET 321 Stage Properties</td>
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<td>THET 680 Graduate Seminar</td>
<td>3</td>
<td>THET 622 Scene Design 2</td>
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<td>THET 693 Directed Study: Rendering</td>
<td>3</td>
<td>THET 625 Lighting Design</td>
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<tr>
<td>THET 302 Directing</td>
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<td>THET 622 Scene Design</td>
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<td>THET 624 Costume Design 1</td>
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<td>THET 600 Practicum</td>
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<td>or</td>
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**Total credits for program 69**

### M.F.A. in Costume Design Suggested Program

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<tr>
<td>THET 424 Advanced Costume Const.</td>
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<td>THET 624 Costume Design 1</td>
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<td>THET 628 Costume History/Decor</td>
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<td>THET 680 Graduate Seminar</td>
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<td>THET 624 Costume Design 2</td>
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<td>THET 693 Directed Study: Rendering</td>
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<td>Elective</td>
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<th>Hrs.</th>
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<td>THET 624 Costume Design</td>
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<td>THET 622 Scene Design</td>
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<td>THET 625 Lighting Design</td>
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<td>THET 698 Thesis</td>
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## M.F.A. in Lighting Design Suggested Program

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<tr>
<td>THET 610 Research/Aesth. Crit.</td>
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<td>THET 424 Advanced Tech.</td>
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<td>THET 627 Costume History/Decor 1</td>
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<td>THET 625 Lighting Design</td>
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<tr>
<td>THET 631 Stenographics</td>
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<th>Third Semester</th>
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<tbody>
<tr>
<td>THET 600 Practicum</td>
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<td>THET 302 Directing</td>
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<td>THET 622 Scene Design</td>
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<td>THET 680 Graduate Seminar</td>
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<td>THET 625 Lighting Design</td>
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<td>THET 693 Directed Study: Rendering</td>
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<tr>
<th>Fifth Semester</th>
<th>Hrs.</th>
<th>Sixth Semester</th>
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<td>THET 600 Practicum</td>
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</tbody>
</table>

**Total credits for program 69**

### Theatre (THET)

**540. Graduate Vocal Techniques.** I. 2 Hr. 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.

**541. Graduate Voice Techniques.** II. 2 Hr. PR: THET 540. Continue the work introduced in THET 540 with text exploration. Introduce the International Phonetic Alphabet (IPA) and structure.

**542. Graduate Stage Movement 1.** I. 2 Hr. Study of human movement in performance, including movement patterning, body and space awareness, and basic experiential anatomy.

**543. Graduate Stage Movement 2.** II. 1 Hr. PR: THET 542. Continuation of THET 542 through work on directed projects; special topics in issues related to physicality in performance.

**544. Graduate Acting Studio 1.** I. 3 Hr. 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.

**545. Graduate Acting Studio 2.** II. 3 Hr. PR: THET 544. Continued exploration of the craft of acting using the rehearsal and performance of a full length play, chosen from modern and contemporary theatre literature.

**546. 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.

**547. Graduate Scene Studio 2.** 1 Hr. PR: THET 546. The presentation of scenes chosen from Shakespeare and other plays of heightened text, before a panel of acting, voice, and movement faculty for critique.

**590. Teaching Practicum.** 1-3 Hr.

**591 A-Z. Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

**592. Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

**593. Special Topics.** 1-6 Hr. Investigation of topics not covered in regularly scheduled courses.

**594 A-Z. Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.
595. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

600. **Rehearsal and Performance.** I. 3 Hr. PR: Consent. (May be repeated for a maximum of 12 credit hours.) Participation in assigned performance projects.

610. **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.

621. **Graduate Theatre Make-up.** 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.

622. **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 translating the script into a visual design.

623. **Advanced Graduate Scene Design.** I, II. 3 Hr. PR: THET 622. 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. (May be repeated for a maximum of 9 credit hours.)

624. **Graduate Costume Design 1.** I. 3 Hr. Intensive study of basic design elements as applied to costume design. Script analysis leading to conceptualization and communication through visual language. Experience in practical organization skills, paperwork, and budgeting. Studio/rendering work.

625. **Graduate Lighting Design.** I, II. 3 Hr. PR: THET 427 or consent. (May be repeated for a maximum of 9 credit hours.) Lecture/studio; intensive practical experience of lighting design for the theatre. Emphasis is placed on conceptualization, drafting, and rendering techniques related to the development and presentation of lighting design.

626. **Graduate Costume Design 2.** 3 Hr. PR: THET 624. 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 be repeated for maximum of 6 credit hours.)

627. **Graduate Costume and Decor 1.** I. 3 Hr. A historical survey of clothing, artistic style, and decoration from ancient Egypt to 1750. Emphasis on how stage designers employ period style in the design of costumes, scenery, and properties. Field trip required.

628. **Graduate Costume and Decor 2.** II. 3 Hr. A historical survey of clothing, artistic style, and decoration from 1750 to the present. Emphasis on how stage designers employ style in the design of costumes, scenery, and properties. Field trip required.

629. **Graduate CAD Seminar.** 3 Hr. PR: THET 631 and THET 622 or consent. Advanced study of the computer-assisted graphic design for the stage.

631. **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 exercises.

640. **Advanced Graduate Vocal Techniques.** I. 2 Hr. PR: THET 541 or consent. Intensive vocal exploration with Shakespearean text, character choices, and dialect work.

641. **Advanced Graduate Vocal Techniques.** II. 2 Hr. PR: THET 640 or consent. Continuation of THET 353 with emphasis on period style texts and voice-over skills.

642. **Advanced Graduate Stage Movement.** I. 2 Hr. PR: THET 543 or consent. Advanced study of movement techniques for character work, including rhythms of basic language/movement connections and period styles of movement.

643. **Advanced Graduate Stage Movement 2.** 1 Hr. PR: THET 642 or consent. Continuation of THET 642 through work on directed projects; special topics in issues related to physicality in performance.

644. **Advanced Graduate Acting Studio 1.** I. 3 Hr. PR: THET 545. Continued exploration of the acting process focusing on heightened text and issues of period and style using the works of William Shakespeare.
645. **Advanced Graduate Acting Studio**. II. 2 Hr. PR: THET 644. 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.

680. **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.

690. **Teaching Practicum**. 1-3 Hr. PR: Consent. Supervised practice in college teaching of theatre. 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.)

691 A-Z. **Advanced Topics**. I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

692. **Directed Study**. 1-6 Hr. Directed study, reading, and/or research.

693. **Special Topics**. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694 A-Z. **Seminar**. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

695. **Independent Study**. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. **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 department.

697. **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.)

698. **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 students’ reports, thesis, or dissertations. (Grading may be S/U.)

699. **Graduate Colloquium**. I, II, S. 1-6 hr. PR: Consent. For graduate students not seeking coursework credit but who wish to meet residence requirements, use University facilities, and participate in its academic and cultural programs. Note: graduate students not actively involved in coursework or research are entitled, through enrollment in his/her departments, 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.)

720. **Seminar in Production Research**. II. 3 Hr. PR: THET 610 and THET 622 or THET 626 or THET 625. Seminar approach to individual design projects with oral and written presentations of research materials. Intensive critique within class by faculty and peers.

721. **Professional Aspects of Design**. I. 3 Hr. PR: THET 622 and THET 624 and THET 625. 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.

744. **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.

745. **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.

751. **Showcase Development**. 2 Hr. PR: THET 624. 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.

771. **Contemporary Theatre Organizations**. 3 Hr. PR: THET 610. This course studies the philosophical and organizational structure of modern and contemporary theatres (1898-present). The class will function as a graduate seminar.
790. *Teaching Practicum.* 1-3 Hr. PR: Consent. Supervised practice in college teaching of theatre. 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.)

791 A-Z. *Advanced Topics.* I, II, S. 1-6 Hr. PR: Consent. Investigation in advanced topics not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

792. *Directed Study.* 1-6 Hr. Directed study, reading, and/or research.

793. *Special Topics.* 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794 A-Z. *Seminar.* 3-9 Hr. (May be repeated for max. 9 hr. credit.) PR: Consent. Selected fields of study in theatre.

795. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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.

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

798. *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 students' reports, thesis, or dissertations. (Grading may be S/U.)

799. *Graduate Colloquium.* I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in his/her departments 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/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.
Degrees Offered

Master of Science in Aerospace Engineering, Doctor of Philosophy in Aerospace Engineering
Master of Science in Chemical Engineering, Doctor of Philosophy in Chemical Engineering
Master of Science in Civil Engineering, Doctor of Philosophy in Civil Engineering
Doctor of Philosophy in Computer Engineering
Master of Science in Computer Science, Doctor of Philosophy in Computer and Information Sciences
Master of Science in Electrical Engineering, Doctor of Philosophy in Electrical Engineering
Master of Science in Engineering
Master of Science in Industrial Engineering, Doctor of Philosophy in Industrial Engineering
Master of Science in Mechanical Engineering, Doctor of Philosophy in Mechanical Engineering
Master of Science in Mining Engineering, Doctor of Philosophy in Mining Engineering
Master of Science in Occupational Hygiene and Occupational Safety
Doctor of Philosophy in Occupational Safety and Health
Master of Science in Petroleum and Natural Gas Engineering, Doctor of Philosophy in Petroleum and Natural Gas Engineering
Master of Science in Safety Management
Master of Science in Software Engineering

College of Engineering and Mineral Resources (CEMR) graduate programs are administered through the Departments of Chemical Engineering, Civil and Environmental Engineering, the Lane Department of 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 engineering, 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 in safety management. These programs are accredited by the Applied Science Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).
Currently the college offers a graduate certificate program in 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 400 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 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 at least 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 requirements 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 coursework 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. Cinn.). Dean. 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.). GE Plastics Professor. 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. Cinn.). Chemistry (physical inorganic chemistry), Solution chemistry, Coal liquefaction, Carbon science.

Associate Professors

Assistant Professors

Civil and Environmental Engineering Professors
†Ronald W. Eck, Ph.D., P.E. (Clemson U.). Transportation engineering, Traffic operations and safety, Airways engineering.
†Udaya B. Halabe, Ph.D., P.E. (MIT). Nondestructive evaluation and in-situ condition assessment of structures and materials, Elastic and radar wave propagation, Structural analysis and design, Structural dynamics and wind/earthquake resistant design.


Samir Shoukry, Ph.D. (Aston U.). Pavement modeling, Non-destructive evaluation, Structural dynamics.


**Associate Professors**


†Darrell R. Dean Jr., L.L.S., Ph.D. (Purdue U.). Land surveying, Mapping, Photo grammetry.


†Donald D. Gray, Ph.D., P.E. (Purdue U.). Fluid flow, Computational fluid mechanics.

†David R. Martinelli, Ph.D. (U. Md.). Chair. Transportation engineering, Traffic operations, Systems analysis, Infrastructure management.


**Assistant Professors**

Karl Barth, Ph.D. (Purdue U.). Steel structures, Bridge design and rehabilitation, Connections, Stability analysis, Experimental mechanics.


‡Kumanaswamy Sirakumaran, Ph.D. (U. of Colo.). Adjunct. Sediment transport and hydraulic engineering.


**The Lane Department of Computer Science and Electrical Engineering**

**Professors**


Walton W. Cannon, Ph.D. (U. Ill.). *Emeritus.*

†Muhammad A. Choudhry, Ph.D. (Purdue U.). Graduate coordinator for CS & EE. Power system control, DC transmission, Stability, Power electronics.


‡Ali Feliachi, Ph.D. (Ga. Tech.). Large-scale systems, Adaptive control, Power systems.


‡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.). Adjunct. Software engineering, Program specification and verification.


Nelson Smith Jr., D.Sc. (U. Pitt.). *Emeritus*.


**Associate Professors**


V. Jagannathan, Ph.D. (Vanderbilt U.). Distributed Intelligent Systems, Internet and security technologies.


Timothy Menzies, Ph.D. (U. New South Wales, Australia). Research. Software engineering, Artificial Intelligence, IV & V.

James D. Mooney, Ph.D. (Ohio St. U.). Associate chair, Graduate coordinator for CS. 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.


Frances L. Van Scoy, Ph.D. (U. Va.). Programming languages and compilers, Software engineering, Parallel processing.

**Assistant Professors**

Donald A. Adjeroh, Ph.D. (Chinese U. of Hong Kong). Multimedia information systems (images, video and audio), Distributed multimedia systems.

Bojan Cukic, Ph.D. (U. Houston). High-assurance systems, Software engineering, Parallel and distributed computing, Fault-tolerant systems, Medical imaging.


Kathleen Meehan, Ph.D. (U. Ill. at U/C). Optoelectronic and optical sensor design and fabrication, Optical spectroscopy.


K. Subramani, Ph.D. (U. Md.). Design and analysis of algorithms, Complexity, Combinatorics.


**Research Assistant Professors**


**Lecturers**


Rebecca Littleton, M.S.C.S. (WVU). Design and development of multimedia, Instructional, web-based systems.

Cynthia D. Tanner, M.S. (WVU). Graduate coordinator for software engineering, Software engineering, Program understanding.

**Post-Doctoral Fellow**

Jim Wang, Ph.D. (Chinese U. of Hong Kong). Advanced process control systems, Nonlinear control systems.
Extension and Outreach

Extension and Outreach is a unit within the College of Engineering and Mineral Resources (CEMR) that is composed of two programs: Mining extension and industrial extension.


Industrial Extension Service

Industrial Extension Specialists


Cindy Decker, B.S., (L.S.U.). Project management, Sales and marketing, Supply chain management, Quality systems.


Mining Extension Service

Professor


Associate Professors


Assistant Professor

Luther B. Ferguson. Emeritus.

Mining Extension Agents

Mark A. Adkins, B.S. (WVU Inst. of Technology). Mine foreman training, Surface and underground apprentice training and electrical training.

Thomas W. Hall, B.S. (Fairmont St. Coll.). Mine foreman training, Mandatory miner training, Mining methods.

John D. Martin, B.S. (Bera Coll.). Fire safety training, Protective clothing and equipment.


Ireland Sutton, B.S. (WVU Inst. of Technology). 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, 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.


†Gary Winn, Ph.D. (Ohio St. U.). Construction safety, Transportation safety and program evaluation, Total quality management, Theory of paradigm shifts.
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, Industrial energy/waste productivity management.

Assistant Professors
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.

Visiting Professors and Adjuncts
Christopher Coffey, Ph.D. (WVU). Occupational safety and health, Assessment, Evaluation of respiratory protective equipment.
Paul Hewett, Ph.D., C.I.H. (U. of Pitt.). Exposure assessment strategies with a focus on data analysis paradigms.
Steven Wiker, Ph.D. (U. of Mich.). Ergonomics/human factors and safety engineering with focus on biomechanical, physiological, or perceptual-motor stressors.
Ziging Zhuang, Ph.D. (WVU). Exposure assessment, Assessment and evaluation of respiratory protective equipment.

Mechanical and Aerospace Engineering Professors
†Richard A. Bajura, Ph.D., P.E. (U. Notre Dame). Director of NRCCE. Fluids engineering.
†Ever Barbero, Ph.D. (VPI & SU). Structural Mechanics, Materials, Constructed facilities.
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.
†Donald W. Lyons, Ph.D., P.E. (Ga. Tech.). Director of Alternative Fuels, Engines, and Emissions Center, Manufacturing systems, Instrumentation, Engines and emissions.
In-Meei Neou, Ph.D. (Stanford U.). Emeritus.
†Timothy Norman, Ph.D. (Purdue U.). Advanced composite materials, Fracture mechanics, Experimental mechanics, Biomechanics.
†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.
†Jacky Prucz, Ph.D. (Ga. Tech.). Graduate program director. Structural dynamics, Composite materials.

Assistant Professors
†Greg Thompson, Ph.D. (WVU). Research. Thermodynamics, Machine design.

Mining Engineering
Professors
†A. Wahab Khair, Ph.D. (Penn. St. U.). Rock mechanics, Ground control.
†Syd S. Peng, Ph.D. (Stanford U.). Charles T. Holland Distinguished Professor of Mining Engineering and Chairman. Longwall mining, Ground control.
Kelvin Wu, Ph.D. (U of Wisc.). Adjunct. Health and Safety.

Associate Professors

Assistant Professor

Particle Analysis Center

Petroleum and Natural Gas Engineering
Professors
†Khshayar Aminian, Ph.D. (U. Mich.). Natural gas engineering, Reservoir engineering.
†Thomas P. Meloy, Ph.D. (MIT). Particle analysis.
Larry Woodford, A.M. (Ind. U.). Adjunct.

Associate Professors
†Shahab Mohaghegh, Ph.D. (Penn. St. U.). Intelligent systems.
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 11 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 three 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 ten doctoral degrees, and over ten 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 (on a 4.0 scale) 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 one to one and a half years beyond completion of prerequisite courses. Typically, the prerequisite courses include as a minimum: CHE 310, 311, 312, 315, 320, and 325. 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 coursework M.S. degree option is not offered by the Department of Chemical Engineering.

Required Courses

All students are required to take CHE 615, 620, and 625, and all full-time students are required to take one credit of journal club/seminar (CHE 694) 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 coursework with a minimum cumulative grade-point average of 3.0 (on a 4.0 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 CHE 615, 620, and 625, 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 (CHE 694) 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 (CHE 797) and seminar/journal club (CHE 694). If the student has an M.S. in chemical engineering from WVU, the program consists of a minimum of 12 course credit hours (excluding CHE 797 and
CHE 694). 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 CHE 797 and CHE 694). 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 400 level may be acceptable. All courses must be approved by the AEC and the academic advisor. Students must complete graduate courses with an overall coursework average of 3.0 or better (exclusive of research credits) and complete all CHE 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 coursework, 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 (CHE)

531. Mathematical Methods in Chemical Engineering. 3 Hr. PR: MATH 261 and consent. Classification and solution of mathematical problems important in chemical engineering. Treatment and interpretation of engineering data. Analytical methods for ordinary and partial differential equations, including orthogonal functions and integral transforms. Vector calculus. (3 hr. lec.)

565. Corrosion Engineering. 3 Hr. PR: CHE 320 or CHEM 341 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.)

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

610. 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.)

611. 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.)
615. **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.)

620. **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.)

625. **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.)

635. **Process Dynamics and Control.** 3 Hr. PR: Consent. Dynamic response of processes and control instruments. Use of Laplace transforms and frequency-response methods in analysis of control systems. Application of control systems in chemical reactors, distillation, and heat-transfer operations. Introduction to nonlinear systems. (3 hr. lec.)

687. **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 687, EE 687, MINE 687, IMSE 687 and MAE 687.) (3 hr. lec.)

694. **Seminar.** 1-6 Hr. Seminars on current research by visitors and graduate students.

697. **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.)

716. **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.)

717. **Advanced Heat Transfer.** 3 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.)

718. **Advanced Mass Transfer.** 3 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.)

720. **Applied Statistical and Molecular Thermodynamics.** 3 Hr. PR: CHE 620 and consent. The connection between macroscopic phenomena (thermodynamics) and microscopic 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.)

726. **Catalysis.** 3 Hr. PR: CHE 625 or consent. Physical and chemical properties of catalytic solids, nature and theories of absorption, thermodynamics of catalysis, theories of mass and energy transport, theoretical and experimental reaction rates, reactor design, and optimization. (3 hr. lec.)

727. **Non-Catalytic Solid-Fluid Reactions.** 3 Hr. PR: CHE 645 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.)


731. **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, geometric and dynamic programming, linear and nonlinear programming, calculus of variations. (3 hr. lec.)

761. **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.)
790. *Teaching Practicum*. 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.)

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

792. *Directed Study*. 1-6 Hr. Directed study, reading, and/or research.

793. *Special Topics*. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. *Seminar*. 1-6 Hr. Seminars arranged for advanced graduate students.

795. *Independent Study*. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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.

797. *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.)

798. *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 students’ reports, thesis, or dissertations. (Grading may be S/U.)

799. *Graduate Colloquium*. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

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**Department of Civil and Environmental Engineering**

David Martinelli, Ph.D., Chair  
623 Engineering Sciences Building  
e-mail: cee-info@cemr.wvu.edu  
http://www.cemr.wvu.edu/~wwwce/

**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**

- Environmental and hydro technical engineering, which includes occupational health; wetland and natural stream restoration; water, wastewater, and industrial waste treatment; air pollution and site remediation, groundwater hydraulics, hydrology, and fluid mechanics.
• 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 expert 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
Many of the 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 master’s programs offered by the department but will receive an M.S.E. degree (upon completion) and will also 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 paper-based TOEFL or a 213 on the computer-based 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. Although rarely permitted, this option is open to students with practical engineering experience and/or who have demonstrated an ability to organize and develop a project and write a technical report. Approval to pursue this option must be obtained from the student’s Advisory and Examining Committee (AEC), the graduate program coordinator, and the department chairperson.

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 (CE 797) 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. Students who possess a baccalaureate degree in a technical area other than civil engineering will receive an M.S.E. degree.

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)
511. Pavement Design. 3 Hr. PR: CE 451 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.)

520. 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. lec.)

522. Free Surface Hydrodynamics. 3 Hr. PR: CE 322 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.)

528. Groundwater Contaminant Transport. 3 Hr. PR: CE 520. Solute and particle transport; aqueous geochemistry; mathematics of mass transport; transformation; retardation, and attenuation of solutes; modeling contaminant transport and remediation. (3 hr. lec.)

532. Airport Planning and Design. 3 Hr. PR: CE 332 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.)

533. 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, sight distances, interchanges, and intersections. Critical analysis of design specifications. (2 hr. lec., 3 hr. lab.)

534. Introduction to Traffic Engineering. 3 Hr. PR: CE 332 or consent. The purpose, scope, and methods of traffic engineering. Laboratory devoted to conducting simple traffic studies, solving practical problems, and designing traffic facilities. (2 hr. lec., 3 hr. lab.)

535. Airphoto Interpretation. 3 Hr. Study of techniques for obtaining qualitative information concerning type and engineering characteristics of surface materials. Use of airphoto interpretation for evaluation of engineering problems encountered in design and location of engineering facilities. (3 hr. rec.)

536. 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.)

537. 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. lec.)

538. Highway Safety Engineering. 3 Hr. PR: CE 431 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. lec.)

539. Traffic Engineering Operations. 3 Hr. PR: CE 534. 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.)

540. Environmental Chemistry and Biology. 3 Hr. PR: CE 322 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.)

546. Principles of Biological Waste Treatment. 3 Hr. PR: CE 540 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.)
549. Solid and Hazardous Waste Management. 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.)

550. Soil Properties and Behavior. 3 Hr. PR: CE 451 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. lec.)

551. Soil Testing. 3 Hr. PR: CE 351 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.)

552. The Finite Element Method. 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.

553. 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.

554. Statically Indeterminate Structures. 3 Hr. PR: CE 461 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. lec.)

555. Introduction to Structural Dynamics. 3 Hr. PR: CE 561. 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. lec.)

556. 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.)

557. Prestressed Concrete. 3 Hr. PR: CE 461 and CE 462 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. lec.)

567. Waterhammer. 3 Hr. PR: Consent. Analysis of pressure surges in pipelines.

568. 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.)

569. Environmental Fluid Mechanics. 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.)

572. 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. lec.)

573. 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.)

577. Wastewater System Conveyance. 3 Hr. PR: CE 422 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.)
732. *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. lec.)

740. *Environmental Systems Engineering*. 3 Hr. PR: 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. lec.)

742. *Water Treatment Theory*. 3 Hr. PR: CE 540. 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.)

744. *Industrial and Advanced Waste Treatment*. 3 Hr. PR or CONC: CE 540 or consent. Basic 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.)

748. *Design of Sanitary Works*. 3 Hr. PR: CE 321. Water supply and waste water disposal problems. Design of treatment facilities. (2 hr. lec., 3 hr. lab.)

751. *Advanced Mechanics of Soils*. 3 Hr. PR: CE 351 and CE 551 and MAE 640 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.)

752. *Advanced Foundation Analysis*. 3 Hr. PR: CE 451 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. lec.)

753. *Advanced Earthwork Design*. 3 Hr. PR: CE 453 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. lec.)

754. *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. lec.)

755. *Geotechnical Risk Assessment*. 3 Hr. PR: CE 451 and CE 453 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. lec.)

756. *Soil Dynamics*. 3 Hr. PR: CE 550 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. lec.)

757. *Geotechnical Case Histories*. 3 Hr. PR: CE 451 and CE 453 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. lec.)

760. *Finite Element Methods in Structural Analysis*. 3 Hr. PR: CE 561 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. lec.)

761. *Bridge Engineering*. 3 Hr. PR: CE 561 or consent. Statically indeterminate trusses, continuous trusses; steel and concrete arches; long-span and suspension bridges; secondary stresses. (3 hr. lec.)

762. *Numerical Analysis of Engineering Systems*. 3 Hr. PR: CE 561 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. lec.)

763. *Behavior of Steel Members*. 3 Hr. PR: CE 463 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. lec.)
764. *Light Gage Metal Design.* 3 Hr. PR: CE 461 and CE 463 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. lec.)

765. *Structural Design for Dynamic Loads.* 3 Hr. PR: CE 563 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. lec.)

766. *Analysis and Design of Multistory Structures.* 3 Hr. (May be repeated once.) PR: CE 563 and CE 462 or CE 463. 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. lec.)

767. *Behavior of Reinforced Concrete Members.* 3 Hr. PR: CE 462 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. lec.)

790. *Teaching Practicum.* 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.)

791 A-Z. *Advanced Study.* 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

792. *Directed Study.* 1-6 Hr. Directed study, reading, and/or research.

793. *Special Topics.* 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. *Seminar.* 1-6 Hr. Seminars arranged for advanced graduate students.

795. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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.

797. *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.)

798. *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.)

799. *Graduate Colloquium.* 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.* I, II, S. 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 graded credit toward a degree program.
The Lane Department of Computer Science and Electrical Engineering
George Trapp, Ph.D., Chairperson
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Degrees Offered

- Master of Science in Computer Science
- Master of Science in Electrical Engineering
- Master of Science in Engineering
- Master of Science in Software Engineering
- Doctor of Philosophy in Computer Engineering
- Doctor of Philosophy in Electrical Engineering
- Doctor of Philosophy in Computer and Information Sciences

Faculty

The Lane Department of Computer Science and Electrical Engineering, with 31 faculty members 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 Lane Department of Computer Science and Electrical Engineering offers master’s programs leading to a master of science in computer science (M.S.C.S.), a master of science in electrical engineering (M.S.E.E.), and a 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 the college in the Guidelines for Master’s 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 and information sciences, and the doctor of philosophy (Ph.D.) with specialization in electrical engineering or computer engineering. Ph.D. in electrical or computer engineering 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 for the M.S.E.E. or the Handbook for Computer Science Graduate Students for the M.S.C.S. and the department in the Doctor of Philosophy Program Guidelines. Ph.D. students in computer and information sciences must comply with the rules set forth in the Handbook for Computer Science Graduate Students.

How to Apply

Students can apply for WVU admission on-line at http://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 on our CSEE website (http://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:
- Fall semester: March 1
- Spring semester: October 1
- Summer session: January 1
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

- An M.S., Ph.D. in computer science.
- 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 CPE) or the sciences.
- M.S.S.E. (software engineering).
  See: Certificate in Software Engineering; Master of Science in Software Engineering for requirements.
- Ph.D. with major in CPE 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 status or provisional. The department also admits students to non-degree status in the College of Engineering and Mineral Resources, but these students are not admitted to any specific program. Regular status is given to students who are qualified for unconditional admission to a specific program. 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.

Provisional students must complete the requirements for transfer to regular status by the end of the semester in which they complete 18 credit hours. Usually provisional students are not considered for graduate assistantships or tuition waivers.

Non-degree status is granted upon request to students meeting the minimum admission requirements. A non-degree student is one who wishes to take courses without seeking a formal degree. Non-degree students require permission of the instructor to take courses that are restricted to specific majors. There is no guarantee of eventual acceptance into a degree program, and in no case may more than 12 hours be transferred to a degree program.

Non-degree students may not be offered graduate assistantships or tuition waivers.
Master of Science in Computer Science

General Description
The M.S.C.S. program qualifies a student to assume a professional role in industry or government, teach in a junior or senior college, or undertake advanced training toward a doctorate in computer science.

The following sections describe the general procedures to be followed in completing the M.S.C.S. degree. Note that steps are intended to be carried out in a specific order. Further details may be found in the Handbook for Computer Science Graduate Students.

Admission Requirements
Students who satisfy the admission requirements for all programs as given above, and who have at least a bachelor’s degree in computer science or a science, engineering, or mathematics discipline will be considered for admission. All applicants must submit three letters of reference and complete an Applicant Information Form.

Removing Deficiencies
The minimum background expected of any student entering the M.S.C.S. program is coursework equivalent to the following:

- One year of calculus (MATH 155 and 156).
- One course in probability and statistics (STAT 215).
- Knowledge of introductory programming in a high-level programming language (CS 110).

Students not meeting these minimum requirements will be required to take the equivalent coursework before applying to the M.S.C.S. program.

Students entering without a four-year bachelor’s degree in computer science may have additional deficiencies in their coursework which must be addressed before beginning the regular M.S.C.S. program. These students will be initially admitted with provisional status, and required to remove these deficiencies during their first 18 hours of coursework.

Possible deficiency areas for students having a bachelor’s degree in other disciplines represent the following core areas required of all undergraduate CS students:

- Data structures (CS 111).
- Software engineering (CS 330).
- Discrete mathematics (CS 220).
- Analysis of algorithms (CS 320).
- Assembler language and computer organization (CS 250).
- Theory of programming languages (CS 310).

To address these deficiencies, every fall semester the department offers three accelerated courses that cover the six core areas:

- CS 601 Foundations of Software Engineering (data structures, software engineering).
- CS 604 Semantics of Program Languages (computer organization, programming languages).

Students with deficiencies will be assigned to take one or more of these courses. A course may be waived if the student can document satisfactory completion of an equivalent course covering both of the equivalent areas. A student who is deficient in either area must take the corresponding course.

These are the only courses available to graduate students for meeting M.S.C.S. deficiency requirements. These courses are offered in the Fall semester only. Each course must be completed with a grade of B or better.

Program Requirements
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 400-level undergraduate coursework may be included. This option requires writing a thesis that represents research suitable for publication in a refereed journal. All theses are submitted to the University’s Electronic Thesis and Dissertation program.
The problem report option requires 33 credit hours: 30 hours of formal coursework and three hours of research. Again, at most nine hours of 400-level undergraduate coursework may be included. The problem 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. The following courses may be used to meet this requirement:

- Theory: CS 510, 520, or 522.
- Systems: CS 550 or 555.
- Applications: CS 530, 540, or 572.

The department or the student’s Graduate Committee may designate additional courses, including doctoral-level courses that may meet these requirements.

Graduate Committee

Before the end of the second semester as a regular master’s student, each student must form a Graduate Committee of at least three members. The chair of this committee must have regular graduate faculty status. For a committee overseeing a thesis, the majority of the members must also have regular graduate faculty status.

The role of this committee is to guide the student both in selection of courses and in research. At the time the committee is formed, the student submits for approval a preliminary plan of study listing the courses that have been taken or will be taken. The choice of thesis or problem report option should also be indicated on the plan of study, along with a tentative title for the thesis or problem report.

Research and Final Defense

After formation of the Graduate Committee and approval of the preliminary plan of study, the student may register for research using course number CS 697. Research may begin at the same time that the coursework is being completed. However, students should normally plan on the equivalent of one semester of full-time effort to complete a problem report, or two semesters to complete a thesis.

All master’s students must defend their thesis or problem report at an oral exam, attended by all members of the committee. The exam consists of two parts. The first part is a period of oral questioning on the student’s coursework. This questioning is intended to ensure that the student has learned the general concepts of the courses he or she has taken. The coursework part must be completed satisfactorily before the research defense can take place. A student who fails the coursework part may have one additional attempt during the same semester.

The second part is presentation of the research and a defense of this research by answering questions from the committee. This defense may occur directly after the coursework questions or at a later time. It cannot be held until the coursework questions are answered satisfactorily.

A student who fails the research defense may repeat the defense at most once, at a time determined by the Graduate Committee but not necessarily during the same semester.

Program Length

Normally a student who has attained regular master’s status should expect to spend two to three semesters plus an additional semester or summer session to complete the M.S.C.S. degree.

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 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 400-level 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 400-level 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 400-level 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 (M.S.E.)

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.CPE. 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.
- 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 and the certificate final exam paper. 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, CPE, or software engineering students** Students who have recently completed a bachelor’s degree in computer science, computer engineering, 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 Computer Science, Computer Engineering, 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. Instead, 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 697). 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 web page at http://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 CPE 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 600 and 700 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 (CPE 797 or EE 797) 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
General 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 in computer and information sciences (CIS) prepares a student for a teaching and research career in computer science or related information sciences, in industry, government, or advanced educational institutions.
An area of emphasis in combinatorial computing and discrete mathematics (CCDM) is offered within the CIS Ph.D. program. The CCDM Ph.D. program offers students the opportunity to pursue multidisciplinary studies across theoretical computer science, discrete mathematics, and statistics. Applicants are expected to satisfy the Admission Requirements for All Programs as given previously. In addition, for regular admission, applicants must satisfy certain CCDM specific prerequisites, and hold a master's degree in computer science, statistics, mathematics, a closely related field, or have completed equivalent graduate coursework. An applicant that does not meet all of these requirements may be admitted provisionally. Note that a CCDM Ph.D. student is not required to have or obtain the equivalent of a bachelor's or master's degree in computer science. The CCDM Entrance Exam replaces the CIS Ph.D. Qualifying Exam. Coursework requirements differ from those of the CIS Ph.D. program, but are not in conflict with any CIS Ph.D. requirements. Details for the CCDM Ph.D. program can be found in the Handbook of CCDM Ph.D. Program for Computer Science Graduate Students.

The following sections describe the general procedures to be followed in completing the regular CIS Ph.D. degree. Note that the steps are intended to be carried out in a specific order. Further details can be found in the Handbook for Computer Science Graduate Students.

Admission Requirements

Students who satisfy the Admission Requirements for All Programs as given previously, and who have at least a bachelor's degree in computer science or a science, engineering, or mathematics discipline will be considered for admission. All applicants must submit three letters of reference and a statement of purpose, which briefly explains their objectives in seeking the degree.

Removing Deficiencies

Normally, students who do not have at least the equivalent of a bachelor's degree in computer science will be admitted initially as provisional master's students. Their first requirement will be to complete all necessary preparatory work by taking the courses as described for the M.S.C.S. degree. After meeting this requirement, these students may apply for transfer to regular doctoral status.

In exceptional cases a student lacking some elements of the required background may be admitted directly as a provisional doctoral student. Students in this category must complete the needed preparatory work as described above during their first two semesters.

Preliminary Coursework

Doctoral students who do not have an M.S.C.S. degree must either earn this degree, or as a minimum, complete coursework as required for the M.S.C.S. with thesis option. It is not necessary to actually write a thesis. A minimum of 24 hours of coursework is required. Up to 12 hours may be transferred from work done at another institution.

Graduate Committee

During the second semester as a regular doctoral student, students must form their Graduate Committee and prepare a plan of study. Students planning to first complete an M.S.C.S. degree should initially form a Master's Committee consisting of three or more members, and follow the requirements for the M.S.C.S. as discussed above. In all other cases, or when the M.S.C.S. degree has been completed, students should form a Doctoral Committee of at least five members in consultation with the graduate coordinator. This committee must conform to all University and college requirements set forth in other sections of this catalog.

Qualifying Examinations

Within three years of admission to the doctoral degree program, applicants must take and pass a set of departmental qualifying examinations, demonstrating a breadth of knowledge in computer science. Information on the content of these examinations is made available by the department. The content is not necessarily limited to specific courses the student has taken.
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 a passing 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.

Regular Coursework
Students who have successfully passed the qualifying examinations, must then take, additionally, 18 hours of advanced graduate coursework at the doctoral level. Courses used to fulfill this requirement are selected in consultation with the Doctoral Committee. Up to six of these hours may be in directed study (CS 792). All other hours must be in regular courses.

Comprehensive Examinations
After completing all regular coursework, a doctoral student will be permitted to stand for the comprehensive examinations. These examinations are prepared for each student by the student’s Doctoral Committee. The examinations are intended to assess the student’s knowledge in areas closely related to his or her intended research area. The committee will determine the content and format of these examinations and the manner in which they will be administered.

Upon successful completion of the comprehensive examinations, the student is formally admitted as a candidate for the Ph.D. degree in CIS.

Research Prospectus
After completion of the comprehensive examinations, the doctoral student will present a research prospectus to his or her Graduate Committee, outlining the original research that the student proposes 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 that will be employed in an attempt to solve the research problem. After the committee has questioned the student on the prospectus and approved it (with any required modifications) as the doctoral research topic, the student will be permitted to register for doctoral research.

Research and Dissertation
After approval of the research prospectus, the student carries out the dissertation research under the supervision of the Doctoral Committee. Each doctoral student must register for a total of 18 hours of dissertation research using course number CS 797. Preliminary research may be carried out before the research prospectus is approved, but not before the Doctoral Committee is formed. Normally the research requirement is fulfilled by registration for nine hours or more in two consecutive semesters of residence, which also meets University residency requirements.

Research for the CIS Ph.D. degree must represent an interesting and original contribution to the field of computer science. The results of the research must be of a quality suitable for publication in an archival journal. The student must demonstrate a good knowledge of the literature related to the research topic and the relation of his or her own work to other work that has been reported. The dissertation must provide satisfactory theoretical or experimental evidence to demonstrate the soundness of the results presented.

The results of the research are reported in a dissertation, which is presented to the Doctoral Committee and formally defended in a public meeting. When the committee determines that the candidate has successfully completed and presented the research as outlined in the prospectus, the student will be certified for graduation.

Program Length
Scholarly achievements are more important than length of program, but a typical Ph.D. program requires at least two years after all master’s-level requirements have been completed. In many cases substantially more time is required.

After admission to candidacy, students must register for at least one credit hour during each semester. All requirements must be completed within five years of admission to candidacy.
Facilities and Centers for All Programs

The Lane Department of 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. The department is also located 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 a system testbed development facility. Department faculty serve as the primary leadership and technical staff for the Concurrent Engineering Research Center (CERC).

Computing Facilities

All graduate students have access to a broad variety of computing platforms for both classwork and research. The 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 Systems. 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, bioinstrumentation, 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, advanced motion controllers, and 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 Engineering

Computer engineering is a very broad area, covering hardware, firmware, and software engineering of complex digital systems and system components. Software and hardware systems design is the most technically intensive components of the electrical and computer engineering curriculum. A broad spectrum of research topics of both applied and theoretical nature are undertaken in the department. Some examples are: software verification and validation, software process improvement, 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 robots, computer-controlled electric and hybrid vehicle instrumentation, a distributed microprocessor monitoring system, knowledge-based decision support system, and microprocessor-based instrumentation. A large selection of hardware and software graduate courses are offered in the department. These cover topics such as switching theory, digital communication systems, VLSI design and testing, fault-tolerant computing, computer architecture, neural networks, applied fuzzy logic, real-time software design and development, and C++ object-oriented programming. In addition, the electrical engineering and computer engineering faculty collaborate very closely with the computer science faculty. Graduate students in the computer engineering area are encouraged to include courses from computer science in their program. The department offers dedicated laboratories equipped with personal computers and workstations to support classroom instruction and research. A number of computer engineering faculty have close cooperation with several interdisciplinary research centers at WVU such as the Concurrent Engineering Research Center, the Alternate Fuels Research Center, and the Constructed Facilities Research Center.

Control Systems

The control systems area is an important part of the research program in electrical engineering. The topic has great breadth in applications ranging from electrical power systems and electrical machines to electrically energized transportation systems. (Applications of control theory in power are described in the electric power systems program description as well as in this control program description). As a research area, control systems may be characterized as both modeling and control of complex systems of both deterministic and stochastic type. The department offers courses that provide the required background to prepare students for the design and analysis of control systems. Control theory, particularly as applied to large-scale systems, is a topic emphasized in the department’s research program. Current research is focused on the application of control to large dynamic systems, especially power systems, electrical machines, and maglev transportation systems. The work is primarily on algorithm development. In recent years external funding for control systems research has come from the National Science Foundation, the Departments of Energy and Defense, and electric utilities. Four faculty members in the Department of Computer Science and Electrical Engineering have significant research activities in control systems. Other faculty members in mathematics and mechanical engineering also collaborate in the exciting on-going work at West Virginia University in the control area.

Communications and Signal Processing

Communications and signal processing are two closely interrelated fields that play an important role in today’s information driven economy. Both fields involve the application of mathematics to the analysis and design of systems that convey and process analog and/or digital signals.
Communications research in the Lane Department of Computer Science and Electrical Engineering focuses on techniques to improve the performance of a wide variety of communication systems. The Wireless Communications Research Laboratory (WCRL) develops and analyzes protocols, error control mechanisms, and signal processing algorithms that enable low energy and/or high data rate transmissions in a cellular or wireless networking environment. Such technologies play a prominent role in third- and fourth-generation cellular networks and in wireless local area and personal area networking standards. A wireless testbed, consisting of low-power wireless transceivers and digital signal processing boards, allows researchers to test prospective protocols and algorithms in an actual wireless environment. The YAS Broadband Center of Excellence supports the broadband industry by performing research related to cable modem, digital subscriber loop (DSL), and fiber optic technologies. The focus of the department's broadband initiative is the development of signaling technology and network infrastructures capable of seamlessly conveying voice, video, and data with Quality of Service guarantees. In addition to the department's broadband and wireless activities, it conducts research involving the compression, storage, and retrieval of multimedia information, and the design and fabrication of RF transceivers.

Bioengineering and Biometric Systems

A majority of the signal and image processing research in the department is centered in the bioengineering and biometrics areas. Bioengineering is the multidisciplinary application of engineering to medicine and biology. 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 departmental projects in these areas 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, neural network, and genetic algorithms for matching of fingerprint and dental images, 3-D crano-facial reconstruction, multimedia information systems (images, video, and audio), distributed multimedia systems, and multimedia data storage and compression. Sponsors for this work include the Department of Defense, National Science Foundation, the American Heart Association, the National Institute of Health, and industry. In addition, the department is working in collaboration with the forestry department to characterize the temporal and spectral characteristics of bird calls. Reserach entities in the department include the Center for Identification Technology, a developing NSF Industry/University Cooperative Research Center, the Biomedical Signal Analysis Laboratory, and the Software Architectures and High Performance Computer Research Lab.

Electric 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 quite mature. Four faculty members have interest in electric power, and the department has an endowed position for Electric Power Systems. Graduate courses are offered regularly in power system stability and control, real-time control of power systems, computer applications in power system analysis, advanced electric machines and HVDC systems. In addition, there are three senior elective/graduate courses on the subjects of distribution, power electronics, and power systems analysis. The power group works closely with the control area that offers graduate courses in linear and nonlinear control systems, optimal control, and digital control. Recent and current research activities include control of power systems in a deregulated environment, energy balancing in a restructured market environment, modeling, controlling, and dispatching distributed resources, 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. The department has enjoyed continuous support from local utilities.
Electronics and Photonics

The field of electronics and photonics—initially microelectronics and now pushing well into nanoelectronics—is at a crossroads where further developments are forcing researchers to take a closer look at quantum mechanical processes to design and fabricate small dimensional devices. Students who chose to take the electronics area at WVU should obtain a deeper understanding of the physical basis for the design and fabrication of micro- and nano-electronic and photonic devices.

The suggested coursework draws upon the expertise of the WVU faculty in electrical engineering, physics, and chemical engineering—demonstrating the interdisciplinary characteristic of this field. These faculty have joined to form the Photonics and Microelectronics Working Group (http://msrc.wvu.edu/pmt/). The research areas that these faculty are involved in cover aspects of materials science, physics, and semiconductor electronics to design, grow, fabricate, and characterize novel electronic and photonic devices and small subsystems. Thus, the strength of the faculty is in experimental semiconductor physics and electronics. Present areas of research include wide bandgap semiconductor fabrication techniques, device design, and materials and device characterization; integration of photonics in microelectromechanical devices (MEMs) for active control and feedback; near-infrared and mid-infrared photonic materials and devices; nanoelectronic materials growth and device design; and the small-scale integration of photonic and electronic devices for sensing applications.

These faculty are also involved in research on electronic applications that, by their very nature, require the integration of knowledge from other disciplines. One such example is the increasing activity in the design and characterization of sensors for biometric and information assurance applications. The Center for Identification Technology Research (CITeR), (http://www.csee.wvu.edu/citer/) was recently established to coordinate the research in this area at WVU and three other universities and several industrial and governmental partners. Thus, students are encouraged to take courses outside of the more standard electrical engineering coursework, in information technology and biotechnology, so that they can effectively participate in these multidisciplinary research programs.

Much of the research in photonics and micro/nanoelectronics is supported by the laboratory facilities of the Microelectronic Systems Research Center (http://msrc.wvu.edu/). The facilities include a micro/nanofabrication laboratory, a photonics laboratory, a CAD/CAE facility with SUN workstations/PCs and commercial/academic software tools, an electronic and photonics test facility (device through small scale systems testing), and a surface-mount, printed circuit board fabrication and assembly facility. Students also have access to a number of other facilities across the University to support specific research projects—in physics, chemistry, chemical engineering, and the Health Sciences Center as examples.

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)

520. Application of Neural Networks. 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.


560. Introduction to Information Systems. 3 Hr. PR: CPE 310. This course will provide the student with background in the principles and practice of digital communications, beginning with early digital voice systems and extending through current systems based on “information” communications, including voice, data, and video.
572. Advanced Computer Architecture. 3 Hr. PR: CPE 271 and CPE 310, CPE 311 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.)

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


651. VLSI System Design. 3 Hr. Introduction to hardware modeling languages. CAD tools for logic synthesis and simulation. Design methodology. Rapid prototyping using field programmable gate arrays. IC chip design.

660. 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 system: communication standards and protocols; transmission fundamentals; network access protocols; local area and wide area networks, SONET, ATM, and Gigabit networks.

670. Switching Circuit Theory 1. 3 Hr. PR: CPE 271 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.)

673. Design of Computer Arithmetic Circuits. 3 Hr. PR: CPE 271 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.)


695. Independent Study. I, II, S. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.

697. 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.)

771. Switching Circuit Theory 2. 3 Hr. PR: CPE 670, 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 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.)

772. Advanced Digital Systems Design. 3 Hr. PR: CPE 572 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.

790. 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.)

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

792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.
796. **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.

797. **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.)

798. **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.)

799. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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)**

510. **Formal Specification of Language.** 3 Hr. PR: CS 410. 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.

512. **Design of Language Processors.** 3 Hr. PR: CS 410. 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.

520. **Advanced Analysis of Algorithms.** II. 3 Hr. PR: CS 320 Analysis and design techniques for efficient sequential and parallel algorithm design; NP-completeness, advanced analysis techniques, advanced algorithms, and parallel algorithms.

522. **Advanced Automata Theory.** 3 Hr. PR: CS 422. Survey of automata outside the Chomsky hierarchy with applicability to parallel processing, learning, temporal logic, and language processing.

525. **Advanced Mathematics of Computation.** 3 Hr. PR: MATH 375. Foundations of computer science; formal logic, graph theory, computability, and complexity theories.

530. **Formal Methods in Software Engineering.** 3 Hr. PR: CS 430. Principles of rigorous specification, designing, implementation, and validation of sequential, concurrent, and realtime software; emphasis on reading current papers on these topics.

533. **Developing Portable Software.** 3 Hr. PR: CS 330 and CS 450 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.

535. **Software Verification and Validation.** 3 Hr. PR: CS 310 and CS 330. Principles of formal software specification; formal verification, testing, and other validation techniques.

537. **Object-Based Software Design.** 3 Hr. PR: CS 330. Data type and structure specification, axiomatic and model-based specification, algebraic techniques, testing and verification specifications, data abstraction facilities in modern programming languages, examples, and associated algorithms.

540. **Theory of Database Systems.** 3 Hr. PR: CS 440. 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.

550. **Theory of Operating Systems.** 3 Hr. PR: CS 450. 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.

555. **Advanced Computer Systems Architecture.** 3 Hr. PR: CS 455 or CPE 442. 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.

557. **Software Engineering in Data Communications.** 3 Hr. PR: CS 450. 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.

570. Interactive Computer Graphics. 3 Hr. PR: CS 320. Viewing in three dimensions, projections, rendering of surfaces and solids, illumination and shading, interaction handling, display processors and programming systems, and graphics system organization.

572. Advanced Artificial Intelligence Techniques. 3 Hr. PR: CS 472. 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.

575. Artificial Neural Networks. 3 Hr. PR: MATH 543 or MATH 441 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.

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

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

601. Foundations of Software Engineering. 3 Hr. For CS provisional graduate students only. Object-oriented programming concepts applied to data structures such as queues, lists, and trees, techniques, and methods of developing software.

602. Foundations of Algorithms. 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.

604. Semantics of Programming Languages. 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.

690. 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.)


695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

719. Information Modeling. 2 Hr. PR: CS 440 or CS 537. Information modeling, data definition languages, graphical information models (NIAM and IDEF), computer-readable information models (EXPRESS); information exchange and sharing using STEP application protocols.

722. Advanced Theory of Computing. 3 Hr. PR: CS 520 or CS 522. Advanced structural complexity theory and its relationship to algorithmic problems. Interactive proofs, hierarchies (polynomial time, low, high) and hardness of approximation. (Alt. yrs.)

725. Computability and Recursive Function Theory. 3 Hr. PR: CS 525. 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.

727. Information Dissemination. 3 Hr. PR: CS 520. Research issues in information dissemination in graphs; emphasis on broadcasting and gossiping algorithms, including identification and solution of open research questions.
734. **Software Reuse.** 3 Hr. PR: CS 530 or CS 535. Formal and practical modular verification of functionality and performance; soundness and completeness of proof systems; module testing.

735. **Advanced Software Verification.** 3 Hr. PR: CS 535. Formal and practical modular verification of functionality and performance; soundness and completeness of proof systems; module testing.

740. **Advanced Databases Theory.** 3 Hr. PR: CS 540. Design theory for relational databases; functional dependencies; multivalued dependencies and normal forms; projection mappings, tableaux and the chase; representation theory.

757. **Distributed Systems and Algorithms.** 3 Hr. PR: CS 320 and CS 550. Distributed and networked operating systems and the algorithms necessary to achieve such goals as transparency, sharing, fault tolerance, and efficient process and task scheduling.

760. **Advanced Graphics and Multimedia.** 3 Hr. PR: CS 570 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.

770. **Global Knowledge Networks.** 3 Hr. PR: CS 572. Representational formalisms and effective retrieval techniques to obtain information from international knowledge repositories connected via high-speed networks.

775. **Advanced Neural Networks.** 3 Hr. PR: CS 575 or equivalent. Continuation of CS 575. 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.

790. **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.)

791 A-Z. **Advanced Topics.** 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

792 A-Z. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

793. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

795. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. **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.

797. **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.)

798. **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.)

799. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 provides 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.
Electrical Engineering (EE)

511. Applied Nonlinear Control. 3 Hr. PR: EE 411 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.


515. 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.)

517. 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.)

519. Digital Control. 3 Hr. PR: EE 411 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.)

525. 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.)

531. Advanced Electrical Machinery. 3 Hr. PR: Consent. Theory and modeling of synchronous, induction, and direct-current machines, and their steady-state and transient analysis. (3 hr. rec.)

533. Computer Applications in Power System Analysis. 3 Hr. PR: EE 436 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.)

535. Power System Control and Stability. 3 Hr. PR: EE 515. 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.)

537. Advanced Power Electronics and Drives. 3 Hr. PR: EE 435. Study of solid-state power semiconductor 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.

551. Linear Integrated Circuits. 3 Hr. PR: EE 355 and EE 356. (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.)

553. Integrated Logic Circuits. 3 Hr. (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-coupled, diode-transistor, transistor-transistor integrated logic circuits. (3 hr. lec.)

561. Communication Theory. 3 Hr. PR: EE 461 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.)

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

625. Advanced Signal Processing. 3 Hr. PR: EE 513 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.)

687. 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 687, CE 687, MINE 687, IMSE 687, and MAE 687.)

695. Independent Study. I, II, S. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.

697. 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.)

711. 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.)

713. Large-Scale System Modeling. 3 Hr. PR: EE 515. 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.)

715. Stochastic Estimation and Control. 3 Hr. PR: EE 517 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.)

731. Real Time Control of Power System. 3 Hr. PR: EE 515 and EE 517 and EE 533. Application of computers to modern control theory for reliable and economic real-time operation of integrated power systems. (3 hr. rec.)

733. Protection of Power Systems. 3 Hr. PR: EE 436 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.)

735. HVDC Transmission. 3 Hr. PR: EE 435 and EE 533. Line-commutated converter analysis, operation of twoterminal and multiterminal dc systems, harmonics and filters, modeling of ac/dc system, and design of modulation controllers.

790. 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.)


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

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

794. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
Software Engineering (SENG)

510. **Software Project Management.** 3 Hr. Techniques and tools for managing the software development process for large development projects.

520. **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.

530. **Validation and Verification.** 3 Hr. Tools and techniques for applied verification and validation of computer software including requirements, design, and code relevant to several development lifecycle models.

540. **Software Lifecycle and Configuration Management.** 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.

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

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

697. **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.)

Department of Industrial and Management Systems Engineering

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E-mail: wrmyers@mail.wvu.edu
Graduate IE web page: http://www.cemr.wvu.edu/~wwwie/iegraduate
Graduate Occupational Hygiene and Occupational Safety web page: http://www.cemr.wvu.edu/~wwwohos/
Graduate Safety Management web page: http://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 members. 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 ten Ph.D. students. The department is in the unique position in the United States of having two complimentary graduate programs in occupational health and safety accredited by the Applied Science Accredidation Commission (ASAC) of the Accredidation Board for Engineering and Technology (ABET). 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 ongoing funding opportunities are available to students in the areas of: ergonomics; operations research; manufacturing; occupational safety and health; artificial intelligence; and respirator research.

Master’s Degree Programs
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 hygiene and occupational 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 http://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 http://www.cemr.wvu.edu/~wwwie/iegraduate.
• The M.S. in occupational hygiene and occupational safety is accredited in industrial hygiene by the Applied Science 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 http://www.cemr.wvu.edu/~wwwohos/.
• The M.S. in safety management degree program is accredited in safety by the Applied Science 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 http://www.cemr.wvu.edu/~wwwsem/.

Admission
To qualify as a regular graduate student, applicants must have as a minimum, the equivalent of a 3.0 GPA. Applicants with a minimum 2.5 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 M.S.I.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 M.S. occupational hygiene and occupational safety program applicants must meet ABET/ASAC 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 coursework 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 M.S. safety management program applicants must meet ABET/ASAC 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 coursework. 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:

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 problem 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 coursework and the thesis or problem report. M.S. in safety management degree candidates may opt to complete a minimum of 30 credit hours, 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 at a minimum (or 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 coursework beyond their baccalaureate degree, with a minimum of 30 hours in industrial engineering or occupational safety and health. 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 or occupational safety and health subject matter. Upon completion of the coursework, 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)**

502. *Advanced Manufacturing Processes*. 3 Hr. PR: IMSE 302 and IMSE 303. 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.


505. *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.)

507. *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.)

508. *Advanced Problems in Manufacturing Engineering*. 1-3 Hr. PR: IMSE 593 or IMSE 502; 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.

509. *Computational Methods for Manufacturing Engineers*. 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.)

514. *Design of Industrial Experiments*. 3 Hr. PR: IMSE 314 or consent. Continuation of IMSE 314. More complex experimental design especially useful to engineering and industrial researchers, including factorial and optimum-seeking design. Emphasis on use of existing digital computer routines and interpretation of results.

518. *Forecasting*. 3 Hr. Various procedures used in forecasting technical developments.

525. *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.

542. *Advanced Production Control*. 3 Hr. PR: IMSE 350. 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, and under risk.


551. *Quality and Reliability Engineering*. 3 Hr. PR: Graduate standing. Introduction to quality and reliability engineering. Special emphasis on Taguchi Design and Markov Models for determining system reliability and availability.

553. *Applied Linear Programming*. 3 Hr. PR: IMSE 350 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.

555. *Scheduling and Sequencing Methods*. 3 Hr. PR: IMSE 350. Theory and applications of analytical models used in the scheduling models; flow shop models; job shop models; and assembly line balancing methods.

561. *Industrial Hygiene Engineering*. 4 Hr. Introductory course in industrial hygiene with laboratory. Topics include: recognition, evaluation, and control of occupational and environmental contaminants and physical agents; basic IH quantitative analysis; PPE selection and evaluation.
564. *Industrial Ergonomics*. 3 Hr. PR: IMSE 360 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.

593 A-Z. *Special Topics*. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

660. *Human Factors System Design*. 3 Hr. PR: IMSE 360 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.)

662. *Systems Safety Engineering*. 3 Hr. PR: IMSE 461 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.

668. *Advanced Problems in Human Factors*. 1-3 Hr. PR: IMSE 360 or IMSE 660 and graduate standing. Special problems relating to one of the areas of human factors, such as ventilation, ergonomics, controls, vigilance, safety, and occupational health.

677. *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.

678. *Costing and Estimating for Manufacturing*. 1. 3 Hr. PR: IMSE 377 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.

687. *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 687, CHE 687, EE 687, MINE 687, and MAE 687.)

698. *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.)

751. *Nonlinear Programming*. 3 Hr. PR: IMSE 350 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.

752. *Queueing Theory*. 3 Hr. PR: IMSE 213 and IMSE 350 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.

754. *Inventory Theory*. 3 Hr. PR: IMSE 213 and IMSE 350 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.

755. *Advanced Digital Simulation*. 3 Hr. PR: IMSE 455 or consent. Analysis and comparison of special purpose digital simulation languages such as GPSS, SLAM, SIMAN, SIMSCRIPT, CSMP, DYANOMO, and JOB SHOP simulation.

757. **Dynamic Programming.** 3 Hr. PR: IMSE 350 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.

758. **Integer Programming and Applied Networks.** 3 Hr. PR: IMSE 350 or consent. Introduction to application of integer programming and maximum flow networks to engineering and operations research problems. Emphasis on problem formulation and solution.

790. **Teaching Practicum.** 1-3 Hr. PR: Consent. Supervised practice in college teaching of industrial and management systems 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.)

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

792. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

793. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794 A-Z. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

795. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. **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.

797. **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.)

798. **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.)

799. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

**Occupational Hygiene and Safety (OH&S)**

621. **Epidemiology: Principles and Practices.** 2 Hr. PR: Consent. Principles and methods of epidemiology with emphasis on descriptive and analytical epidemiological methods.

627. **Industrial Hygiene-Noise Assessment and Control.** 3 Hr. PR: Consent. Industrial hygiene aspects of assessing and controlling noise induced hearing loss. Practical experience with noise dosimeters, sound-level meters and instrumentation used to access human noise exposure is provided by field trips and case studies.

628. **Ventilation Control Technology.** 3 Hr. PR: IMSE 561 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.

685. **Internship.** 3-6 Hr. PR: Consent. (May be repeated.) Professional internship providing on-the-job training under supervision of a previously approved environmentalist in settings appropriate to professional objectives.

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

692. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

693. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.
694. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

720. Foundations of Environmental Health Practice. 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.

725. Industrial Hygiene Sampling and Analysis. 4 Hr. PR: IMSE 561 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.

Safety and Environmental Management (SEM)

501. Safety Management Integration. 3 Hr. Consideration of integrated arrangements, staff roles, management theory, staff liaison, project improvement, effectiveness, audits, and collaboration needed to assure success of the safety function.

502. Controlling Environmental and Personnel Hazards. 3 Hr. 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.

505. Safety Legislation and Compliance. 3 Hr. 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.

528. 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.

533. Disaster Preparedness. 3 Hr. Major elements involved in disasters and emergencies, preparedness planning, systems utilization, and attention to essential human services, with emphasis on community action.

534. Fire Safety Management. 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.

539. Security Management. 3 Hr. Safety manager responsibilities for security of persons and property including organizational patterns, personnel competencies expected, surveillance and monitoring methods, and occupational problems among security personnel.

550. Loss Control and Recovery. 3 Hr. 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.

552. 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.
578. Substance Abuse in the Workplace. 3 Hr. The problem, nature, and effects of alcohol and drug use in the workplace; approaches for treatment and avoidance such as EAP’s, community programs, and testing; development of management approaches and programs.

580. Fundamentals of Environmental Management. 3 Hr. An introductory but comprehensive overview of topics related to environmental technology as it applies to safety management. Focuses on regulation and technology relative to environmental management. Includes field trip.


590. Instrumentation for Safety Managers. 3 Hr. 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.

591. Biomechanics of Safety Management. 3 Hr. 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.

599. Professional Field Experience. 1-18 Hr. PR: Must have completed 12 hours in SEM and consent. 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.

640. Advanced Topics. 1-6 Hr. Investigation of advanced topics not covered in regularly scheduled courses.

641. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

650. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

651. Research. 1-6 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading will be S/U.)

652. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

701. Essential Safety Management Information. 3 Hr. Examination of information needed for safety management success, harm investigation procedures, evaluation techniques, nonrealized profit calculations, and decision-making which should enhance improvement of all safety function affairs.

703. 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.

705. 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.)

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

710. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

713. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

714. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

715. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
796. 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.

797. 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.)

798. 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.)

Department of Mechanical and Aerospace Engineering
Gary J. Morris, Ph.D., Interim Chair
325 Engineering Sciences Building
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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 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) a 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 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 a completed application, application fee, and transcripts of all college work (directly from the institution) to the WVU Office of Admissions and Records.
- 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 paper-based TOEFL or a 213 on the computer-based 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.

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 coursework can be at the advanced (400) undergraduate-level, dependent upon the program desired by the student and the agreement of his or her Advisory and Examining Committee.

Courses

Only courses with grades of C or higher are acceptable for graduate credit, although all coursework taken will be counted in establishing the student’s grade-point average. No more than nine hours of 400-level credit can be counted toward meeting the coursework requirements for the M.S. degree. For the Ph.D., even though the absolute minimum set by the college is 18 hours of coursework 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 coursework for a doctoral degree can be at the 400-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 campus in Morgantown are necessary to meet residency requirements in the Ph.D. program.

Math Requirements

The Department of Mechanical and Aerospace Engineering requires that the graduate coursework 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 or her advisory and Examining Committee. A minimum of 30 hours of coursework (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 coursework 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 or 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 coursework. 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 or 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 coursework may consist of other courses from mechanical and aerospace engineering, other departments in the College of Engineering and Mineral Resources, or advanced coursework 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 or 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 or 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 design and manufacturing; 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, workstations, personal computers, and supercomputers), and shop facilities.

Regardless of the chosen specialty, the SMMS student is required to take six hours of courses from a core group consisting of MAE 543, MAE 641, 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)
515. 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.

521. Advanced Thermodynamics 1. 3 Hr. PR: MAE 321 or MAE 426. 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.


532. Dynamics of Viscous Fluids. 3 Hr. PR: Consent. Derivation of and exact solutions for the Navier-Stokes equations; laminar boundary-layer theory, laser-based holographic and moire interferometric equipment, a lung acoustic impedance measurement system, and modern orthopedic, rehabilitation, and computer research laboratories.

534. Fluid Flow Measurements. 3 Hr. PR: MAE 336 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.

543. 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.

615. 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.

621. Advanced Thermodynamics 2. 3 Hr. PR: MAE 521 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.
623. Conduction Heat Transfer. 3 Hr. PR: MAE 423 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.

624. Convection Heat Transfer. 3 Hr. PR: MAE 423 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.

625. Radiation Heat Transfer. 3 Hr. PR: MAE 423 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.)


633. Computational Fluid Dynamics. II. 3 Hr. PR: MAE 532 or equivalent. 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.

640. Continuum Mechanics. 3 Hr. PR: MAE 242 and MAE 243. Mathematical preliminaries including index notation; analysis of stress; analysis of deformation; fundamental laws, field equations, and constitutive equations; application to fluids and solids.

641. Theory of Elasticity 1. 3 Hr. PR: 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.


643. Inelastic Behavior of Engineering Materials. 3 Hr. PR: MAE 543 or consent. Characterization and constitutive relations of engineering materials; nonlinear elasticity, plasticity, viscoelasticity and creep; numerical implementation.

644. Fracture Mechanics. 3 Hr. PR: MAE 641. Linear-elastic and elastic-plastic fracture mechanics; fatigue, dynamic, and creep crack growth; fracture mechanics models for composite materials.


646. Advanced Mechanics of Composite Materials. 3 Hr. PR: MAE 446 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.

648. Experimental Stress Analysis. 3 Hr. PR: 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.)

650. Mechanical Metallurgy. 3 Hr. PR: MAE 244 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.
652. **Advanced Kinematics of Mechanisms.** 3 Hr. PR: MAE 452 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.

653. **Advanced Vibrations.** 3 Hr. PR: Consent. Dynamic analysis of multiple degree-of-freedom discrete vibrating systems; Lagrangian formulation; matrix and numerical methods; impact; mechanical transients.

654. **Advanced Machine Design.** 3 Hr. PR: Consent. Design for extreme environments, material selection, lubrication and wear, dynamic loads on cams, gears, and balancing of multiengines and rotors, electromechanical components.

656. **Advanced Computer Aided Design.** I. 3 Hr. 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.)

660. **Feedback Control in Mechanical Engineering.** 3 Hr. PR: 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.

662. **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 control schemes.

663. **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.)

647. **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 687, CHE 687, EE 687, MINE 687, and IMSE 687.)

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

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

694. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

697. **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.)

721. **Fundamentals of Combustion.** 3 Hr. PR: MAE 321 or MAE 426. Thermodynamics, chemical kinetics, and diffusion of reacting gases; laminar and turbulent flames; flame stability and ignition.

731. **Fundamentals of Turbulent Flow.** 3 Hr. PR: MAE 532 or MAE 733 or consent. Basic experimental data. Application of semi-empirical theories to pipe, jet, and boundary layer flow. Turbulent heat and mass transfer. Statistical theory of turbulence and recent applications.

733. **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.)

735. **Hydrodynamic Stability Theory.** 3 Hr. PR: MAE 532 or MAE 733 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-Sommerfield equation; Rayleigh-Benard flow; introduction to nonlinear stability theory.


744. *Theory of Plates and Shells*. 3 Hr. PR: MAE 543 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.

760. *Advanced Topics in Control Theory*. 3 Hr. PR: MAE 660 or MAE 465. 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.

790. *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 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.)


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


798. *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.

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
Department of Mining Engineering
Syd S. Peng, Ph.D., Chairperson
365A Mineral Resources Building
http://www.cemr.wvu.edu/~wwwmine/

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 coursework 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 600-level or 700-level courses while the remainder can be made up of 400-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, students 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 mining 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 three areas of specialization are mine systems, rock mechanics and ground control, and mineral/coal processing.

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 mining engineering consists of 54 hours of coursework 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)

611. Advanced Ground Control-Coal Mines. I, II. 3 Hr. PR: MINE 411 or consent. Ground and strata control for underground and surface coal mining, including slope stability and subsidence.

612. Surface Subsidence Engineering. II. 3 Hr. PR: MINE 411. Elements of surface subsidence engineering due to underground mining: theories of surface subsidence, characteristics and prediction of surface movements, and effects of surface movements.

620. Mobile Excavating and Materials Handling. I. 3 Hr. PR: Graduate standing and consent. Mobile mining equipment will be systematically analyzed as to functional, failure, production, and operational aspects. Included will be routine and innovative methods, and surface and underground applications, such as the hydraulic shovel and impactors.

621. 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.


629. Mine Wastes Management/Closure. 3 Hr. PR: Consent. Planning and design to control, detoxicate and contain mine openings for mine and mill closure in mineral industry. Regulatory frameworks.

631. Mine Ventilation Network Analysis. II. 3 Hr. PR: MINE 331 and MINE 381 or consent. Theory and computational techniques for mine ventilation network problems with emphasis on computer-aided analysis of complex mine ventilation systems.

632. Advanced Mine Ventilation. II. 3 Hr. PR: MINE 331. 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.

633. 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.

642. Advanced Mine Health and Safety. I. 3 Hr. PR: MINE 342 or graduate standing. Special emphasis will be placed on mine rescue, mine disaster prevention and organization, and mine property and equipment loss prevention.

651. Explosive Engineering Design. II. 3 Hr. PR: Consent. Rock drilling, total blast systems simulation, experimental studies in blast design, rock fracturing, chemical thermodynamics, kinetics, and reaction rates.

665. 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.

666. Stochastic Methods for Mineral Engineers. II. 3 Hr. PR: Graduate standing or consent. Application of stochastic methods to mineral engineering problems in equipment selection, renewal processes, mine ventilation, mine production, and mineral extraction.

671. Mine Production and Cost Management. I. II. 3 Hr. PR: MINE 381, MINE 471. Planning manpower and material requirements for different mining methods, forecasting productivity from production sections, analysis of mine cost components, scheduling and control of mine operations, integrated optimization of mine cost and productivity.

685. Graduate Seminar in Coal Mining. 3-6 Hr.

686. Graduate Seminar Coal Mine. 3-6 Hr.

687. 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 687, CHE 687, EE 687, IMSE 687, and MAE 687.)

688. Advanced Mine Design 1. 1-6 Hr. PR: MINE 482. Detailed design of the components of coal mine subsystems including ground control, excavation and handling, and life support subsystems. (1-6 hr. lec.)
689. **Advanced Mine Design**. I, II, S. 1-6 Hr. PR: MINE 482. 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.)

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

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

697. **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.)

711. **Theories of Surface Subsidence**. 3 Hr. PR: MINE 612. Theories of surface subsidence due to underground coal mining including empirical, profile function, theoretical and physical modeling methods, and time factors. (3 hr. lec.)

712. **Theory of Pillar Design**. 3 Hr. PR: MINE 411 and MINE 611. Examination of various theories of pillar design for room and pillar mining and longwall mining including chain pillars, barrier pillars, and bleeder pillars.

716. **Theory of Rock Failure**. I. 3 Hr. PR: MINE 414 or consent. Friction, elasticity, strength of rock, mechanism of brittle failure, factors affecting failure process, theories of failure, fracture propagation in rock, fracture toughness of rock and coal, fluid pressure, size, stress gradient, and time-dependent effects.

717. **Laboratory and Field Instrumentation**. I. 3 Hr. PR: MINE 411 and MINE 414 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.

718. **Rock Mechanics in Mine Design**. II. 3 Hr. PR: MINE 411 and MINE 414 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.)

731. **Mine Ventilation Network Optimization**. I. 3 Hr. PR: MINE 631 or consent. Application of mathematical optimization techniques to mine ventilation network problems, including linear and nonlinear optimization for controlled-flow and generalized networks.

751. **Theory of High Explosives**. II. 3 Hr. PR: MINE 651 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.

765. **Optimization Applications in Mining**. 3 Hr. PR: Graduate standing. 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.

769. **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.

790. **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.)


792. **Directed Study**. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

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

794. **Seminar**. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. **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.
797. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

Department of Petroleum and Natural Gas Engineering
Samuel Ameri, P.E., M.S. in Petroleum Engineering, Chairperson
347A Mineral Resources Building
E-mail: sameri@wvu.edu
http://www.cemr.wvu.edu/~wwwpe/

Degrees Offered

Master of Science in Petroleum and Natural Gas Engineering
Doctor of Philosophy in Engineering with a major in Petroleum and Natural Gas Engineering

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 coursework 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 coursework and three hours of independent study leading to a comprehensive problem report. At least 60 percent of the course credits must be from 500- or 700-level courses while the remainder can be made up of 400-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.
- A score of 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 coursework and 30 hours of independent research above and beyond a bachelor’s degree; or 30 hours of coursework 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)


532. Introduction to Reservoir Simulation. 3 Hr. PR or CONC: PNGE 434 or consent. Partial differential equations for fluid flow in porous media and the use of finite-difference equations in solving reservoir flow problems for various boundary conditions. Study of individual well pressures and fundamentals of history matching.

533. Secondary Recovery of Oil by Water Flooding. 3 Hr. PR: PNGE 333. Theory of immiscible fluid displacement mechanism, evaluation and economics of water flood projects, and oil field flooding techniques. (3 hr. lec.)

601. Fluid Flow in Porous Media. 3 Hr. PR: PNGE 434 and MATH 261 or consent. Theoretical and practical aspects of the physical principles of hydrodynamics in porous media. (3 hr. lec.)

632. Reservoir Simulation and Modeling. II. 3 Hr. PR: PNGE 532 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.

633. Advanced Secondary Recovery. 3 Hr. PR: PNGE 533. Secondary recovery of oil by gas flooding, miscible fluid injection, in-situ combustion, and heat injection. (3 hr. lec.)

634. Pressure Transient Analysis. 3 Hr. PR: PNGE 434 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.

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

693 A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

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

697. 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.)

701. Environmental Issues in Petroleum Engineering. 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.

710. Advanced Drilling Engineering. 3 Hr. PR: PNGE 310. Drilling optimization, methods for estimating formation pore and fracture pressures, air drilling, application of directional drilling and deviation control, horizontal drilling, coiled tubing applications.

711. Advanced Productions Engineering. 3 Hr. PR: PNGE 420. 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.

734. Advanced Reservoir Engineering. 3 Hr. PR: PNGE 434. Modeling and simulation of heterogeneous reservoirs, predicting the performance of the heterogeneous reservoirs during primary, secondary, and enhanced recovery production.
735. *Advanced Formation Evaluation.* 3 Hr. PR: PNGE 450. Advanced methods for interpreting well logs, shaly sand analysis, and production logging methods.

770. *Advanced Natural Gas Engineering.* 3 Hr. PR: PNGE 470. Application of reservoir modeling, history matching, and type curves techniques to analyze and predict the performance of conventional and unconventional gas reservoirs.

790. *Teaching Practicum.* 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.)

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

792. *Directed Study.* 1-6 Hr. Directed study, reading, and/or research.

793 A-Z. *Special Topics.* 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. *Seminar.* 1-6 Hr. Seminars arranged for advanced graduate students.

795. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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.

797. *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.)

798. *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.)
Degrees Offered

Doctor of Philosophy in Counseling Psychology
Doctor of Education
Master of Arts Counseling
Master of Arts in Educational Leadership Studies
Master of Arts in Educational Psychology
Master of Arts in Elementary Education
Master of Arts in Reading
Master of Science in Rehabilitation Counseling
Master of Arts in Secondary Education
Master of Arts in Special Education
Master of Science in Speech Pathology and Audiology
Master of Arts in Technology Education

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, 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 the college 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 coursework 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 coursework acceptable. The doctoral program must include coursework 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 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 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 or 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.

Master’s Degree Programs

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.

Three options are generally available in the college’s master’s programs; the student should refer to the specific program to determine the option that applies.

A. At least 30 semester hours of coursework, including six semester hours of research.
B. At least 30 semester hours of coursework, including three semester hours of research, selected in conference with the candidate’s committee, directed by the advisor, with final approval of the committee, and 27 semester hours of coursework.
C. At least 36 semester hours of approved coursework.

• 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 coursework 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 coursework 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, Fieldwork 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, Counseling psychology, Vocational psychology, Consulting models, Program design, Conflict resolution and mediation. Emeritus.


**Associate Professors**

Margaret K. Glenn, Ed.D. (George Wash. U.). Department chair and coordinator, master’s degree program in rehabilitation counseling. Rehabilitation counseling and leadership, Substance abuse rehabilitation, Problem gambling, HIV and employment.


**Assistant Professor**


**Visiting Assistant Professor**

Justin L. Boyce, Ph.D. (WVU). Counseling, Counseling psychology, Multicultural issues, Behavioral medicine, Severe psychological pathology.
Educational Leadership Studies

Professors
†Helen M. Hazi, Ph.D. (U. Pitt.). Legal issues affecting instructional supervision.
*Jon Reed, J.D. (WVU). Higher education law and policy.

Associate Professor

Assistant Professor
†Paul Chapman, Ph.D. (Va. Tech.). Public school leadership organizational dynamics ethics and leadership.

Visiting Assistant Professor

Adjunct Teaching and Field Practice Resource Personnel
D. Lyn Dotson, J.D. (WVU). Vice president for development, WVU Foundation Inc.

*Thomas S. Sloane, Ph.D. (Ohio St. U.). Assistant dean of student life. College student, Student development.

Douglas C. Smith, Ph.D. (Penn. St. U.). Program coordinator, Off-campus credit, Shepherdstown, WV.

Educational Psychology

Professors
†Daniel E. Hursh, Ph.D. (U. Kans.). Program coordinator. Applied behavioral analysis and Instructional design.
†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, and Life and work of B.F. Skinner.

Associate Professor

Assistant Professors
Andrew D. Katayama, Ph.D. (Miss. St. U.). Educational psychology, Learning, Metacognition, Study skills.
Carol S. Parke, Ph.D. (U. of Pitt.). Applied statistics, Research methods, Measurement.
†Neal Shambaugh, Ph.D. (Va. Tech.). Instructional design, Instructional technology, Cognition.
Educational Theory and Practice
Curriculum and Instruction
Elementary Education
Reading
Secondary Education
Special Education
Professors
Gabriel A. Nardi, Ph.D. (U. Wisc.). Mental retardation.
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
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.
Social and Cultural Foundations
Professors
Associate Professors
Esther E. Gottlieb, Ph.D. (U. Pitt.). Adjunct. Comparative and international education, Qualitative research methodology, Teacher education.
Visiting Assistant Professor
†Jaci Webb-Dempsey, Ph.D. (U.N.C.). Qualitative research and evaluation methodology, Social contexts of learning, Educational policy and school reform, Teacher action research.

Speech Pathology and Audiology
Professors
†Mary Ellen Tekieli Koay, Ph.D. (U. Okla.). Speech pathology. Cleft palate, Neurophysiology, 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
†R. Neal Shambaugh, Ph.D. (Va. Tech.). Instructional design, Instructional technology integration, Cognition.
The Educational Leadership Studies program at West Virginia University prepares individuals for leadership positions in elementary, secondary, and post-secondary educational institutions. While most of the program’s students pursue administrative careers, some prepare for college or university research, teaching, and/or staff positions. The 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. Applicants for the master’s program who have an undergraduate GPA below 2.75 must either submit a MAT score of at least 45 (raw score) or have an earned master’s degree from an accredited institution in order to be considered for admission. 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, P.O. 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 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 coursework, 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 Educational Leadership Studies program coordinator, the program secretary, or from individual 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 (EDLS)

601. Dynamics of Educational Organizations. 3 Hr. A foundation course which introduces students to school cultures, systems theory, hierarchy of school organizations, impact of global issues and forces, strategic planning, and the expanding role of technology as a learning and management tool.

602. Human Resources Dynamics. 3 Hr. An overview of personnel functions with a focus on recruitment, selection, orientation, evaluation, and development; interpersonal skills; motivational theories; and the utilization of technology in the personnel process.

603. Principles of Educational Leadership. 3 Hr. An exploration of the role of leadership in modern education. Topics and simulations include group processes, verbal and non-verbal communication, leadership styles, team building, interpersonal relations, conflict management, and ethical practices.

610. School Business Administration. 3 Hr. Efficient and effective operational procedures at the school and district level relating to the fiscal, spatial, physical conditions, safety and security, and information management systems are explored, including the use of technology.

611. Principles of Supervision. 3 Hr. Students develop instructional leadership skills in working with teachers to understand and improve classroom instruction. Topics include: developing a learning culture, supervisory theories and models, and integration of technology and best instructional practices.

612. School: Policies, Politics, and Laws. 3 Hr. An overview of statutes, common law, and court decisions. Topics include the politics of education, due process, policy development, the role of federal, state, and local government in public education, and the issues of diversity and equity in a school setting.

613. Planning/Research/Evaluation-School Leaders. 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.

614. Community and Media Relations. 3 Hr. This course will explore community attitudes, cultures, and communication strategies. It will provide students with resources to understand, evaluate, and improve internal and external school/community relations.

620. Site-Based Leadership. 3 Hr. PR: Consent. An overview course that focuses on the principal’s active role of applying theory to practice with a special emphasis on emerging trends and issues, goal setting, testing, curricular alignment with goals, facilities management, and the change process.

621. Principal Internship. 3 Hr. Practical experiences in leading and administering an organizational unit under the supervision of an administrator in the unit and an EDLS faculty member.

625. Topics in Supervision. 3 Hr. Special knowledge and skills for supervisors K-12 including media, computers, reading, multicultural education, testing, and special education.

631. Supervisor Internship. 3 Hr. Practical experiences in leading and administering an organizational unit under the supervision of an administrator in the unit and an EDLS faculty member.

641. Superintendent Internship. 3 Hr. Practical experience in leading and administering an organizational unit under the supervision of an administrator within the unit and an EDLS faculty member.
650. Higher Education Administration. 3 Hr. Key concepts of organization and administration within higher education institutions, concentrating primarily on the non-academic components of the institutions, from the president to first-level supervisor.

651. College Student Development. 3 Hr. Review of research and literature on college student development form beginning freshmen through graduate school. Emphasis on different student subgroups.

652. Assessment in Higher Education. 3 Hr. Critical analysis of contemporary assessment issues; develop sophisticated plans to evaluate the quality of student learning and growth in academic programs and student affairs.

653. 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.

654. College Student Affairs. 3 Hr. PR: Consent. A study of the organization, administrative functioning components, issues, and models of college student services using a historical and topical approach.

655. Institutional Advancement. 3-6 Hr. PR: Consent. Studies in fund raising, alumni relations, and foundation management.

656. College Business Management. 3 Hr. Covers knowledge of such areas as budgeting systems, budget preparation and administration, resource reduction and reallocation, and grants/contracts preparation and administration.

657. Community College Leadership. 3 Hr. An analysis of the historical/philosophical development of community colleges in the U.S. A specific focus on developing a critical understanding of the administrative and leadership issues.

659. Administrative Procedures in Adult Education. 3 Hr. PR: Consent. 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.

685. Practicum. 1-12 Hr.

691. Advanced Topics. 1-6 Hr. Investigation of advanced topics not covered in regularly scheduled courses.

693 A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

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

697. 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.)

701. Advanced Supervision. 3 Hr. PR: Consent. Learning how to work with teachers and principals to create a learning culture in schools and classrooms. Includes instruction in mentoring styles and assessment of instructional leadership styles.

702. Superintendency: Role and Responsibilities. 3 Hr. PR: M.A. in education leadership or equivalent, or consent. This course is designed to examine the concepts of effective school district leadership. Students will examine the roles, relationship behaviors, and competencies which characterize an effective educational organization.

703. Economics and Education Funding. 3 Hr. PR: M.A. in education leadership or equiv., or consent. This course will focus on the macro and micro economics concepts and their application to financing education and its infra-structure. The content will incorporate forces of economic change, development of new societal and educational infra-structures, and implications for social spending.

704. Education Facilities: Planning and Evaluation. 3 Hr. PR: M.A. in education leadership or equiv., or consent. The planning, evaluation, and management of current and future school facilities.

705. Public Education: Ethics/Laws/Policies. 3 Hr. PR: M.A. in education leadership or equivalent, or consent. This course will focus on ethics, educational responsibility, and the legal concepts relating to human resources management and student rights. The content is designed to develop an understanding of the judicial process and its effect on public school law and to understand the legal parameters within which the educational CEO operates.
706. Learning Organizations: Culture, Technology, and Change. 3 Hr. PR: M.A. in education leadership, or equivalent, or consent. This course will focus on the concepts of results-based strategic planning, critical inquiry, and new assessment paradigms. The content will emphasize beginning where we are, authentic assessment of learning and horizontal assessment of processes, and broadening the base of responsibility for processes and results (outcomes.) New knowledge about and use of information systems, integrating technology and high performance learning expectations, and the CEO’s role in the process will be addressed.

707. Politics and Education. 3 Hr. PR: M.A. in education administration, or equiv., or consent. The purpose of this course is to raise the student’s awareness and comprehension of the role political processes play in shaping the fundamental governance and organizational structures of American education. A special emphasis will be placed on the role of the state and national government.

708. Changing Organizations. 3 Hr. PR: M.A. in education administration, or equiv., or consent. Interdisciplinary study of the major concepts of education administration theory and its application to educational settings. Topics include organizational change, understanding of organizational dynamics and relationships, motivation, empowerment, and responding to human resource needs.

751. Academic Affairs Roles. 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.

752. 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.

753. Adult and Continuing Education. 3 Hr. Principles, concepts, and processes involved in programming for adults in a community setting. Nature of adult learning, subject matter, and learning environment.

754. History and Policy 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.


756. Higher Education Finance. 3 Hr. Financial concerns in higher education with emphasis on taxation and legislative actions, sources of income, budgeting, and cost analysis.

757. Institutional Research and Analysis. 3 Hr. Analysis and interpretation of data relevant to decision making and the allocation of institutional resources.

758. 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.

760. Curriculum Developments and Reform in Higher Education. 3 Hr. Analyze curriculum development and implementation issues. Critique different curriculum designs in general education and major academic programs too.

785. Education Administration Internship. 3-6 Hr. (May be repeated for credit.) PR: Consent. Practical experiences in the administration of a collegian unit under the supervision of an administrator within the unit.

790. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of education leadership 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.)

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

792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty-supervised study of topics not available through regular course offerings.
796. *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.

797. *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.)

798. *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.)

799. *Graduate Colloquium*. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

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.

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**Educational Psychology**

Daniel E. Hursh, Program Coordinator

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 also are 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:

- EDP 600 *Educational Psychology*
- EDP 611 *Measurement/Evaluation in Educational Psychology*
- EDP 613 *Statistical Methods 1*
- EDP 621 *Applied Behavior Analysis*
The master's requires a minimum of 30 hours of coursework including the completion and successful defense of a thesis or the completion of 30 hours of coursework 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 should 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 degree.

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:
1. One Professional Seminar (EDP 794).
2. EDP 710 Seminar in Educational Research (PR: EDP 613).
3. EDP 740 Principles of Instruction.
4. A selection of two of the following courses in the area of learning and development.
   - EDP 620 Introductory Behavior Analysis: Human Resources
   - EDP 621 Applied Behavior Analysis
   - EDP 700 Psychological Foundations of Learning
   - EDP 701 Memory
   - EDP 702 Human Development and Behavior
   - EDP 730 Cognition and Strategic Learning
   - EDP 731 Cognition in Social Contexts
   - SCFD 620 Philosophy of Education

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 (EDP)
500. Development for Teachers. I, II. 3 Hr. PR: EDUC 400. Cognitive, social, emotional, and physical development of children and young adolescents with application to school settings.

540. Media and Microcomputers in Instruction. 3 Hr. The effective operation and educational uses of educational media including microcomputers. Hands-on experience with equipment, and in designing materials for an instructional unit incorporating media and/or microcomputers.

600. Educational Psychology. 3 Hr. Designed for beginning graduate students. Psychological principles of learning and development as they relate to processes of instruction.

610. Measurement/Assessment for the Classroom Teacher. 3 Hr. An examination and application of classroom testing and measurement principles in the assessment and evaluation of student performance.

611. 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.

612. Introduction to Research. 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.

613. Statistical Methods 1. 3 Hr. PR: MATH 126. 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.

614. Statistical Methods 2. 3 Hr. PR: STAT 511. 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.

616. Non-parametric Statistics. 3 Hr.

617. Program Evaluation. 3 Hr. An awareness of the purposes, ethics, issues of design, methods, and models of program evaluation.


621. Applied Behavior Analysis. 3 Hr. PR: EDP 620 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.

640. Instructional Design. 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.


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

697. 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.)


701. Memory. 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.

702. Human Development and Behavior. 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. It is recommended that students complete EDP 600 prior to registering for this course.

703. 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. It is recommended that students complete EDP 600 prior to registering for this course.
710. Seminar: Educational Research. 3 Hr. PR: EDP 613 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.

711. Multivariate Methods 1. 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 SPSS Procedure Matrix for data analyses. (Alt. yrs.)

712. Multivariate Methods 2. 3 Hr. PR: STAT 511 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. (Alt. yrs.)

713. Designing Single Case Research. 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.

720. Conceptual Foundations of Behavior Analysis. 3 Hr. Comprehensive introduction to the basic science of human behavior and its philosophy. Provides a conceptual framework for a variety of applied fields.

721. Verbal Behavior 1. 3 Hr. PR: EDP 621. Behavioral analysis of complex verbal behavior in person-to-person contacts in text materials and in instructional systems. (Alt. yrs.)

730. Cognition and Learning. 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.


732. Interactive Technologies in Education. 3 Hr. Principles of human cognition on 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. (Alt. yrs.)

740. Principles of Instruction. 3 Hr. Basic principles of teaching-learning process implied in major learning theories; study of factors in learning, variables in instructional programming, and principles of instructional design.

790. Teaching Practicum. 1-3 Hr. 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.)

791 A-Z. Advanced Topics. 1-6 Hr. Investigation of advanced topics not covered in regularly scheduled courses.

792 A-Z. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793 A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. 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 choice.

797. 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.)

798. 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.)
799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in his/her departments 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.)

Social and Cultural Foundations
Sam F. Stack, Associate Professor
508-G 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 intensive 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)

600. Sociology of Education. 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.

620. Philosophy of Education. 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.

640. History of American Education. 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.

650. 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.

685. Practicum. 1-12 Hr. PR: Consent.

693. Special Topics. 1-6 Hr. PR: Consent.

694. Seminar. 1-6 Hr. Selected topics in historical, sociological, and philosophical foundations of education. (Titles to be announced each semester.)

697. 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.)

790. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of SCFD. 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.)

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

792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. 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.
797. 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.)

798. 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.)

799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

Technology Education
David L. McCrory, Chair
509 Allen Hall
http://www.wvu.edu/~teched

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 focuses on the study of communication and information systems and instructional design technology.

- Communication and Information Systems—Study of visual, acoustical, telecommunication, and computer systems including the analysis of information transfer and its social/cultural impact.
- Instructional Design Technology—Study of instructional design appropriate for the development and delivery of instruction by electronic means.
Students may also include in their plans of study special themes related to technology including appropriate technology, curriculum, 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 interests, 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 (CAIS), or instructional design and Technology (IDT). 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 fifteen core credits, 18 credits in the area of the specialization, and six credits in the area of research. Specific courses and activities in each of these categories are listed as follows.

**Communication and Information Systems (CAIS)**

**Professional Core**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 730 Introduction to Technology</td>
<td>3</td>
</tr>
<tr>
<td>TE 731 Interdisciplinary Seminar</td>
<td>3</td>
</tr>
<tr>
<td>TE 740 Curriculum Development</td>
<td>3</td>
</tr>
<tr>
<td>TE 600 Development of Instructional Materials</td>
<td>3</td>
</tr>
<tr>
<td>EDP 640 Instructional Design</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
</tr>
</tbody>
</table>

**Specialization**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 601 Distance Education</td>
<td>3</td>
</tr>
<tr>
<td>TE 702 Rural Telecommunications</td>
<td>3</td>
</tr>
<tr>
<td>TE 710 Contemporary Problems in Communication</td>
<td>3</td>
</tr>
<tr>
<td>TE 711 Technical Development in Communication</td>
<td>3</td>
</tr>
<tr>
<td>Approved Electives</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>18</td>
</tr>
</tbody>
</table>

**Research/Practicum**

**Thesis Option**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDP 612 Introduction to Research</td>
<td>3</td>
</tr>
<tr>
<td>TE 698 Master’s Degree Research</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>6</td>
</tr>
</tbody>
</table>

**OR**

**Coursework Option**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE Approved Electives</td>
<td>6</td>
</tr>
</tbody>
</table>

| **Total Hours** | 39 |

**Instructional Design and Technology (IDT)**

**Professional Core**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE 600 Development of Instructional Materials</td>
<td>3</td>
</tr>
<tr>
<td>TE 730 Introduction to Technology</td>
<td>3</td>
</tr>
<tr>
<td>TE 731 Interdisciplinary Seminar</td>
<td>3</td>
</tr>
<tr>
<td>TE 740 Curriculum Development</td>
<td>3</td>
</tr>
<tr>
<td>EDP 640 Instructional Design</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
</tr>
</tbody>
</table>
Specialization

EDUC 605 Trends and Issues in IDT .................................................................................. 3
TE 611 CMC in Education ................................................................................................... 3
TE 750 WBI Design ............................................................................................................. 3
TE 744 Instructional Technology Integration ...................................................................... 3
Approved Electives ............................................................................................................. .6
Total .................................................................................................................................. 18

Research/Practicum

Thesis Option
EDP 612 Introduction to Research ..................................................................................... 3
TE 698 Master’s Degree Research ..................................................................................... 3
Total .................................................................................................................................. 6

OR

Coursework Option
TE Approved Electives ........................................................................................................ 6
Total Hours ................................................................................................................................ 39

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

TE 710 Contemporary Problems in Communication ................................................................ 3
TE 711 Technical Developments in Communication ................................................................ 3
TE 731 Interdisciplinary Seminar ........................................................................................ 3
TE 732 Technology: Its History and Development ................................................................ 3
TE 733 Readings in Technology and Culture ......................................................................... 3
TE 734 Innovation and Invention ......................................................................................... 3

Technology Education (TE)

600. Development of Instructional Materials. 3 Hr. Design and development of media and instructional units for education in the technologies.

601. Distance Education. 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.

611. 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 environments.

685. Practicum. 1-12 Hr.

691 A-Z. Advanced Topics. 1-6 Hr. Investigation of advanced topics not covered in regularly scheduled courses.
693 A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

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

701. Technical Developments in Transportation. 3 Hr. Selected developments in transportation technology. Principles, concepts, and processes fundamental to the design and development of transportation systems.

702. 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.

710. 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.

711. 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.

721. 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.

730. Introduction to Technology. 3 Hr. An introduction to selected technical concepts and the evolution of the technical systems of transportation, communication, and production, with a focus on the relationship of these systems to technological change and the civilization process.

731. 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.

732. 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.

733. Readings in Technology and Culture. 3 Hr. Fundamental, historical, and contemporary ideas of the nature of technology as an area of created knowledge.

734. Innovation and Invention. 3 Hr. A study of the innovation and invention process.

740. Curriculum Development and Technology. 3 Hr. Development of curriculum components for the study of technology.

741. Design in Technology. 3 Hr. Study of the design of technical products and systems.

744. 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.

750. Web-Based Instructional Design. 3 Hr. PR: TE 611 or consent. Addresses 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.

751. Internet for Educational Research. 3 Hr. PR: TE 611. An introduction and exploration into the use of Computer Mediated Communication (CMC) for conducting educational research and as a learning/teaching tool.

790. Teaching Practicum. 1-3 Hr. 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.

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

792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.
794. **Special Seminars.** 1-6 Hr. Seminars arranged for advanced graduate students.

795. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. **Graduate Seminar.** 1 Hr. 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.

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

798. **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.)

799. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.

### Department of Counseling, Rehabilitation Counseling, and Counseling Psychology

**Counseling**

Margaret K. Glenn, Chair
502 Allen Hall
P.O. Box 6122
http://www.wvu.edu/~crc

**Degrees Offered**

- **Master of Arts**
- **Master of Science**
- **Doctor of Philosophy in 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 of the curriculum allow emphasis in school counseling and community 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 501 Counseling Theory and Techniques I
- COUN 505 Theory and Practice of Human Appraisal
- EDP 612 Introduction to Research
- COUN 606 Counseling Theory and Techniques II
- COUN 608 Organization of School Guidance Services*
- COUN 609 Group Counseling Theory and Techniques
- COUN 620 Lifespan Career Counseling
- COUN 622 Community Counseling
- COUN 630 Counseling Children and Adolescents
- COUN 632 Counseling Adolescents and Adults
- COUN 634 Cultural Issues
- COUN 640 Addictions Counseling
- COUN 645 Couples and Family Counseling
- COUN 685 Practicum
- COUN 686 Counseling Internship

* 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 coursework. Please note: doctoral-level courses in counseling have the prefix CPSY.

Application

Applications for admission to the counseling program should be made to WVU’s 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 coursework 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 coursework, including practicum and internship. A minimum of 48 hours of coursework with a 3.0 grade-point average is required. The curriculum and total program hours are under review. Please check the department for current requirements.

In addition to completing all coursework 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 coursework 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 coursework 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 coursework 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 coursework 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 coursework.
- 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 an internship. The internship is a full-time calendar year at 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)

303. Introduction to Helping Professions. I, II, S. 3 Hr. To assist in evaluating students potential for a career in the helping professions. Exposure is provided to client populations served by helping professionals, along with a selection of intervention strategies used in those professions.

416. Behavior Problems and the School. II. 3 Hr. A course primarily oriented toward assisting educators to utilize current psychological principles related to classroom discipline, as well as academic and social adjustment.

483 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.

501. Counseling Theory and Techniques 1. I, II, S. 3 Hr. PR: Consent. Development and application of basic counseling skills including interviewing, clinical observations, and a general orientation to counseling theory and 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.

505. 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, ethical standards, and interpretation of selected instruments.


622. Community Counseling. II, S. 3 Hr. PR: (COUN 501 and COUN 620 and PR or CONC: COUN 606) or consent. Role and function of the community agency counselor; DMS categories and ethical standards, cognitive skills and practical experience necessary to understand client populations served by community agencies.

630. Counseling Children and Adolescents. I, S. 3 Hr. PR: COUN 501 and PR or CONC: COUN 606 and consent. Practical application of the principles of counseling to the elementary and high school age population. Emphasis on developmental stages, diversity, and ethics.

631. Consultation Theory and Techniques. 3 Hr. PR: COUN 606. Strategies in schools and agencies.

632. Counseling Adolescents and Adults. II, S. 3 Hr. PR: (COUN 501 and PR or CONC: COUN 606) or consent. Techniques and models that apply to the counseling of adolescents and adults. Emphasis will be given to stages of adolescents and adult development, ethical standards, diversity, and implications for behavior. Demonstration of counseling with adolescents and adults is required.

634. Cultural Issues. II, S. 3 Hr. PR: (COUN 501 and PR or CONC: COUN 606) 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.

640. Addictions Counseling. II, S. 3 Hr. PR: (COUN 501 and PR or CONC: COUN 606) or consent. Specific techniques and models that apply to counseling the addicted client will be explored. Chemical addictions, food addictions, relationship addictions, sexual addictions, and ethics will be addressed. Demonstration of counseling clients with various addictions is required.

645. Couples and Family Counseling. I, S. 3 Hr. PR: COUN 501, COUN 606 or consent. Techniques and methods of couples and family counseling. Emphasis on ethics, diversity, theory, and practice of couples and family counseling. Demonstration of counseling skills for couples and families is required.

660. Field Experience in School Counseling. I, II, S. 3 Hr. PR: (COUN 606 and COUN 630 and COUN 632) and PR or CONC: COUN 685 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.

661. 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.

662. 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.

663. 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.

664. Ethical Issues in Counseling. I, S. 3 Hr. PR: COUN 501 and COUN 505, and COUN 606. Surveys the legal and ethical issues and professional ethics codes in the counseling profession. Ethical principles applied to schools, agencies, and private practice.

665. Use of DSM in Counseling. I, II, S. 3 Hr. PR: COUN 501 and COUN 606. 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.

673. Professional Development. 1-6 Hr.
685. **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.]

686. **Counseling Internship.** I, II. 1-12 Hr. PR: Preregistration, completion of COUN 585 (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.

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

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

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

697. **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.)

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.

900 A. **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)**

701. **Advanced Counseling Psychology Interventions.** I. 3 Hr. PR: Advanced standing and COUN 501 and COUN 606 and COUN 685 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.

709. **Advanced Group Counseling/Therapeutic Interventions.** 3 Hr. PR: COUN 609 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.)

731. **Advanced Consultation Techniques.** I. 3 Hr. PR: COUN 631 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.

734. **Multicultural Psychology.** 3 Hr. PR: CPSY advanced standing and CPSY 701. Interactive effects of cultural factors (race, ethnicity, gender, sexual orientation, social status, religious affiliation) as they relate to counseling psychology practice, competences, and roles. (Alt. yrs.)

760. **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.

763. **Advanced Theories of Counseling Psychology.** II. S. 3 Hr. PR: COUN 606 and COUN 685, or equiv., admission to post-master’s graduate study; and consent. A comprehensive study of the theoretical issues in contemporary counseling.

764. **Intellectual Assessment.** II. 4 Hr. PR: Advanced standing, COUN 505 and pre-registration with instructor. Administering, scoring, and interpreting individual intelligence tests.
766. **Vocational Theory and Assessment.** II. 3 Hr. PR: COUN 620 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.

769. **Personality Testing and Interpretation.** I. 3 Hr. PR: COUN 505 and consent. Advanced study in the application of personality assessment procedures and consideration of alternative methods for measuring human behavior.

770. **Doctoral Practicum in Counseling Psychology.** 1-9 Hr. PR: CPSY 701 and CPSY 769 and CPSY 780 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.)

772. **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.

780. **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.

782. **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.)

783. **Counseling Psychology Supervision Models.** I. 3 Hr. PR: CPSY 701 and CPSY 780 and at least one semester of CPSY 770 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.

790. **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.)

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

792. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

793. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794 A-Z. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. **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.

797. **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.)

798. **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.)

799. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
Degree Offered

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 coursework in counseling as well as specific coursework 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 coursework 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 coursework 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 501  *Counseling Theory and Techniques I*
COUN 505  *Theory and Practice of Human Appraisal*
COUN 606  *Counseling Theory and Techniques II*
COUN 609  *Group Counseling Theory and Techniques*
REHB 600  *Introduction to Rehabilitation Services*
REHB 610  *Medical Aspects of Rehabilitation*
REHB 612  *Psychological Aspects of Disability*
REHB 620  *Career Development and Job Placement*
REHB 624  *Rehabilitation Client Services*
REHB 672  *Counseling Practicum*
REHB 675  *Clinical Practice*
REHB 680  *Seminar*

Application

Applications for admission to the rehabilitation counseling program should be made to the WVU, 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 coursework 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.
• 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
Admission to the program 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 2004, is October 15, 2003.

Counseling (COUN)
501. Counseling Theory and 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 theory and 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.

505. 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, ethical standards, and interpretation of selected instruments.


Rehabilitation Counseling (REHB)
600. 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.

610. Medical Aspects of Rehabilitation. I. 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.

612. Psychological Aspects of Disability. II, S. 1-3 Hr. PR: REHB 610 graduate standing and consent. The impact of disability considering cultural, intrapersonal, and interpersonal factors. Methods of assisting persons to adjust to problems of disability.

614. 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.
620. 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.

621. Vocational Evaluation Systems and Techniques. II. 3 Hr. PR: REHB 600. 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.

622. Advanced Vocational Evaluation Techniques. S. 3 Hr. PR: REHB 621. 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.

623. Seminar in Vocational Evaluation Services. S. 3 Hr. PR: REHB 621 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.

624. Rehabilitation Client Services. I. 3 Hr. PR: REHB 620. The planning and management of client services focusing on serving the public and private sectors. The human service and rehabilitation service systems will be explored considering both career and independent living issues.

662. Clinical Seminar in Rehabilitation Counseling. II. 3 Hr. PR: REHB 600, graduate standing, and consent. Exploration and evaluation of current methods of service delivery to vocational rehabilitation clients. Analysis and integration of service systems and the needs of the disabled client.

674. 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.


682. 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.

690. 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.)


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

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

694. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

696. 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.

697. 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.)
698. 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.)

699. Graduate Colloquium. I, II. S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 program.)

Department of Education Theory and Practice
Elizabeth A. Dooley, Chair
602 Allen Hall
http://www.wvu.edu/~hre/departments/etp/etpindex.htm

Degree Offered
  Master of Arts
  Area of Emphasis for Doctor of Education

Curriculum and Instruction

Doctor of Education
The curriculum and instruction area of specialization for the doctoral degree is designed to prepare candidates to teach at college or university levels, work with school districts or other agencies in curriculum areas, or to hold leadership positions in organizations that emphasize teaching and learning. Program flexibility allows candidates to design programs that meet their career goals. All programs are approved by an advisor and Faculty Committee.

The program requires a minimum of 72 hours beyond the baccalaureate degree, including 42 hours beyond a master’s degree. In addition, the completion of a major in curriculum and instruction, an area of specialization, a core of foundations and research courses, successful completion of a comprehensive examination, and an approved dissertation are mandatory.

Admission All applicants must comply with the requirements of WVU, and College of Human Resources and Education, and the curriculum and instruction emphasis area program. Entrance requirements for the curriculum and instruction area of entrance for the Ed.D. are as follows:
  • Completion of a master’s degree; preferably in a curriculum or instruction area.
  • Graduate grade-point average of a 3.25 or higher.
  • A goals statement that describes the extent to which the applicant’s goals may be accomplished through the program.
  • Three letters of references.
  • Total GRE score of 1500 or above with a minimum score of 400 on each part (verbal, quantitative, and analytic), or a Miller Analogies Test score of 50 or above. International students from a country in which English is not the native language must have a TOEFL score of at least 550.

Applications are reviewed and admission recommendations are made by the Programs Doctoral Admissions Committee. The number of students accepted into the program in each admission period is determined by available resources.

Candidacy Students are accepted for study toward the Ed.D. with an emphasis in curriculum and instruction upon admission into the program. To advance to candidacy for the doctorate, the student must:
  • Complete prerequisite doctoral program coursework with at least a 3.0 grade-point average.
  • Pass a written comprehensive examination.
  • Have a research prospectus approved by his or her Dissertation Committee.
Inquires

For additional information concerning program requirements, deadlines, and timelines, please direct inquiries to the Chair of Educational Theory and Practice, 602 Allen Hall, College of Human Resources and Education, West Virginia University, P.O. Box 6122, Morgantown, WV 26506-6122; or phone (304) 293-3411.

Elementary Education
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 master’s 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, and 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

<table>
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(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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<th>C***</th>
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**Total required courses**: 27 24 18

**Approved electives**

**Restricted electives in**

**Supportive electives in education** (All elective courses must be approved by the advisor before enrollment.)

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**Total for master’s degree**: 30 30 36

*Program A—Thesis required.

**Program B—Research problem required.

***Program C—36-semester hour coursework program.

Note: New requirements for the master’s degree in elementary education are now being developed. Information concerning any new degree requirements are available at the Department of Educational Theory and Practice.

**Curriculum and Instruction (C&I)**


584. *Student Teaching: Elementary-Early Childhood.* I, II. 2-12 Hr. PR: For elementary and early childhood undergraduates who meet eligibility requirements and other guidelines. (Applicable to preschool, nursery, day care, child care, kindergarten, primary grade, or elementary school.)

585. *Student Teaching: Secondary Education.* I, II. 2-12 Hr. PR: Students enrolled in secondary education undergraduate programs who meet eligibility requirements and other guidelines.

587. *Advanced Clinical Experience.* I, II. S. 1-6 Hr. PR: Consent. Clinical experience in teaching-learning situations at any level.

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

600. *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.

601. *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.

604. *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.

606. *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.
608. 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.

609. Experiences in Alternative Learning Environments. I. 6 Hr. PR: C&I 608 and SCFD 620 and consent. This course helps teachers to learn and practice skills that are needed to be an effective teacher in an alternative teaching environment. (Alt. yrs.)

612. Early Childhood Curriculum. I. 3 Hr. PR: (C&I 410 and C&I 411) 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.

614. Early Childhood Instruction. I, II. 3 Hr. PR: (C&I 410 and C&I 411) or consent. Design of instruction for continuous improvement toward mastery of curriculum goals for early childhood education pre-K to 4th grade.

616. Early Childhood Program Development and Evaluation. I. 3 Hr. PR: (C&I 410 and C&I 411) 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.

617. Language Arts in Early Childhood. I, II. 3 Hr. 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.

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623. 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.)

624. 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.)


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644. 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.)

650. 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.

654. 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.

657. 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.)

660. Classroom Simulation Techniques. II. S. 3 Hr. To provide experience in the use of learning games and simulations as an instructional technique and simulated activities and games to be used in a variety of learning environments. (Alt. yrs.)
661. **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.

662. **Hypermedia in Learning.** I, II. 3 Hr. Survey of theory, research, and application of hypermedia and the authoring language—Authorware.

663. **Software Development.** II. 3 Hr. Principles and models of software design and the authoring language—HyperCard.

671. **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.

677. **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.

685. **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.

686. **Teaching Strategies for Middle Childhood.** II. 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.

687. **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.

688. **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.

689. **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.


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

694 A-Z. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

697. **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.)

701. **Curriculum Development.** I, II, S. 3 Hr. PR: Consent. The study of the concepts underlying school curriculum.

707. **Theories, Models, and Research of Teaching.** II. 3 Hr. PR: SCFD 620 or consent. The theories behind selected models of teaching as well as research in teaching and best practices.

708. **Contemporary Determinants of Curriculum.** II, S. 3 Hr. PR: C&I 701 and SCFD 640 or consent. Contemporary determinants of curriculum development.

709. **Curriculum Theories.** I, II, S. 3 Hr. PR: C&I 708 or consent. Theories underlying curriculum from the past to the present and projected to the future.

710. **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 EDLS 701.)
719. 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.

738. Survey of Major Issues in Mathematics Education. II, S. 3 Hr. PR: Consent. Individual and group research on selected topics in mathematics education.

757. Social Studies Curriculum Development, K-12. I. 3 Hr. PR: (C&I 601 or C&I 604) and (C&I 650 or C&I 654.) 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.

787. 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.

788. 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.

789. 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.

792. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.
Reading
Elizabeth A. Dooley, Chair, Educational Theory and Practice
602 Allen Hall
http://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 coursework.
- 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.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Program A</th>
<th>Program B</th>
</tr>
</thead>
<tbody>
<tr>
<td>RDNG 621</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>RDNG 622</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>RDNG 624</td>
<td>3</td>
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</tr>
<tr>
<td>RDNG 627</td>
<td>3</td>
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</tr>
</tbody>
</table>
RDNG 640 ................................................................. 3 .......... 3
RDNG 641 ................................................................. 3 .......... 3
RDNG 726 ................................................................. 3 .......... 3
RDNG 798 ................................................................. 6 .......... 0
C&I 601 or 604 or 701 .................................................. 0 .......... 3
EDP 610 or
EDP 600 or 700 or 740 .................................................. 3 .......... 3
SPED 500 ...................................................................... 3 .......... 3
Subtotal ................................................................................ 36 .......... 33
Electives ............................................................................... 0 .......... 3
Total .................................................................................... 36 .......... 36

Reading (RDNG)

573. Professional Development. 1-6 Hr.

583. Special Workshop in Reading. I, II, S. 1-6 Hr. For elementary and secondary students in pre-service education programs, as well as elementary and secondary teachers in in-service education.

621. 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.

622. 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.

623. 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.

624. 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.

627. 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.

630. 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.

631. Selection and Evaluation of Reading Materials. I, S. 3 Hr. PR: RDNG 621. Survey of critical reading skills, techniques, and procedures with emphasis on the selection of supplementary materials needed for effective development and remedial reading programs.

640. Instructing Students Who Have Reading Difficulties. II, S. 3 Hr. PR: RDNG 621 and (RDNG 624 or RDNG 622). 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.

641. Problems in Reading. II, S. 3 Hr. PR: RDNG 640. A laboratory course in the University Reading Clinic. Major emphasis on tutoring children who have reading problems.

642. 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.

680. 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.

681. 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.

685. 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.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

697. 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.)

725. Survey of Reading Research. 3 Hr. A research course in which each student will complete an individual problem in an area of special interest.

726. 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.

732. Survey of Major Problems in the Language Arts. II, S. 3 Hr. PR: RDNG 630 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.

743. 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.


780. 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.

781. 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.

785. Practicum. I, II, S. 1-12 Hr. PR: Consent. Practical application of reading theory to organizing and conducting developmental and remedial reading programs.


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

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

794. Seminars. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.

Secondary Education
Elizabeth A. Dooley, Chair, Educational Theory and Practice
602 Allen Hall
http://www.wvu.edu/~hre.departments.etp.etpindex.htm

Degree Offered

**Master of Arts**

Program

The Department of Educational Theory and Practice gives opportunities for graduate study and research leading to the degree of master of arts, to 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 licensed 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

Graduate Courses in Education Program ......................... A* ...... B** ...... C***
C&I 604 ................................................................. 3 ...... 3 .......... 3
Approved Course in Curriculum/Instruction in student’s Content Field ........................................ 3 ...... 3 .......... 3
Approved Course in General Teaching Strategies or General Curriculum Development .................. 3 ...... 3 .......... 3
EDP 612 ................................................................. 3 ...... 3 .......... 0
C&I 691 ................................................................. 0 ...... 3 .......... 0
C&I 797 ................................................................. 6 ...... 0 .......... 0
Approved Education Electives ........................................ 0 ...... 3 ...... 6-12
Approved Graduate Courses Outside of Education ................................................................. 9 ...... 9 ...... 12-18

27 27 36

* Thesis required.
** Problem required.
*** 36-semester hour coursework 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>Course Description</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Graduate Courses in Education</strong></td>
<td>18-24</td>
</tr>
<tr>
<td><strong>Required Courses in Education</strong></td>
<td>15</td>
</tr>
<tr>
<td>EDF 620 or EDF 640</td>
<td>3</td>
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<tr>
<td>C&amp;I 687</td>
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<tr>
<td>C&amp;I 701</td>
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<td>C&amp;I 789</td>
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<td>EDP 600</td>
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<tr>
<td><strong>Approved Education Electives</strong></td>
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</tr>
<tr>
<td><strong>Graduate Courses in an Academic Area</strong></td>
<td>12-18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>36</td>
</tr>
</tbody>
</table>

A combination of undergraduate courses and courses in the graduate program is necessary to meet certification requirements.

### Curriculum and Instruction (C&I)


533. **Corrective Techniques in Mathematics Education.** I, S. 3 Hr. PR: Consent. Materials and methods used in diagnosis and remediation of learning difficulties in mathematics.

584. **Student Teaching: Elementary-Early Childhood.** I, II. 2-12 Hr. PR: For elementary and early childhood undergraduates who meet eligibility requirements and other guidelines. (Applicable to preschool, nursery, day care, child care, kindergarten, primary grade, or elementary school.)

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663. **Software Development.** II, 3 Hr. Principles and models of software design and the authoring language—HyperCard.

671. **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.

677. **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.

685. **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.

686. **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.

687. **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.

688. **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.

689. **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.


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

694 A-Z. **Seminar.** I, II, S, 1-6 Hr. Seminars arranged for advanced graduate students.

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

697. **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.)

701. **Curriculum Development.** I, II, S, 3 Hr. PR: Consent. The study of the concepts underlying school curriculum.

707. **Theories, Models, and Research of Teaching.** II, 3 Hr. PR: SCFD 620 or consent. The theories behind selected models of teaching as well as research in teaching and best practices.

708. **Contemporary Determinants of Curriculum.** II, S, 3 Hr. PR: C&I 701 and SCFD 640 or consent. Contemporary determinants of curriculum development.

709. **Curriculum Theories.** I, II, S, 3 Hr. PR: C&I 708 or consent. Theories underlying curriculum from the past to the present and projected to the future.

710. **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 EDLS 701.)

719. **Behavior Modification in Early Childhood Education.** I, II, S, 3 Hr. PR: None. Application of behavior modification principles to classroom management in early childhood education pre-k to 4th grade.

738. **Survey of Major Issues in Mathematics Education.** II, S, 3 Hr. PR: Consent. Individual and group research on selected topics in mathematics education.
757. **Social Studies Curriculum Development, K-12.** I. 3 Hr. PR: (C&I 601 or C&I 604) and (C&I 650 or C&I 654.) 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.

758. **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.

759. **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.

760. **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.

761. **Teaching Practicum.** I, II. 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.)

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

763. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and/or research.

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

765. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

767. **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.

768. **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.)

769. **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.)

770. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.

771. **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.
Special Education
Elizabeth A. Dooley, Chair, Educational Theory and Practice
602 Allen Hall
http://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.

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 multiple disabilities

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. 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.

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. Contact an 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 coursework 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 the program for a complete list of practicum eligibility requirements.

Performance is assessed during coursework and practicum experiences. A student who fails to achieve an acceptable level of performance in the practicum will have his or her individual performance deficits reviewed and will be given the opportunity to repeat the practicum once; such repetition may occur following completion of an indicated remediation and/or additional instruction. Any student who fails the first practicum and does not commit to a remediation plan will be eligible to enroll in a second practicum.

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 coursework 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.

Note: The master’s degree program in special education is currently being revised. Information concerning any new degree requirements will be available from the department of educational theory and practice.

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 500 Introduction to Special Education .............................................................. 3
   SPED 601 Special Education Curriculum and Methods ............................................. 3
   SPED 602 Special Education Assessment ................................................................. 3
   SPED 603 Classroom/Behavior Management:
   Special Education ...................................................................................................... 3
   Total .......................................................................................................................... 12

B. Teacher Certification Behavior Disorders Area Requirements
   SPED 640 Introduction to Behavior Disorders ........................................................... 3
   SPED 642 Teaching Strategies: Behavior Disorders .................................................. 3
   SPED 690 Practicum: Behavioral Disorders ............................................................. 3-6
   Total ....................................................................................................................... 9-12

C. Teacher Certification Learning Disabilities Area Requirements
   SPED 630 Introduction to Specific Learning Disabilities ........................................... 3
   SPED 632 Teaching Strategies: Specific Learning Disabilities ................................... 3
   SPED 690 Practicum: Learning Disabilities ............................................................. 3-6
   Total ....................................................................................................................... 9-12
### D. Teacher Certification Mental Impairments (Mild to Moderate) Area Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 660 Introduction to Mental Impairments</td>
<td>3</td>
</tr>
<tr>
<td>SPED 662 Teaching Strategies: Mental Impairments</td>
<td>3</td>
</tr>
<tr>
<td>SPED 690 Practicum: Mentally Impairments</td>
<td>3-6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>9-12</strong></td>
</tr>
</tbody>
</table>

### E. Teacher Certification Gifted Education Area Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 500 Introduction to Special Education</td>
<td>3</td>
</tr>
<tr>
<td>SPED 602 Special Education Assessment</td>
<td>3</td>
</tr>
<tr>
<td>SPED 603 Classroom/Behavior Management</td>
<td>3</td>
</tr>
<tr>
<td>*SPED 670 Introduction to Gifted Education</td>
<td>3</td>
</tr>
<tr>
<td>*SPED 672 Teaching Strategies: Gifted Education</td>
<td>3</td>
</tr>
<tr>
<td>SPED 690 Practicum: Gifted Education</td>
<td>3-6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>18-21</strong></td>
</tr>
</tbody>
</table>

*These courses may be offered only in the summer.

### F. Additional Requirements for Master's Degree

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDP 612 Introduction to Research</td>
<td>3</td>
</tr>
<tr>
<td>SPED 609 Computer Applications in Special Education</td>
<td>3</td>
</tr>
<tr>
<td>SPED 680 Culminating Project</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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</tr>
</tbody>
</table>

Planned Electives (minimum for degree) ................................................................. 3-18

### G. Teacher Certification Severe/Profound Handicapped Area Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 604 Characteristics Adaptations:</td>
<td></td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 605 Family/Professional Collaboration:</td>
<td></td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 606 Communication Intervention:</td>
<td></td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 607 Assessment: Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 608 Instructional Programming:</td>
<td></td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 620 Curriculum: Severe Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 625 Secondary/Adult Programming:</td>
<td></td>
</tr>
<tr>
<td>Severe Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 629 Positive Behavior Support: Severe Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 690 Practicum: Severe/Multiple Disabilities</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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</tr>
</tbody>
</table>

### H. Teacher Certification Early Intervention/Preschool Special Needs Area Requirements

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPED 604 Characteristics Adaptations:</td>
<td></td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 605 Family/Professional Collaboration:</td>
<td></td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 606 Communication Intervention:</td>
<td></td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 607 Assessment: Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 608 Instructional Programming:</td>
<td></td>
</tr>
<tr>
<td>Developmental Disabilities</td>
<td>3</td>
</tr>
<tr>
<td>SPED 610 Typical/Atypical Development:</td>
<td></td>
</tr>
<tr>
<td>Early Intervention</td>
<td>3</td>
</tr>
<tr>
<td>SPED 611 Curriculum: Early Intervention</td>
<td>3</td>
</tr>
<tr>
<td>SPED 616 Program Management: Early Intervention</td>
<td>3</td>
</tr>
<tr>
<td>SPED 690 Practicum: Early Intervention</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Planned Electives (minimum for degree) ................................................................. 6
I. Problem or Thesis Area Requirements

EDP 612 Introduction to Research ................................................................. 3
SPED 685 Problem in Special Education or
   SPED 797 Research ........................................................................... 3-6
SPED 691 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.
- A well-defined goals 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 coursework 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 coursework 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)

500. Introduction to Special Education. 3 Hr. Comprehensive overview of exceptionalities which require special education.

573. Professional Development. 1-6 Hr.

601. 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.

602. 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.

603. 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.

604. Characteristics Adaptations: Developmental 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.
605. **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.

606. **Communication Intervention: Developmental Disabilities.** 3 Hr. PR: Consent. Design and implementation of training programs for at-risk children, infants, and preschoolers with delays, and persons with severe disabilities.


609. **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.)

610. **Typical/Atypical Development: Early Intervention.** 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.

611. **Curriculum: Early Intervention.** 3 Hr. Design, implementation, and evaluation of curricular 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.)

616. **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.

620. **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.

625. **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.


630. **Introduction to Specific Learning Disabilities.** 3 Hr. PR: Consent. Historical, etiological, educational, and legislative aspects of, and multidisciplinary approaches to students with learning disabilities.

631. **Evaluating and Teaching the Specific Learning Disabled.** 3 Hr.

632. **Teaching Strategies: Specific Learning Disabilities.** 3 Hr. PR: SPED 630 and SPED 631 and consent. Curriculum planning, informal diagnosis, techniques, teaching strategies in specific areas, opportunities to use strategies in student designed programs.


641. **Behavioral Dynamic School Community.** 3 Hr.

642. **Teaching Strategies: Behavior Disorders.** 3 Hr. PR: Consent. Practical application of instructional methods for students with behavior disorders: assessment, management, and cognitive behavioral curriculum.

660. **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.)

662. **Teaching Strategies: Mental Retardation.** 3 Hr. Curriculum development based upon individual needs; application of classroom instructional methods for students with mild/moderate mental retardation.
663. Collaborative-Consultative Inclusion Strategies. 3 Hr. Strategies for building and maintaining effective collaborative teams for the inclusive environment. Communication, decision making, group dynamics, and conflict resolution will be discussed.

665. Math Mentally Retarded. 3 Hr.

666. Reading Mentally Retarded. 3 Hr.

670. 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.

672. 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.

680. Culminating Project. 3 Hr. PR: EDP 612 or consent and all special education core requirements with the exception of practicum. Completion of master’s program; projects in applied research, curriculum development, or program design, culminating project serves as the final course in the special education sequence. (3 hr. lec.)

684. 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.)

685. Problem in Special Education. 3 Hr. Research for master’s degree in special education.

689 A-Z. Teaching Practicum: Severe/Multiple Disabilities. 1-6 Hr. PR: Consent. Internship, advanced student teaching in each certification area; administration and supervision practicum.

690 A-Z. Teaching Practicum. 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 not on assistantships to gain teaching experience. (Grading will be S/U.)

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

693 A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

697. 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.)

70. 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.

771. 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.

772. 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.

774. 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.

778. 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.
779. **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.

780. **Seminar.** 1-6 Hr. PR: Consent. Special topics concerned with the educational, sociological, and psychological aspects of special education.

783. **Internship in Professional Instruction.** 1-9 Hr. PR: SPED 771. Supervised experience in design, delivery, and evaluation of a college course in special education or disability services.

784. **Internship in Practicum Supervision.** 1-9 Hr. PR: SPED 771. Supervised experience in observing, supervising, and evaluating student teacher performance in a practicum setting in special education or disability services.

785. **Internship in Research.** 1-15 Hr. PR: SPED 774. Supervised experience in design, conduct, analysis and report preparation of empirical, applied, or policy analysis research in special education or disability services.

790. **Teaching Practicum.** 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 on assistantships to gain teaching experience. (Grading will be S/U.)

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

792. **Directed Study.** 1-6 Hr. Directed study of contemporary topics selected from recent developments in the field.

793. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

795. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. **Graduate Seminar.** 1 Hr. PR: Consent. Designed to permit graduate students an opportunity to present research to the assembled faculty and graduate student body. (Graded as S/U.)

797. **Research.** 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.)

798. **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.)

799. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.
Department of Speech Pathology and Audiology
Lynn R. Cartwright, Chair
805 Allen Hall
http://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 coursework. 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.
• 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.

Speech Pathology and Audiology (SPA)

608. Hearing-Impaired School Child. 3 Hr. Audiology in the public school classroom; remediation for the hearing-impaired child.


612. *Advanced Practice/SLP* 2. I, II, S. 3 Hr. PR: SPA 610 or consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with speech-language disorders.

613. *Advanced Practice/Audiology* 2. I, II, S. 3 Hr. PR: SPA 611 or consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with speech-language disorders.


615. *Advanced Practice/Audiology* 3. I, II, S. 4 Hr. PR: SPA 613 or consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with hearing disorders.


617. *Advanced Practice/Audiology* 4. I, II, S. 4 Hr. PR: SPA 615 or consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with hearing disorders.

620. *Neurophysics of Speech and Language*. I. 3 Hr. PR: SPA 320 and SPA 424 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.

622. *Advanced Voice Disorders*. I. 3 Hr. PR: SPA 422 or consent. Advanced study of the vocal and respiratory mechanisms; epidemiology, classification, etiology, symptomatology, assessment, prevention, and remediation of voice disorders.


626. *Experimental Phonetics*. S. 3 Hr. PR: SPA 320 and SPA 340 or consent. Discussion of contemporary topics in the speech and hearing sciences, including acoustic, physiological, and perceptual phonetics.

628. *Advanced Stuttering Disorders*. II. 3 Hr. PR: SPA 422 or consent. Advanced study of the symptomatology, epidemiology, etiology, research findings, assessment, prevention, and remediation of stuttering and related fluency disorders.


632. *Advanced Study: Cleft Palate*. II. 3 Hr. PR: SPA 326 or consent. Investigation of the etiology, diagnosis, nature, and therapy approaches of communicative disorders in persons with cleft palate.


635. *Language Disorders in Children: Treatment*. S. 3 Hr. PR: SPA 634 or consent. Treatment procedures for children with language disorders are presented. Clinician-oriented and client-oriented approaches are emphasized.

636. *Augmentative/Alternative Communication*. I. 3 Hr. Discussion of augmentative/alternative communication options for persons who are unable to meet their daily needs through natural modes of verbal, manual, or written communication. Demographics, assessment, and treatment of candidates for AAC interventions.

637. *Augmentative Alternative Communication Technology*. II. 3 Hr. PR: SPA 636 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.

638. *Professional Issues*. II. 2 Hr. PR: EDP 612 or consent. Discussion of contemporary professional issues in speech-language pathology and audiology.


646. 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.

648. Central Auditory Disorders. 3 Hr. PR: SPA 642 or consent. Pathology and audiometric site-of-lesion testing of the central auditory nervous system.

650. 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.


656. 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 audiological manifestation.

660. Neuropathology of Speech and Language. S. 3 Hr. PR: SPA 620. Explores methods of identifying and treating speech and language problems associated with nonprogressive and progressive neurological disorders.

662. Dysphagia. 3 Hr. PR: Must be SPA major. Assessment and treatment of feeding and swallowing disorders in children and adults.

664. Diagnostics in Speech Language Pathology. I. 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.


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

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


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

696. 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.

697. 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.)

698. 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.)
718. *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.

799. *Colloquium*. 1-6 Hr. PR: Consent. For graduate students not seeking coursework credit but who wish to retain all the rights and privileges of duly enrolled students. Enrollment entitles students to consult with graduate faculty, use the University’s facilities, and participate in its academic and cultural programs. Colloquium credits may not be counted toward master’s degree requirements. (Grading is S/U.)

900. *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 toward attaining a graduate degree. (Grading is 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.

798. *Thesis*. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level
Davis College of Agriculture, Forestry, and Consumer Sciences

Cameron R. Hackney, Ph.D., Dean; Director of West Virginia Agricultural and Forestry Experiment Station
Dennis K. Smith, Ph.D., Associate Dean for Academic Affairs
William E. Vinson, Ph.D., Associate Director, West Virginia Agricultural and Forestry Experiment Station
Kenneth E. Martin, Ph.D., Director, Extension Center for Agricultural and Natural Resource Development

http://www.caf.wvu.edu

Degrees Offered

Division of Animal and Veterinary Sciences
Master of Science in Animal Sciences, Breeding, Food Sciences, Nutrition, Physiology, Production
Doctor of Philosophy in Animal and Food Science
Master of Science, Doctor of Philosophy in Reproductive Physiology

Division of Family and Consumer Sciences
Master of Science in Child Development and Family Studies, Human Nutrition

Division of Forestry
Master of Science in Forestry in Forest Resources Management, Wood Industries
Master of Science in Wildlife and Fisheries Resources
Master of Science in Recreation, Parks, and Tourism Resources
Doctor of Philosophy in Forest Resources Science

Division of Plant and Soil Sciences
Master of Science in Agronomy, Entomology, Environmental Microbiology, Horticulture, Plant Pathology
Doctor of Philosophy in Plant and Soil Sciences
Master of Science, Doctor of Philosophy in Genetics and Developmental Biology

Division of Resource Management
Master of Science in Agricultural and Environmental Education
Master of Science in Agricultural and Resource Economics
Doctor of Philosophy in Natural Resource Economics

Interdisciplinary Programs
Master of Science, Doctor of Philosophy in Genetics and Developmental Biology
Master of Science, Doctor of Philosophy in Reproductive Physiology
Master of Science in Agriculture, Forestry, and Consumer Sciences
Doctor of Philosophy in Agricultural Sciences
Animal and Food Science, Plant and Soil Sciences

The Davis 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 Davis 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 Davis 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.

Master’s Programs
The Davis 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 and environmental education; animal sciences; family and consumer sciences; forestry, plant and soil sciences; recreation, parks, and tourism resources; or wildlife and fisheries resources. In addition, students may choose to pursue a master of science in the interdisciplinary programs in genetics and developmental biology or reproductive physiology or the master of agriculture, forestry, and consumer sciences.

For additional information concerning any of the graduate programs in the college, contact the Associate Dean for Academic Affairs, Davis College of Agriculture, Forestry, and Consumer Sciences, P.O. Box 6108, West Virginia University, Morgantown, WV 26506-6108; telephone (304) 293-2691; E-mail dsmith3@wvu.edu.

Doctoral Programs
The Davis 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 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; recreation, parks, and tourism resources; 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 economic development.
- **Ph.D. in Genetics and Developmental Biology** Doctoral students may select areas related to human, plant, and animal genetics, and developmental biology in this interdisciplinary program.
- **Ph.D. in Reproductive Physiology** Doctoral students may select courses in biochemistry; developmental embryology; endocrinology; reproductive physiology; statistics; physiology; and pharmacology in this interdisciplinary program.

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 graduate student 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 coursework 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 coursework taken since admission as a non-degree 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 Inskoep, Ph.D. (U. Wisc.). Reproductive physiology.
†Hillar Klandorf, Ph.D. (U. Edinburgh). Poultry physiology.
†Paul E. Lewis, Ph.D. (WVU). Director. Reproductive physiology.
†John E. Warren, Ph.D. (U. of Md.). Reproductive physiology.

**Associate Professors**


**Assistant Professors**

†Kenneth P. Blemings, Ph.D. (U. Wisc.). Nutritional biochemistry.
June deGraf-Hanson, Ph.D. (U. of Md.). Extension specialist-poultry.
Mathew E. Wilson, Ph.D. (Iowa St. U.). Reproductive physiology.

**Clinical Assistant Professor**


### 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
†John Jacob, Ph.D. (VPI & SU). Social and psychological aspects of appearance, Gender studies, Cultural studies, Historic costume, Qualitative research, and Apparel design.
†Carol A. Markstrom, Ph.D. (Utah St. U.). Family, Adolescents, Social contexts.

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

Lecturer

Genetics and Developmental Biology
Professors
†Linda Butler, Ph.D. (U. Ga.). Entomology. Forest entomology, Pest management.
†Nyles Charon, Ph.D. (U. Minn.). Medical bacteriology, Genetics and physiology of spirochetes.
†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.
†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.
†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
†Kenneth P. Blemings, Ph.D. (U. Wisc.) Nutritional biochemistry.

Plant and Soil Sciences
Professors
†Gary K. Blissonnette, Ph.D. (Mont. St. U.). Environmental microbiology, Aquatic microbiology.
†Linda Butler, Ph.D. (U. Ga.). Entomology. Forest entomology, Pest management, Lepidoptera.

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

Assistant Professors
†Devinder K. Bhumbla, Ph.D. (WVU). Extension specialist. Soil science.
†Louis McDonald, Ph.D. (U. Ky.). Soil chemistry.

Resource Management
Professors
†Jerald J. Fletcher, Ph.D. (U. Calif.). Agricultural and resource economics, Resource economics.
†Stacy A. Gartn, Ph.D. (Ohio St. U.). Agricultural education, Communications, Program planning, Leadership development, Adult education, Teaching methods.
†Layde D. Lawrence, Ph.D. (L.S.U.). Agricultural education. Social science, Curriculum development, Teaching methods.
†Tim T. Phipps, Ph.D. (U. Calif.). Agricultural and resource economics. Agricultural policy.

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

Assistant Professors
†Randall S. Rosenberger, Ph.D. (Colo. St.). Agricultural and Resource Economics. Natural resource economics, Recreation economics, Economics and ethics of agriculture and development.

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.
†Hillar Klandorf, Ph.D. (U. Edinburgh). Poultry physiology.
†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 Professors
Mathew E. Wilson, Ph.D. (Iowa St. U.). Reproductive physiology.

Division of Animal and Veterinary Sciences
Paul E. Lewis, Director, Division of Animal and Veterinary Sciences
e-mail: plewis@wvu.edu
G038 Agricultural Sciences Building
http://www.caf.wvu.edu/avs/index.html

Degrees Offered

Doctor of Philosophy in Agricultural Sciences (see page 270)
Master of Science and Doctor of Philosophy in Reproductive Physiology (see page 268)

The master of science in animal and veterinary sciences in the Davis 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
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 for 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 a Ph.D. should apply for admission to the doctoral program in agricultural sciences or reproductive physiology.

Agricultural Biochemistry (AGBI)

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
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<tbody>
<tr>
<td>410. Introductory Biochemistry</td>
<td>I, II. 3 Hr. PR: 8 hr. general chemistry, CHEM 231 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.</td>
</tr>
<tr>
<td>411. Introductory Biochemistry Laboratory</td>
<td>I. 1 Hr. CONC: AGBI 410. Experiments to demonstrate certain principles and properties of animal and plant biochemistry.</td>
</tr>
<tr>
<td>512. Nutritional Biochemistry</td>
<td>II. 3 Hr. PR: AGBI 410 or consent. Nutritional biochemistry of domestic animals.</td>
</tr>
<tr>
<td>513. Nutritional Biochemistry Laboratory</td>
<td>II. 1 Hr. PR: AGBI 410 and AGBI 411 and CONC: AGBI 412. Experiments to determine the nutritional constituents in animal and plant tissues.</td>
</tr>
<tr>
<td>610. General Biochemistry</td>
<td>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.</td>
</tr>
<tr>
<td>611. Laboratory Experiments in Biochemistry</td>
<td>I. 2 Hr. PR or CONC: AGBI 610. Experiments designed to demonstrate some of the basic tools and procedures of biochemical research.</td>
</tr>
<tr>
<td>612. General Biochemistry</td>
<td>II. 4 Hr. PR: AGBI 610 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.</td>
</tr>
<tr>
<td>714. Enzymes</td>
<td>II. 3 Hr. PR: AGBI 612 or consent. A survey of enzymology covering general principles as well as current concepts and methods.</td>
</tr>
<tr>
<td>715. Advanced Biochemistry Laboratory</td>
<td>II. 2 Hr. PR or CONC: AGBI 612. Experiments in the areas of intermediary metabolism and enzymology.</td>
</tr>
<tr>
<td>716. Vitamin and Coenzyme Biochemistry</td>
<td>II. 2 Hr. PR: AGBI 612 or BIOL 331, 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.)</td>
</tr>
<tr>
<td>722. Plant Biochemistry</td>
<td>I. 3 Hr. PR: AGBI 612 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.)</td>
</tr>
<tr>
<td>724. Advanced Nutritional Biochemistry</td>
<td>I. 4 Hr. PR: AGBI 610 and AGBI 611 and AGBI 612 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.)</td>
</tr>
<tr>
<td>728. Biomembranes and Muscle Biochemistry</td>
<td>II. 3 Hr. PR: AGBI 612 or BIOC 331, 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.)</td>
</tr>
</tbody>
</table>
Animal and Veterinary Science (A&VS)
402. Values and Ethics. 3 Hr. PR: Senior standing or consent. Current ethical aspects in agriculture and forestry and their impact on societal values.


595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

690. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of agriculture, forestry, and consumer 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.)


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

696. 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.

697. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

Animal Nutrition (ANNU)
601. Principles of Nutrition and Metabolism. I. 3 hr. PR: AGBI 410 or consent. A basic course in principles of nutrition with emphasis on the major classes of dietary nutrients and their digestion and utilization.

602. Nutrition and Physiological Function. II. 3 Hr. PR: ANNU 601 or consent. Sequence to ANNU 601. Techniques used in nutritional studies and the relationship of nutrient requirements to physiological function in species of laboratory and domestic animals and man.

731. 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.)

732. Forage Chemistry and Quality. 3 Hr. PR: ANNU 601 and AGRN 454, 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. (Offered in spring of even years. Also listed as AGRN 432.)

734. Mineral Nutrition of Animals. II. 3 Hr. PR: ANNU 601 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.)

794. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.
Animal Physiology (ANPH)
400. *Growth and Lactation Physiology*. II. 3 Hr. PR: ANPH 301 or consent. Animal life cycles; nature of growth and lactation; effects of biological, environmental, and social-psychological variants; physiological regulation and control.

405. *Animal Physiology Laboratory*. I. 2 Hr. PR: ANPH 301 or consent. Laboratory study of the physiological systems of animals and the influences of environment on these systems. (4 hr. lab.)

424. *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.

430. *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.)

480. *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.)


726. *Endocrinology of Reproduction*. II. 4 Hr. (2 labs) PR: ANPH 424 or BIOL 413 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.)

730. *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.)

794 A-Z. *Seminar*. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

Animal Production (ANPR)
622. *Advanced Milk Production*. II. 3 Hr. PR: ANNU 260 or consent. Advanced study of the feeding, breeding, and management of dairy cattle.

Food Science (FDSC)
570. *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)
405. *Parasitology*. II. 3 Hr. PR: (BIOL 101 and BIOL 102 and BIOL 103 and BIOL 104) or (BIOL 115 and BIOL 116). 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 odd years.)

411. *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.)
**Division of Family and Consumer Sciences**

Janice I. Yeager, Director, Division of Family and Consumer Sciences
Wanda K. Franz, Graduate Program Coordinator
e-mail: wfranz@wvu.edu
702 Allen Hall
http://www.caf.wvu.edu/fcs

**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: child development and family studies; and 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 a 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. Further information is on-line at http://www.caf.wvu.edu/fcs/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 coursework, which includes six hours of research credit. The scholarly problem option requires a minimum of 36 hours of coursework, which includes three hours credit for 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. Coursework 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)

412. Adolescent Development. I. 3 Hr. PR: Senior or graduate standing and CDFS 110. 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.)

413. Contemporary Issues in Family Relations. I. 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.

415. 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.

540. 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.)

541. Cognitive Development of the Child. 3 Hr. Piaget’s basic theory, including his view of perceptual, symbolic, motor, and logico-mathematical development across the life span. (Offered in spring of even years.)

545. 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 spring of odd years.)

547. 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.)


697. 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.)

Family and Consumer Sciences (F&CS)

689. 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.

690. 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.)
691 A-Z. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

694. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

696 A-Z. **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.

697. **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.)

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


461. **Nutrition Laboratory Experimentation.** I. 2 Hr. COREQ.: HN&F 460 or consent. Nutrient analysis and introduction to nutrition experimentation; nutritional assessment.

472. **Community Nutrition.** 3 Hr. PR: HN&F 171. Beginning planning for community nutrition to individuals and families at various stages of the life cycle. Roles of concerned agencies and professional groups. Clinical experience in community facilities.

474. **Nutrition in Disease.** II. 4 Hr. PR: HN&F 171; physiology or consent. Nutritional care aspects of patients. Modification of diet to meet human nutrition needs in various medical conditions.

670. **Human Nutrition Concepts and Application.** II. 3 Hr. PR: HN&F 460 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.)

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). 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.

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

420. **Merchandise Buying and Management.** 2. 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.

424. **Functional Apparel.** I. 3 Hr. PR: ENGL 101 and ENGL 102 and TA&M 220 and TA&M 230. Physical, sociological, and psychological clothing needs of individuals with functional needs. Historical developments and research needs explored. Students conduct a service-learning project.

433. **Apparel Design and Illustration.** II. 3 Hr. PR: TA&M 230 and TA&M 231 and TA&M 332 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 a maximum of 6 hr. credit.)
Degrees Offered

*Doctor of Philosophy in Forest Resources Science*

*Master of Science in Recreation, Parks, and Tourism Resources, Wildlife and Fisheries Resources, and Forestry*

A student seeking admission to work toward the degree of doctor of philosophy in forest resources science in the Davis College of Agriculture, Forestry, and Consumer Sciences may choose as the major field of study forest resources management; recreation, parks, and tourism; 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 coursework 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 Davis 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 Davis 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 resources 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)
444. Watershed Management. II. 3 Hr. PR: FMAN 212 and FMAN 311. (Primarily for forest management majors.) Influences of silvicultural practices and forest management activities on the hydrology of forested catchments.

Forest Management (FMAN)
400. Forest Resources Management Field Practice. S. 6 Hr. PR: CE 200 and FMAN 322. (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.

413. Regional Silviculture. I. 2 Hr. PR: Forestry major or consent, FMAN 212; PR or CONC: FMAN 311. Major forest types of the United States: their composition, management, problems, and silvicultural treatment.


434. Forest Resources Management Planning. II. 3 Hr. PR: FMAN 322 and FMAN 400 and FMAN 311 and PR or CONC: (ENTO 470 or PPTH 470) and FMAN 330. 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.


530. Advanced Principles of Forestry Economics. II. 3 Hr. PR: (ECON 201 or ARE 150) and ECON 202 and FMAN 330. Intensive study of both micro-and macroeconomics of forestry.

540. 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.)

611. Advanced Forest Ecology. I. 3 Hr. PR: FMAN 212 or equivalent; FMAN 311. Ecological relationships in forests with emphasis on biogeochemical cycles.

631. 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)

697. 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.)

796. 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.

797. 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.)

798. Thesis and 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
Forestry (FOR)

410. 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.

420. Forest Policy and Administration. I, 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.

425. 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.

580. 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.

590. Teaching Practicum. I, II. 1-6 Hr. PR: Consent. Supervised practice in college teaching of forestry. 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.)

696. 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.

698. 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.)

699. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

797. 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.)

Recreation, Parks, and Tourism Resources (RPTR)

433. Wildland Recreation Management. I. 3 Hr. PR: FMAN 212 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.

434. Wilderness in American Society. II. 3 Hr. PR: RPTR 433 or consent. A seminar examining political, sociological, and environmental aspects of American wilderness. A discussion on articles concerning wilderness preservation, management, and aesthetics.

439. 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.)

442. 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.

448. Environmental Concerns in Outdoor Recreation. I. 3 Hr. PR: Consent. Understanding and interpreting environmental concerns within the context of outdoor recreation.

450. 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.
570. 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 570.)

608. 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.


697. 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.)

714. 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.


721. 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.)

733. 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.)

738. 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.)

762. Community Recreation. I. 3 Hr. PR: 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.)

790. 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.)

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

794. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

796. 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.

797. 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)

425. Mammalogy. II. 3 Hr. PR: BIOL 117 or consent. Mammals and their biological properties with emphasis on life history, ecology, and distribution of regional forms.

426. Ornithology. II. 3 Hr. PR: BIOL 115 and BIOL 117 or consent. Identification, distribution, and ecology of birds (particularly of forest lands.) (2 hr. lec., 1 hr. lab.)

428. 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.
431. *Wildlife Habitat Techniques*. I. 3 Hr. PR: Wildlife major or consent; WMAN 313 and FOR 205. Field and laboratory techniques necessary in management and study of wildlife; collection of field data, mapping, censusing, habitat evaluation, wetland delineation, use of literature, and scientific writing.


445. *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.

446. *Limnology*. II. 4 Hr. PR: (BIOL 101 and BIOL 103) or WMAN 224 or consent. Physical, chemical, and biological characteristics of inland waters with emphasis on the structure and function of stream ecosystems.

449. *Fisheries Techniques*. II. 3 Hr. PR: BIOL 102 or BIOL 115. 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.)

512. *Advanced Wildlife Population Ecology*. II. 3 Hr. PR: WMAN 313 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.)

534. *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.)

536. *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.)

550. *Fish Ecology*. II. 3 Hr. PR: WMAN 445. 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.

633. *Quantitative Ecology*. I. 3 Hr. PR: STAT 511 or equivalent, and WMAN 313 or equivalent. A survey of techniques and strategies for the quantitative analysis of complex ecological data sets. (Offered in fall of odd years.)

639 A-Z. *Special Topics*. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

696. *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.

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

797. *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)**

400. *Forest Measurement Field Practice*. S. 3 Hr. PR: Wood Industry major and FOR 205 and FMAN 322 and CE 200. Application of surveying and measuring techniques with emphasis on field problems.

401. *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.

413. *Wood Chemistry*. I. 3 Hr. PR: Wood industry major or consent, and CHEM 231 or CHEM 233. Chemical composition of wood including cellulose, hemicellulose, and extractives. Chemical processing of wood.
422. *Harvesting Forest Products*. II. 3 Hr. PR: MATH 128 or equivalent and WDSC 232. 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.)


460. *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.

465. *Wood-Based Composite Materials*. 3 Hr. PR: WDSC 232 and WDSC 340 and WDSC 341. Fundamentals of manufacturing wood-based composite materials, including processing, products, evaluation, and applications in the marketplace. (2 hr. lec., 1 hr. lab.)

540. *Advanced Physical Behavior of Wood*. I. 3 hr. PR: WDSC 340 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.


690. *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.)

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

696. *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.

699. *Graduate Colloquium*. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

796. *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.

797. *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.)
Division of Plant and Soil Sciences
Barton S. Baker, Director, Division of Plant and Soil Sciences and Graduate Program Coordinator
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1090 Agricultural Sciences Building
http://www.caf.wvu.edu/plsc

Degrees Offered
  Master of Science
  Ph.D. in Agricultural Sciences (see page 270)

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’s-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 511, 512, 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)

410. Soil Fertility. I. 3 Hr. PR: AGRN 202 and AGRN 203 and CHEM 116. 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.)

415. Soil Survey and Land Use. I. 3 Hr. PR: AGRN 125 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 in fall of odd years.)

417. Soil Genesis and Classification. I. 4 Hr. PR: AGRN 125 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 in fall of even years.)

420. Soil Microbiology. I. 3 Hr. PR: ENVM 241. 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 420 and ENVP 420.)

425. Environmental Soil Management. I. 3 Hr. PR: AGRN 202 and AGRN 203. 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 425.)

430. Soil Physics. II. 3 Hr. PR: AGRN 202 and AGRN 203. Physical properties of soils; water and air relationships and their influence on soil productivity. (Offered in spring of even years.)

451. Weed Control. I. 3 Hr. PR: PLSC 206 and AGRN 202 and AGRN 203 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 451.)

452. Grain and Special Crops. II. 3 Hr. PR: PLSC 206 and AGRN 202 and AGRN 203 or consent. Advanced 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.)

454. Forage Crops. I. 3 Hr. PR: PLSC 206 and AGRN 202 and AGRN 203, 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.)

455. 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 455.)

516. Soil Chemistry. II. 3 Hr. PR: AGRN 410. 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 in spring of odd years.)

525. Forage Harvesting and Storage. 3 Hr. PR: AGRN 454 or consent. Advanced study of processes associated with harvesting and storage of forages. (3 hr. lec.) (Offered in fall of odd years.)

554. Pasture Management and Utilization. 3 Hr. PR: AGRN 454 and ANNU 260 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.)

574. Tropical Grasslands. 3 Hr. PR: AGRN 454 and ANNU 260, or consent. Advanced study of tropical grasslands and their management and utilization in animal production. (Offered in fall of even years.)

697. 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.)

710. Soil Testing and Plant Analysis. II. 3 Hr. PR: AGRN 210 and BIOL 350, 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., 1 hr. lab.) (Offered in spring of even years.)

726. Advanced Soil Chemistry. II. 3 Hr. PR: AGRN 516. The structure of important soil minerals and their identification; the physical chemistry of surfaces; introduction to modeling soil chemical processes. (3 hr. lec.) (Offered in spring of even years.)

732. Forage Chemistry and Quality. 3 Hr. PR: ANNU 601 and AGRN 454, 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. (3 hr. lec.) (Offered in spring of even years. Also listed as ANNU 432.)

790. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of agronomy. 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.)


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

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

794. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

Entomology (ENTO)


697. 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.)

790. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of entomology. 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.)

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

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

794. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

Environmental Microbiology (ENVM)

747. Food Microbiology. 4 Hr. PR: ENVM 241 and AGBI 410. Ecology and physiology of microorganisms important in the manufacture and deterioration of foods. Techniques for the microbiological examination of foods. (Offered in fall of odd years).

748. Sanitary Microbiology. II. 3 Hr. PR: ENVM 241 or consent. Microbiology and health hazards associated with food handling, water treatment, and sanitary waste disposal. (Offered in spring of even years.)


797. 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.)

Horticulture (HORT)

501. Post Harvest Physiology. 3 Hr.


Plant Pathology (PPTH)

501. Diseases of Economic Plants. I, II, S. 1-3 Hr.; 2 Hr. in summer. PR: PPT 401 or 503 or consent. Recognition, cause, and control of diseases of economic plants. (Sem. 1—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 hrs. in I and II, 2 hrs. in S, until 8 hours of credit are accumulated.) (Offered in alternate years.)
502. *Principals of Plant Pathology*. II. 4 Hr. PR: PPTH 170, 401, or 503, 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.)

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

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

513. *Insect Transmit Plant Diseases*. 3 Hr.

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

697. *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.)

702. *Physiology of Plant Diseases*. I. 3 Hr. PR: AGBI 610 and PPTH 502, 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.

730. *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.)

740. *Taxonomy of the Fungi*. S. 3 Hr. PR: PPTH 503. Collection and identification of fungi with emphasis upon those of economic importance. (Offered in summer of even years.)

790. *Teaching Practicum*. 1-3 Hr. PR: Consent. Supervised practice in the college teaching of plant pathology. 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.)

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

792. *Directed Study*. 1-6 Hr. Directed study, reading, and/or research.

793. *Special Topics*. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. *Seminar*. 1-6 Hr. Seminars arranged for advanced graduate students.

795. *Independent Study*. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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.

797. *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.)

798. *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.)

799. *Graduate Colloquium*. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
Plant Science (PLSC)


790. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of plant 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.)


792. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and or research.

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


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

796 A-Z. 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.

797. 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.)

Division of Resource Management

Peter V. Schaeffer, Director, Division of Resource Management
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Agricultural and Environmental Education

Layle D. Lawrence, Graduate Program Coordinator
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http://www.caf.wvu.edu/resm/aee

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)

421. 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.)

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


442. Program Development and Evaluation in Extension. II. 3 Hr. PR: Consent. Planning, implementation, and evaluation of programs in rural and community development.

453. 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.

454 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.)

460. Engineering Technology for Urban Watersheds and Irrigation. 3 Hr. Soil and water management; analysis of small watersheds and design of waterways, culverts, ponds, sediment basins, and turf irrigation systems. (3 hr. lec.)

461. 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.

630. Supervision of Agricultural Experience Programs. S. 3 Hr. PR: AGED 430 or consent. Planning, supervision, and evaluating experience programs of secondary students and adults.

631. Planning Agricultural Programs and Courses. S. 3 Hr. PR: AGED 430 or consent. Formulating programs and courses for schools and communities.

690. 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.)


692 A-Z. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

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


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

696. 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 coursework 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 coursework 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 continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

Agricultural and Resource Economics
Tim T. Phipps, Graduate Program Coordinator
e-mail: tphipps@wvu.edu
2018 Agricultural Sciences Building
http://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, and rural development economics. The degree prepares students for further graduate study and a wide variety of careers in the private sector and government.

Admission Requirements
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.

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 coursework 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 coursework option may be selected. Students should select the option by the time 12 hours of coursework 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.

Coursework Option
- A minimum of 36 credit hours of approved coursework 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, quantitative methods, 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 coursework. 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 are available to highly qualified students on a competitive basis. The awards are based on academic merit only.

Agricultural and Resource Economics (ARE)
401. 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.

402. 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.

406. Agribusiness Planning. I. 3 Hr. PR: ARE 204 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.

410. Environmental and Resource Economics. I. 3 Hr. PR: (ARE 401 and ARE 402) or ECON 301 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.

411. 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.

413. Economic Development. I, II. 3 Hr. PR: ECON 201 and ECON 202. The problems, changes, and principal policy issues faced by nonindustrialized countries.
420. 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.)

431. 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.

435. 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.)

440. 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.

445. 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.

450. Agriculture, Environmental, and Resource Policy. II. 3 Hr. PR: (ARE 401 and ARE 402) or ECON 301 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.

461. 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.

500. Applied Microeconomics. I. 3 Hr. PR: ECON 301 and ECON 421, or equiv. Producer and consumer economics used in resource, environmental, and agricultural economic analysis.

521. Quantitative Methods in Resource Economics. I. 3 Hr. PR: ECON 421 or equivalent. Optimization techniques in economic analysis of natural resources; environmental and agricultural management problems; linear, nonlinear, and dynamic programming.


530. Production Economics. II. 3 Hr. PR: ARE 500 and ARE 521. Developments in producer economics applied to natural resources, environmental, and agricultural issues.

540. 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.

541. Economics Metal Industries. 3 Hr.

542. 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.

543. 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.

546. Energy and Regional Development. II. 3 Hr. PR: ARE 580. Energy in the West Virginia economy and selected regions of the United States.

580. 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.
581. *Resource Appraisal and Decision Making*. II. 3 Hr. PR: ARE 500 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.


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

585. *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.

600. *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.

629. *Resource Commodity Markets*. II. 3 Hr. PR: ECON 725 and ECON 726 or consent. Advanced econometric methods of specification, estimation, and simulation of domestic and international resource markets and industries; time series and forecasting techniques.

632. *Natural Resource and Environmental Economics*. II. 3 Hr. PR: ARE 500 and ARE 521 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.

633. *Natural Resource Policy Analysis*. I. 3 Hr. PR: ARE 500 and ARE 521, or equiv. Welfare economics applied to the analysis and evaluation of natural resources, environmental, agricultural, and energy policy issues.

644. *International Markets and Trade*. I. 3 Hr. PR: ARE 500 and ARE 521. 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.


690. *Teaching Practicum*. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of agriculture research 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.)

696. *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.


698. *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.)

699. *Graduate Colloquium*. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
703. Advanced Natural Resource Economic Theory. I. 3 Hr. PR: ECON 710 and ARE 632. 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.

710. Advanced Environmental Economics. II. 3 Hr. PR: ECON 701 and ARE 632 or consent. Theory, efficient environmental design and analysis, modeling of economic and environmental systems, evaluation of non-market benefits and costs, and risk assessment.

735. Resources of Development Planning. 3 Hr.

Resource Management (RESM)


696. 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.

697. 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.)

Natural Resource Economics

Tim T. Phipps, Graduate Program Coordinator

e-mail: tphipps@wvu.edu
2018 Agricultural Sciences Building
http://www.caf.wvu.edu/resm/are

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.
- Economic 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 coursework 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 600-level or higher. Certain course requirements may be waived if the student has received equivalent training in prior coursework. Additional required coursework 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 development. Doctoral students must select two fields subject to approval by the student’s major professor and Graduate Committee (a prior M.S. degree can count towards one field). The student will be required to successfully complete a minimum of three courses at the 500-level or higher 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 (one field if the student has a prior M.S. degree);
• 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 expected.
Agricultural and Resource Economics (ARE)

500. Applied Microeconomics. I. 3 Hr. PR: ECON 301 and ECON 421, or equiv. Producer and consumer economics used in resource, environmental, and agricultural economic analysis.

521. Quantitative Methods in Resource Economics. I. 3 Hr. PR: ECON 421 or equivalent. Optimization techniques in economic analysis of natural resources; environmental and agricultural management problems; linear, nonlinear, and dynamic programming.


530. Production Economics. II. 3 Hr. PR: ARE 500 and ARE 521. Developments in producer economics applied to natural resources, environmental, and agricultural issues.

540. 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.

542. 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.

543. 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.

580. 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.

581. Resource Appraisal and Decision Making. II. 3 Hr. PR: ARE 500 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.

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

583. 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.

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

585. 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.

600. 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.

629. Resource Commodity Markets. II. 3 Hr. PR: ECON 725 and ECON 726 or consent. Advanced econometric methods of specification, estimation, and simulation of domestic and international resource markets and industries; time series and forecasting techniques.

632. Natural Resource and Environmental Economics. II. 3 Hr. PR: ARE 500 and ARE 521 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.

633. Natural Resource Policy Analysis. I. 3 Hr. PR: ARE 500 and ARE 521, or equiv. Welfare economics applied to the analysis and evaluation of natural resources, environmental, agricultural, and energy policy issues.
644. *International Markets and Trade*. I. 3 Hr. PR: ARE 500 and ARE 521. 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.


696. *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.


698. *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.)

699. *Graduate Colloquium*. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

703. *Advanced Natural Resource Economic Theory*. I. 3 Hr. PR: ECON 710 and ARE 632. 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.

710. *Advanced Environmental Economics*. II. 3 Hr. PR: ECON 701 and ARE 632 or consent. Theory, efficient environmental design and analysis, modeling of economic and environmental systems,evaluation of non-market benefits and costs, and risk assessment.


**Resource Management (RESM)**


696. *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.

697. *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.)
Interdisciplinary Degrees
Genetics and Developmental Biology
Joginder Nath, Chairperson of the Interdisciplinary Faculty
e-mail: jnath@wvu.edu
1120 Agricultural Sciences Building
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, immu-
nogenetics, mutagenesis, toxicology, human genetics, plant genetics, population and quan-
titative 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 coursework,
conducting examinations, and supervising the research.

Admission
To be considered for admission in the program the student must possess a baccalaure-
ate 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 informa-
tion, 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 702 Advanced Developmental Anatomy; Anatomy 704 Experimental Embryology; Biochemistry 791 Advanced Study in Nucleic Acids; Biology 313 Molecular Basis of Cellular Growth; Biology 793 Molecular Biology of the Gene; Biology 737 Developmental Biology, and Biology 752 Advanced Plant Physiology.

Genetics (GEN)


525. Human Genetics. II. 3 Hr. PR: GEN 371 or GEN 521 or consent. Study of genetic system responsible for development of phenotype in man. (Offered in spring of odd years.)

535. Population Genetics. II. 3 Hr. PR: GEN 371 or GEN 521 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.)

570. 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 770.)

575. Crop Breeding. II. 3 Hr. PR: GEN 371 or GEN 521. Methods and basic scientific principles involved in improvement of leading crops through hybridization, selection, and other techniques. (Offered in spring of even years.)


595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

697. 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.)

724. Cytogenetics. II. 4 Hr. PR: GEN 171 or GEN 321. 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.)

726. Advanced Biochemical Genetics. II. 3 Hr. PR: GEN 371 or GEN 521 and organic chemistry. Physiological and biophysical concepts of genetic material. Structure and arrangement of genetic units. Nucleic acids as carriers of genetic information. Gene action and amino acid coding. Biochemical evolution of genetic material. Genetic control mechanisms in mutation. (Offered in fall of even years.)

727. Genetic Mechanisms of Evolution. I. 3 Hr. PR: GEN 371 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.)

750. Seminar. I, II. 1 Hr. Recent literature pertaining to biochemical, classical, human, molecular, and cytological genetics.

790. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of genetics. 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.)

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

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

794. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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

E-mail: einskeep@wvu.edu

G-044 Agricultural Science Building

http://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 of 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 studies of embryonic loss, control of fertility 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. The focus of research is both basic and applied and 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.

Agriculture, Forestry, and Consumer Sciences

Dennis K. Smith, Associate Dean, for Academic Affairs/Program Coordinator
e-mail: dsmith3@wvu.edu
1006 Agricultural Sciences Building
http://www.caf.wvu.edu

Degree Offered

Master of Science

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. 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 associate dean of the Davis 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 until 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 coursework 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 associate dean during the first semester of enrollment. Upon completion of the coursework, the candidate must pass either an oral or a written examination given by the committee.
Agricultural Sciences
Paul E. Lewis, Director, of Division Animal and Veterinary Sciences, G038 AGS
e-mail: plewis@wvu.edu
Barton S. Baker, Director, Division of Plant and Soil Sciences, 1090 AGS
e-mail: bbaker2@wvu.edu
http://www.caf.wvu.edu

Degree Offered

**Doctor of Philosophy**

The Davis 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. 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. Students entering this program may select research and classes in ten areas of emphasis: 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 master’s 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 or 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 or her committee will formulate a plan of study, which will be filed in the Office of the Associate Dean for Academic Affairs of the College. 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 coursework. Additional coursework 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 coursework 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 coursework 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.
Eberly College of Arts and Sciences

M. Duane Nellis, Ph.D., Dean
Joan S. Gorham, Ed.D., Associate Dean
Rudolph P. Almasy, Ph.D., Associate Dean
Nicholas G. Evans, Ed.D., Associate Dean
Fred L. King, Ph.D., Associate Dean
Asuntina S. Levelle, J.D., Assistant Dean

http://www.as.wvu.edu/

Degrees Offered

Master of Science, Doctor of Philosophy in Biology
Master of Science, Doctor of Philosophy in Chemistry
Master of Arts in Communication Studies
Master of Arts, Master of Fine Arts, Doctor of Philosophy in English
Master of Arts in Foreign Languages
Master of Arts, Doctor of Philosophy in Geography
Master of Science, Doctor of Philosophy in Geology
Master of Arts, Doctor of Philosophy in History
Master of Arts in Liberal Studies
Master of Legal Studies
Master of Science, Doctor of Philosophy in Mathematics
Master of Science, Doctor of Philosophy in Physics
Master of Arts, Doctor Philosophy in Political Science
Master of Arts, Doctor of Philosophy in Psychology
Master of Public Administration
Master of Social Work
Master of Arts in Sociology and Anthropology
Master of Science in Statistics

The Eberly College of Arts and Sciences is West Virginia University’s largest college, with 300 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 2001, the faculty of the college produced over 400 publications, delivered over 450 professional presentations, and received 209 grants and contracts, 50 professional association citations, and 49 academic honors. In recent years, Arts and Sciences faculty have generated over $7,000,000 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, biological, 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, electromagnetics, 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 Faculty
† Indicates regular member of graduate faculty.
* Indicates associate member of graduate faculty.

Biology

Professors

Associate Professors
1Clifford P. Bishop, Ph.D. (U. Va.). Developmental and molecular biology of drosophila.

Assistant Professors
1Ashok Bidwai, Ph.D. (Utah St.). Biochemical and molecular genetic analysis of protein kinases.
Christy Foran, Ph.D. (Cornell U.). Environmental physiology, Endocrine disruption.
1Marc Kantorow, Ph.D. (George Wash. U.). Molecular biology of ocular disease.

Clinical Associate Professor
1Donna Ford-Werntz, Ph.D. (Mo.). Plant systematics.

Chemistry

Professors
1Jeffrey L. Petersen, Ph.D. (U. Wisc.). Associate chairperson. Physical inorganic chemistry, Organometallic chemistry, X-ray diffraction, Catalysis, Olefin polymerization.
1Kenneth Showalter, Ph.D. (U. Colo.). C. Eugene Bennett chair of chemistry, Chemical kinetics, Multistability and oscillating systems.
1Reuben H. Simoyi, Ph.D. (Brandeis U.). Physical chemistry, Chemical kinetics, Oscillating reactions.

Associate Professors
1Charles Jaffe, Ph.D. (U. Colo.). Theoretical chemistry, Molecular dynamics, Nonlinear dynamics.
1Fred L. King, Ph.D. (U. Va.). Analytical chemistry, Mass spectrometry, Gas-phase ion chemistry.
1John H. Penn, Ph.D. (U. Wisc.). Chemical education, Organic chemistry, Photochemistry, Electron transfer.
1Ronald B. Smart, Ph.D. (U. Mich.). Associate chairperson. Environmental analytical chemistry, Electrocatalysis, Trace metals.
1Bjorn C. Soderberg, Ph.D. (Royal Inst. of Tech.-Stockholm). Organic and organometallic chemistry, Synthetic methods, Natural product synthesis.
1Alan M. Stolzenberg, Ph.D. (Stanford U.). Inorganic chemistry, Bioinorganic chemistry, Organometallic chemistry.

Assistant Professor
1Aaron Timperman, Ph.D. (U. Ill.). Analytical chemistry, Separation science, Mass spectrometry, Proteins in seawater.
Communication Studies

Professors
†Melanie Booth-Butterfield, Ph.D. (U. Mo.). 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, nonverbal, and Organizational communication.

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

Assistant Professors
Scott A. Myers, Ph.D. (Kent St. U.). Group, instructional, and interpersonal communication.

English

Professors
†Dennis Allen, Ph.D. (U. Minn.). Critical theory, Prose fiction, Popular culture.
†Patrick W. Conner, Ph.D. (U. Md.). Eberly College Centennial Professor in English. Anglo-Saxon literature and culture, Medieval English literature, Humanities computing.
†Robert Markley, Ph.D. (U. Penn.). Jackson Family Chair in British Literature. Restoration and 18th-century literature, Science studies, Cultural studies.
†Brian McHale, Ph.D. (Oxford). Eberly Family Professor of American Literature. Postmodernism, American literature, Cultural studies.
†Kevin Oderman, Ph.D. (U. Calif.). American poetry, American literature, Creative writing: essay.
†Cheryl B. Torsney, Ph.D. (U. Fla.). American fiction, Henry James, Literary theory, Women writers.

Associate Professors
†Gail Adams, M.A. (U. Tex.). American studies, Creative writing.
†Rudolph P. Almasy, Ph.D. (U. Minn.). Associate dean. Renaissance and Reformation studies.
†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.
†Ellesa High, Ph.D. (Ohio U.). American Indian literature, Creative writing: fiction and nonfiction, Appalachian studies.
†David Stewart, D.Phil. (Oxford U.). British romanticism, Literary theory.
†Timothy Sweet, Ph.D. (U. Minn.). American studies (17th-19th century), Literature and environment, Native American literature.

Assistant Professors
Foreign Languages

Professors
1 Kathleen McNerney, Ph.D. (U. N. Mex.) Spanish. Catalan language and literature, Spanish literature and culture, Women writers.

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

Assistant Professors
1 Susan Braidi, Ph.D. (U. Del.) ESL/linguistics. Applied linguistics, Second language acquisition, Syntax.
Cynthia Chalupa, Ph.D. (Ohio St. U.). German. 19th- and 20th-century German Literature, Poetry, Foreign language pedagogy.

Geology and Geography

Professors
1 Trevor M. Harris, Ph.D. (U. Hull). Chair. Geographic information systems.
Randall Jackson, Ph.D. (U. of Ill.-Urbana). Director of the Regional Research Institute. Economic geography, Regional economic health and performance, Regional science.
1 Kenneth C. Martis, Ph.D. (U. Mich.). Political geography, Historical geography.
M. Duane Nellis, Ph.D. (Oregon St. U.). Natural resources, Land use, Remote sensing, Geographic information systems.
1 John J. Renton, Ph.D. (WVU). Geochemistry.
1 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.
†Ann M. Oberhauser, Ph.D. (Clark U.). Economic restructuring, Gender studies, Europe.
†Timothy A. Warner, Ph.D. (Purdue U.). Remote sensing.

Assistant Professors

Amy Hessl, Ph.D. (U. Ariz.). Biogeography, Forest ecosystems.
Ge Lin, Ph.D. (SUNY at Buffalo). Demography, GIS, Modeling.
Jamie Toro, Ph.D. (Stanford). Structural geology.

History

Professors

†Robert E. Blobaum, Ph.D. (U. Nebr.). Russia, East Europe, Poland, 20th-century political and social history.
†Ronald L. Lewis, Ph.D. (U. Akron). Robbins Chair. Modern U.S., West Virginia/Appalachia, Labor, South.
†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.
†Ken Fones-Wolf, Ph.D. (Temple U.). Late 19th-century, Labor, Ethnicity.
†Gregory A. Good, Ph.D. (U. Toronto). History of science, 18th- and 19th-century science, History of instruments and scientific institutions.
†Barbara J. Howe, Ph.D. (Temple U.). American women’s history, Women’s studies.
†A. Michal McMahon, Ph.D. (U. of Tex.). 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.
Matthew A. Vester, Ph.D. (U.C.L.A.). Early modern Europe, Italy.

Mathematics

Professors

†Krzysztof Ciesielksi, Ph.D. (Warsaw U.). Analysis, topology, set theory.
†Harvey Diamond, Ph.D. (MIT). Approximation theory, applied mathematics.
†Harry Gingold, D.Sc. (Israel Inst. Tech.). Differential equations, asymptotic methods
†Henry W. Gould, M.A. (U. Va.). Combinatorics, Number theory, Special functions.
†Harumi Hattori, Ph.D. (RPI). Differential equations, Continuum mechanics.
†Caulton L. Irwin, Ph.D. (Emory U.). Associate director, National Research Center for Coal and Energy.
†Yuesheng Xu, Ph.D. (Old Dominion U.). Eberly Family Professor of Mathematics. Numerical analysis, Integral equations, Wavelet analysis
†Cun-Quan Zhang, Ph.D. (Simon Fraser U.). Graph theory, Combinatorics.
Associate Professors
†Weifu Fang, Ph.D. (Claremont). Applied mathematics.
†John Goldwasser, Ph.D. (U. Wisc.). Combinatorics, Graph theory.
†Jerzy Wojciechowski, Ph.D. (Cambridge U.). Combinatorics, Graph theory.
Assistant Professor

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.
†Nancy C. Giles, Ph.D. (N.C.U.). Optical properties of semiconductors, Experiment.
†Larry E. Halliburton, Ph.D. (U. Mont.). Chairperson. Solid state physics, Experiment.
†Mark E. Koepke, Ph.D. (U. Md.). Plasma 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.
†David Lederman, Ph.D. (U. Calif.-Santa Barbara). Condensed matter physics, Experiment.
Assistant Professor
†Martina E. Bachlechner, Ph.D. (Johannes Kepler U., Austria). Condensed matter theory and large-scale materials simulations.

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.
Associate Professors
†Neil Berch, Ph.D. (U. Wash.). Public policy (political economy), American politics (state and local).

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.

Jeffrey S. Worsham, Ph.D. (U. Wisc.). Public policy (regulation, social welfare), Bureaucratic politics and public administration.

Assistant Professors

R. Scott Crichlow, Ph.D. (L.S.U.). International relations, Foreign policy decision-making, Middle East politics.

Lawrence J. Grossback, Ph.D. (U. Minn.). American, national, and state politics and policy, Environmental policy, Research methods.

*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, Organizational behavioral management.


Philip E. Comer, Ph.D. (WVU). Emeritus.

Barry A. Edelstein, Ph.D. (Memphis St. U.). Social competence, Clinical group psychology.

Kennon A. Lattal, Ph.D. (U. Ala.). Centennial professor. Animal learning and behavior, Issues in the history and philosophy of psychology, Human-pet relations.


Kevin T. Larkin, Ph.D. (U. of Pitt.). Cardiovascular reactivity and its implication in the development of cardiovascular disorders and anxiety-related problems.


Daniel W. McNeil, Ph.D. (U. of Ala.). Experimental psychopathology, Behavioral dentistry and behavioral medicine, Clinical research training and clinical suppression.


B. Kent Parker, Ph.D. (U. Utah). Stimulus control, memory, and complex sequential learning in animals, Research design.

David W. Schaal, Ph.D. (U. Fla.). Behavioral pharmacology of abused drugs.


Assistant Professors


Lindsay Cohen, Ph.D. (U. of Ga.). Pediatric coping and distress. Medical procedures.


Julie Hicks Patrick, Ph.D. (U. of Akron). Decision-making, Caregiving issues related to chronic mental illness and retardation, Non-traditional family constellations.


Adjunct Faculty
Lynda J. Birkhead, Ph.D. (U. Md.).
Andrew S. Bradlyn, Ph.D. (U. Miss.).
Bruce Corsino, Ph.D. (Fla. Inst. of Tech.).
Jennifer Haut, Ph.D. (U. of N.D.).
Marc Haut, Ph.D. (U. of N.D.).
Daniel E. Hursh, Ph.D. (U. Kans.).
A. Darnell Lattal, Ph.D. (WVU).
Aaron W. Schopper, Ph.D. (Va. Polytechnic Inst.).
M. Katherine Shear, Ph.D. (Tufts U.)
Julie Smith, Ph.D. (WVU).
Thomas J. Spencer, Ph.D. (WVU).
Christina Sara Wilson, Ph.D. (Wayne St. U.).
Oliver Wirth, Ph.D. (WVU).

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

Assistant Professors
Nancy Adams, Ph.D. (Fielding). Healthcare administration.
Mohamad Alkardy, Ph.D. (Fla. Atlantic U.). Public administration research and theory, Organizational behavior, Citizen participation.

Social Work
Professors
Marjorie H. Buckholz-Cleveland, Ph.D. (WVU). Emerita.
† Nancy L. Lohmann, Ph.D. (Brandeis U.). Social administration, Research measurement.
† Roger Lohmann, Ph.D. (Brandeis U.). Nonprofit management.
Virginia Majewski, Ph.D. (U. Pitt.). Public policy research and analysis.

Associate Professors
Caroline T. Mudd, M.S.W. (U. Penn.). Emerita.

Assistant Professors
Joan E. Saltman, Ph.D. (U. of Md.). Human behavior, Family social work, Multicultural issues.

Instructors
Lori Fountain Bales, M.S.W. (Wayne St. U.). Director of off-campus program, Martinsburg.
Linda Ferrise, M.S.W. (WVU). Clinical social work, Mental health, Adoption.

Academic Professionals
Sociology and Anthropology

Professors

Associate Professors
1Lawrence 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 Professor

Statistics

Professors
1Erdogan Gunel, Ph.D. (SUNY-Buffalo). Bayesian inference, Biostatistics, Categorical data analysis.
1William V. Thayne, Ph.D. (U. Ill.). Experimental design, Statistical genetics, Regression analysis.

Research Professor

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

Adjunct Associate Professor

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

Women’s Studies

Professor

Associate Professor
Barbara J. Howe, Ph.D. (Temple U.). Director. Women’s history, Women’s studies.

Assistant Professor
Elizabeth Engelhardt, Ph.D. (Emory U.). Women’s studies, Appalachian women, Ecofeminism.
Degrees Offered

Master of Science
Doctor of Philosophy

Nature of the Program
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 areas 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; environmental physiology; plant molecular biology; 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; biogeochemistry; wetland ecology; urban ecology; and in general, 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 40th percentile ranking for the verbal, quantitative, and analytical sections of the Graduate Record Examination; and an adequate science background which normally includes one year of physics and two years of chemistry. 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, but a 50th percentile ranking or higher in the verbal quantitative and analytical section of the GRE are required. The advanced biology GRE is recommended. 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, Eberly 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 coursework 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 no later than the end of the fourth semester in residence. The proposal exam is taken no later than the end of the fifth semester in residence.

**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)**

301. *History of Biology*. I. 3 Hr. PR: (BIOL 101 and BIOL 103 and BIOL 102 and BIOL 104) or BIOL 115. History of development of biological knowledge with philosophical and social backgrounds.

302. *Biometry*. 3 Hr. PR: STAT 211. 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.


311. *Advanced Cellular/Molecular Biology-Laboratory*. II. 1 Hr. COREQ: BIOL 310. Experimental approaches to the study of cellular systems.

312. *Introduction to Virology*. I. 3 Hr. PR: BIOL 219. Survey of viruses, their modes of replication, their contribution to molecular biology, the significance of viral diseases in agriculture and medicine, and the contemporary use of viruses in biotechnology.

313. *Molecular Basis of Cellular Growth*. I. 3 Hr. PR: BIOL 219. 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.

314. *Molecular Genetics*. II. 4 Hr. PR: BIOL 115, 117 and 219. 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 actual research experience in molecular genetics.

315. *Developmental Biology*. II. 4 Hr. PR: BIOL 115 and 117 and 219. A molecular genetic analysis of the mechanisms by which multicellular organisms develop from single cells. (With lab.)

336. *Aquaculture*. 3 Hr. PR: (BIOL 101 and 102 and 103 and 104) or 115. An introduction to the farming and husbandry of freshwater and marine organisms. Overnight field trips are voluntary.
340. *Invertebrate Zoology.* II. 4 Hr. PR: BIOL 219 and 221. The evolution of animals without vertebral columns. The laboratory includes field trips, including one that takes an entire weekend. (Dissection kit required.)

348. *Basic Neurobiology.* 3 Hr. PR: BIOL 115 and 117 and 219. This course provides an introduction to neuroscience. Basic neuroanatomy, neurophysiology, and the relationship between the central nervous system, physiology, and behavior will be covered. Neuroscientists from the medical center will provide guest lectures.

351. *Comparative Evolutionary Biology of Plants.* II. 4 Hr. PR: (BIOL 101 and 102 and 103 and 104) or (BIOL 115 and 117). 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. Laboratory emphasizes comparative analysis of living specimens. One or two field trips to nearby areas.

352. *Anatomy and Development of Plants.* II. 4 Hr. PR: BIOL 117 or PLSC 206. 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.

353. *Flora of West Virginia.* S. 3 Hr. PR: (BIOL 101 and 103 and 102 and 104 or 115). Identification of local woody and herbaceous seed plants, with emphasis 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.

357. *Plant Ecology.* I. 4 Hr. PR: BIOL 221. Introduction to the four divisions of plant ecology, including physiological ecology, population ecology, community ecology, and ecosystem ecology.

358. *Limnology.* I. 4 Hr. PR: (BIOL 101 and 103) or BIOL 115 or WMAN 224 or consent. Physical, chemical, and biological characteristics of inland waters with emphasis on the structure and function of stream ecosystems. (Also listed as WMAN 446.)

361. *Plant Geography.* I. 3 Hr. PR: BIOL 221. World-wide distribution patterns of plants and factors related to these distributions-including dispersal. Limiting factors, climate, evolution, historical history, plate tectonics, Pleistocene glaciations, and human activities. Plant communities and soils of polar, temperate, and tropical biomes are discussed.

410. *Cell and Molecular Biology Methods.* I. 3 Hr. PR: BIOL 219. Introduction to the theory and application of basic analytical tools used in molecular biology. Selected topics included are hydrodynamic methods, chromatography, electrophoresis, and general laboratory methods.

411. *Introduction to Recombinant DNA.* I. 4 Hr. PR: BIOL 219. 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.

412. *Cell Structure and Function.* 4 Hr. PR: BIOL 221. Students gain hands-on experience in methodologies used to study cell structure and function. Light and florescence microscopy are used to address cell signaling, signal transduction, exocytosis, apoptosis, and regulation of gene expression in reproductive endocrinology.

413. *Molecular Endocrinology.* I. 3 Hr. PR: BIOL 219. Hormonal action is discussed at the cellular and molecular levels. Topics include hormone production and regulation, receptor kinetics and activation, and receptor output.

414. *Molecular Endocrinology-Laboratory.* I. 1 Hr. COREQ: BIOL 413. Experimental techniques used to study hormones and receptors.

415. *Plant Development.* I. 4 Hr. PR: BIOL 115 and BIOL 117 and BIOL 219 and BIOL 221 and (organic chemistry or biochemistry.) Experimental studies of plant growth and development.

436. *General Animal Physiology.* I. 3 Hr. PR: BIOL 115 and BIOL 117 and BIOL 119 and BIOL 221. 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 analyses in discussion sessions of research literature.

437. *General Animal Physiology-Laboratory.* I. 1 Hr. COREQ: BIOL 436. After learning basic techniques, students are provided the opportunity to design, execute, and report upon an independent research project in physiology.
438. Animal Behavior. I. 4 Hr. PR: BIOL 221 and ((BIOL 101 and BIOL 102 and BIOL 103 and BIOL 104) or BIOL 115). Introduction to animal behavior (ethology) emphasizing the ecology and evolution of individual and social behaviors. Laboratory includes independent investigation of behavioral phenomena. (Offered in even-numbered years.)

439. Neuroethology. II. 3 Hr. PR: BIOL 117 and BIOL 219 and (BIOL 337 or BIOL 438). Explores the way behavior is controlled in a wide variety of animals so the similarities and differences in neural mechanisms can be better understood. (Offered in odd-numbered years.)

440. Comparative Anatomy. I. 4 Hr. PR: BIOL 115 and 117 and BIOL 219 and BIOL 221 or consent. A functional and evolutionary study of vertebrate structure. (Dissection kit required.)

441. Vertebrate Microanatomy. II. 5 Hr. PR: BIOL 115 and BIOL 117 and BIOL 219 and BIOL 221. Structural and functional approach to the study of tissues and organs of vertebrates.

450. Plant Systematics. I. 4 Hr. PR: (BIOL 101 and BIOL 103 and BIOL 102 and BIOL 104) or BIOL 117. 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.

461. Principles of Evolution. I. 3 Hr. PR: BIOL 221. Introduction to the study of evolution, including genetics of evolutionary change, speciation and adaptation, molecular evolution, the history of life, co-evolution, and the origins of humans.

462. Methods in Ecology and Biogeochemistry. II. 3 Hr. PR: BIOL 221. 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 the chemical analyses of biological material. (Offered in odd years.)

463. Global Ecology. I. 3 Hr. PR: BIOL 221. 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.

464. Quantitative Genetics. 3 Hr. PR: BIOL 221. Relationship of gene and genotype frequencies in populations of diploid organisms and the effects of mutation, selection, and non-random mating in relation to single gene pairs. Application of these concepts to multigenic inheritance of quantitative traits.


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

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

697. 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.)

698. 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.)

710. 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.

711. Molecular Basis of Virology. I. 3 Hr. PR: BIOL 219 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.

712. Molecular Biology of the Gene. 3 Hr. PR: BIOL 219 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.)

713. 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 florescence microscopy are used to address cell signaling, signal transduction, exocytosis, apoptosis, and regulation of gene expression in reproductive endocrinology. (Lec 3 hr., lab 3 hr., contact 6 hrs.)
736. *Fisheries Science*. II. 4 Hr. PR: BIOL 341 or equiv., or consent. Population dynamics in relation to principles and techniques of fish management. (Offered in spring of even years.)

737. *Developmental Biology*. I. 3 Hr. PR: BIOL 336 or equiv., organic chemistry or biochemistry, or consent. The molecular and cellular basis of differentiation and morphogenesis. (Offered in fall of odd years.)

738. *Fundamentals of Gerontology*. II. 3 Hr. PR: MDS 212 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 524.)

750. *Advanced Plant Systematics 1*. II 3 Hr. PR: BIOL 450 or equiv. Taxonomy of bryophytes, pteridophytes, and gymnosperms, emphasizing classification, identification, and nomenclature of regional species of mosses, ferns, and conifers.

751. *Advanced Plant Systematics 2*. II. 3 Hr. PR: BIOL 450 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.

752. *Advanced Plant Physiology*. I, II. 3 Hr. PR: BIOL 350, organic chemistry, general physics, and consent. Advanced studies of plant processes including recent advances in the field. In Fall semester, even numbered years—water relations and mineral nutrition and translocation. II. First semester, odd—numbered years—plant growth and development. III. Second Semester, even-numbered years—environmental physiology.

761. *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.)

762. *Plant Population Biology*. 3 Hr. PR: Graduate status or undergraduate status with the completion of BIOL 221 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.

790. *Teaching Practicum*. 1-3 Hr. PR: Consent. Supervised practice in college teaching of biology. 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.)

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

792. *Directed Study*. 1-6 Hr. Directed study, reading, and/or research.

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

794 A-Z. *Seminar*. I, II. 1-6 Hr. Seminars arranged for advanced graduate students.

795. *Independent Study*. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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 department.


798. *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.)
799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

Chemistry
Harry O. Finklea, Chair
222 Clark Hall
http://www.as.wvu.edu/chemistry

Degrees Offered

Master of Science
Doctor of Philosophy

Nature of the Program
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 300- or 400-level chemistry courses may be included; no more than ten hours may be elected outside the department; and coursework taken at the 500- to 700-level must include at least three, three-credit-hour courses distributed in at least two areas 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 500-700 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)


521. 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.)

531. Advanced Organic Chemistry 1. I. 3 Hr. PR: CHEM 234. Structural concepts, bonding, tautomerism, static and dynamic stereochemistry, mechanistic classifications of reagents, and reactions including some applications. (3 hr. lec.)

532. Advanced Organic Chemistry 2. II. 3 Hr. PR: CHEM 531. Continuation of CHEM 531 with emphasis upon synthetic methods and reaction mechanisms. (3 hr. lec.)

541. Chemical Thermodynamics. 3 Hr. PR: CHEM 348. Principles of classical and statistical thermodynamics and their application to chemical problems. (3 hr. lec.)

713. Electrochemistry and Instrumentation. I. 3 Hr. PR: CHEM 310. Electronic instrumentation applied to study of mass transfer kinetics of electrode reactions, voltammeter, and high-frequency methods. (3 hr. lec.)

714. Analytical Atomic Spectrometry. I. 3 Hr. PR: CHEM 450. Theory of atomic spectroscopy relevant to elemental analysis. Considerations in the design and use of modern optical spectrometry systems. (3 hr. lec.)

715. Chemical Separations. 3 Hr. PR: CHEM 215 and CHEM 233, and physical chemistry. Fundamentals of transport and flow processes underlying all separation techniques. Empirical coverage of chromatographic and electrophoretic methods for analytical separations. (3 hr. lec.)

723. Physical Methods in Inorganic Chemistry. I. 3 Hr. PR: CHEM 422. Symmetry, vibrational spectroscopy, theory, and applications of NMR and EPR methods, magnetism, optical activity, dynamic processes, and fluxional behavior. (3 hr. lec.)

724. Coordination Chemistry. II. 3 Hr. PR: CHEM 422. Symmetry, hybridization, ligand field theory, molecular orbital theory, metal-ligand bonding in coordination complexes and organometallics. (3 hr. lec.)

725. Inorganic Reactions and Mechanisms. I. 3 Hr. PR: CHEM 422. Inorganic reactions (ligand substitution, aquation, organometallic reactions, electron transfer), kinetics, and mechanistic studies. (3 hr. lec.)

733. Physical Organic Chemistry. II. 3 Hr. PR: CHEM 531. 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.)
743. **Chemical Kinetics.** I. 3 Hr. PR: CHEM 348. Theories and applications of kinetics in gaseous state and in solution. (3 hr. lec.)

744. **Statistical Mechanics.** I, II. 3 Hr. PR: CHEM 746. Theory and application of statistical mechanics to chemical systems. (3 hr. lec.) (Offered on demand.)

745. **Theoretical Chemistry 1.** I or II. 3 Hr. PR: Differential equations. Theoretical background for quantum mechanics. (3 hr. lec.)

746. **Theoretical Chemistry 2.** I, II. 3 Hr. PR: CHEM 745. Theories and applications of quantum mechanics in chemistry. (3 hr. lec.) (Offered on demand.)

747. **Molecular Spectroscopy and Structure.** II. 3 Hr. PR: CHEM 450 or graduate standing in chemistry, or consent. Advanced applications of spectral methods to the study of molecular structure. (3 hr. lec.)

749. **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.)

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

752 **Directed Study.** I, II. 1-6 Hr. Directed study, reading, and/or research.

753 **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

754 **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

755 **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

756 **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.

757 **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.)

758 **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.)

759 **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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
Matthew M. Martin, Chair
108 Armstrong Hall
http://www.as.wvu.edu/comm

Degree Offered

Master of Arts

Nature of the Program
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 700 and 701.
- 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 coursework 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 691A Applied Communication Theory, COMM 691B Nonverbal Communication in the Organizational Environment, and COMM 606 Theory and Research in Organizational Communication. Six hours of electives may be chosen from COMM 602, 604, 612, and 626.
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 36 hours of coursework with at least 30 hours in the Department of Communication Studies including COMM 600, 608, 616, and 619.
- 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)

400. Principles of Communication Education. 3 Hr. Literature, principles, and current practices of communication education in public schools with directed application. Intended for teachers in communication and language arts.

404. 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. This course is not open to freshmen.

408. Advanced Study in Nonverbal Communication. 3 Hr. PR: COMM 308. Functions of nonverbal communication including status, power, immediacy, relationship development, regulation, turn-taking, leakage and deception, person perception, and emotional expressions.

490. Teaching Practicum. I, II. 1-3 Hr. Teaching practice as a tutor or assistant.

600. Communication in the Classroom. 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.

602. Interpersonal Communication: Theory and Research. 3 Hr. Survey of the theory and research in interpersonal communication. Emphasis upon relational communication and intimate communication in interpersonal relationships.

603. 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.

604. Theory and Research in Persuasion. 3 Hr. Various theories and principles of persuasion with emphasis on contemporary research literature.

605. Theory and Research in Mass Communication. 3 Hr. Mass communication from a consumer’s viewpoint. Use of consumer-oriented mass media research also stressed.

606. Theory and Research in Organizational Communication. 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.

607. Theory and Research in Language. 3 Hr. Study of verbal interactions and language from source and receiver perspectives.

608. Nonverbal Communication. 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.

609. Communication Apprehension and Avoidance. 3 Hr. Theory and research related to individuals’ predispositional and situational tendencies to approach or avoid communication. Emphasis on work in the areas of willingness to communicate, communication apprehension, reticence, and shyness.

612. Small Group Theory and Practice. 3 Hr. Specific research areas in interpersonal communication with emphasis on small groups.

615. Media in Communication and Education. 3 Hr. Use of the media in educational and other communication environments with emphasis on communication processes and principles relevant to television and film.
616. *Communication in the Educational Organization.* 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.

617. *Communication Problems of Children.* 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.

619. *Communication and Affect in Instruction.* 3 Hr. PR: Graduate status. This advanced graduate course addresses how communication of affect from the perspective of both instructor and students influences classroom learning.

622. *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.

626. *Intercultural Communication: Theory and Research.* 3 Hr. Advanced seminar in communication of various cultures. Special emphasis on research in diffusion of innovations.

629. *Health Communication.* 3 Hr. 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 medial related applications.

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

693 A-Z. *Special Topics.* 1-6 Hr. A study of contemporary topics selected from recent research.

697. *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.)

700. *Survey of Human Communication Theory.* 3 Hr. Broad overview of contemporary theories in human communication. Should be taken the first semester of graduate study.

701. *Graduate Research Methods.* 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.

711. *Advanced Seminar in Research Methods.* II. 3 Hr. PR: COMM 701. Research techniques necessary to conduct original communication research. Emphasis on advanced statistical techniques.

793 A-Z. *Special Topics.* 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794 A-Z. *Seminar.* 1-6 Hr. Seminars arranged for advanced graduate students.

795. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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.

797. *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.)

798. *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.)

799. *Graduate Colloquium.* 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
English
Timothy D. Adams, Ph.D., Chair
Robert Markley, Ph.D. Supervisor
John Lamb, M.A. Supervisor
James Harms, M.F.A. Supervisor
Stansbury Hall
http://www.as.wvu.edu/english

Degrees Offered
- Master of Arts
- Master of Fine 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 (Non-thesis Option) M.A. candidates selecting the non-thesis option must successfully complete 30 hours of coursework in English, distributed as follows: three hours of ENGL 680 Introduction to Literary Research; nine hours of core courses; nine hours of author/topic/genre courses; six hours of 700-level seminar courses; and three hours of unrestricted coursework. With the approval of the Graduate Program Committee, the three unrestricted hours may be taken in a department other than English. Only classes passed with a grade of B or better count toward the degree.

Course Requirements (Thesis Option) M.A. candidates selecting the thesis option must successfully complete 24 hours of coursework in English and write a thesis for six hours of credit under the supervision of a thesis advisor. The 24 hours of coursework are distributed as follows: three hours of ENGL 680 Introduction to Literary Research; nine hours of core courses; six hours of author/topic/genre courses; and six hours of 700-level seminar courses. Only classes passed with a grade of B or better count toward the degree. Candidates may register for up to 12 hours of thesis credit, but only six of these hours can be counted toward the 30 hours required for the degree. Thesis hours are graded S/U (satisfactory/unsatisfactory). Students must defend the thesis in a public oral examination.

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. Examinations are regularly given in German, French, and Spanish. For the availability of other languages, contact the Department of Foreign Languages directly. 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.

Master of Fine Arts
Admission Prospective candidates for the degree of master of fine arts are normally expected to have completed a bachelor’s degree in English. Admission to the program is based primarily on the excellence of a substantial writing sample in fiction, nonfiction, or poetry (10 to 20 pages of poetry; 20 to 30 pages of prose). Also required are Graduate Record Examination scores, three letters of recommendation, and a personal statement. Non-native speakers of English must present TOEFL scores. Past experience has shown that successful graduate students usually score above the 60th percentile on the verbal section of the GRE.
Course Requirements and Thesis  M.F.A. students must successfully complete 45 hours, distributed as follows: twelve hours of creative writing workshops; twelve hours of graduate-level English courses (non-creative writing); three hours of creative writing pedagogy (which involves participation in the writers-in-the-schools program); three hours of special topics in writing; nine thesis hours; and six hours to be determined in consultation with the creative writing faculty. Only classes passed with a grade of B or better count toward the degree. The student is required to submit a book-length manuscript (minimum of 48 pages in poetry, 150 pages in fiction), suitable ideally for publication on its own, that has been approved by a thesis director and two readers. Final approval is granted following an oral defense of the thesis. The core of the program is the workshop, where students submit their own writing for discussion and critique. This writing will make up the bulk of the thesis, which will be completed under the close supervision of the thesis advisor and two additional Thesis Committee members. The non-creative writing courses will be the same as those taken by Ph.D. and M.A. students. There is no foreign language requirement.

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 Graduate Record Examination General Aptitude Test and Advanced Test scores. Nonnative speakers of English must also present their TOEFL scores.

Course Requirements and Examinations  During the first year in residence, students must enroll in ENGL 799 Graduate Colloquium and pass the preliminary qualifying examination. Thirty hours of coursework must be taken prior to the examination for formal admission to candidacy. Of these 30 hours, nine hours must be in 700-level seminars, one of which must be ENGL 782 Current Directions in Literary Study. All doctoral candidates must take ENGL 680 Introduction to Literary Research unless they have previously taken an equivalent course. A maximum of six hours of ENGL 695 and 795 Independent Study can be counted toward the 30 hours of coursework. Students are required to teach one three-hour composition course and one three-hour literature course while in residence and to register concurrently for ENGL 790 Teaching Practicum; this requirement may be waived pending departmental approval for candidates who have substantial prior teaching experience. ENGL 790 does not count toward the 30 required hours of coursework.

Language Requirement  The foreign language requirement is the same as for the M.A. program and must be completed prior to taking the examination for formal admission to candidacy.

Doctoral Dissertation  After completing coursework, 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 prospectus must be approved by the Dissertation Committee. 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 open to the public.

Eberly College of Arts and Sciences
Core Courses
601. Studies in Composition and Rhetoric
618. Graduate Writing Workshop
623. Old English 1
646. American Literature to 1865
647. American Literature, 1865 to 1915
648. American Literature, 1915 to Present
661. Medieval Literature
663. Shakespeare
664. Renaissance Literature
666. Restoration and Eighteenth-Century Literature
668. Romantic Literature
669. Victorian Literature
671. Twentieth-Century British Literature
682. Recent Literary Criticism

Author, Topic, Genre Courses
606. Topics in Humanities Computing
624. Old English 2
631. Studies in Nonfiction Prose
632. Studies in Poetry
634. Studies in Drama
635. Studies in the Novel
636. Study of Selected Authors
693. Special Topics

Seminars
741. Seminar in American Studies
761. Seminar in Medieval Studies
764. Seminar in Renaissance Studies, 1550–1660
766. Seminar in Restoration and Eighteenth-Century Studies
768. Seminar in British Romanticism
769. Seminar in Victorian Studies
771. Seminar in Twentieth-Century British Studies
782. Current Directions in Literary Study
793. Seminar in Special Topics
789. Folger Institute Seminar

English (ENGL)

606. Topics in Humanities Computing. I, II. 3 Hr. Topics rotate by semester; check with instructor. Topics may 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.

618. Graduate Writing Workshop. I, II. 3 Hr. PR: Consent. (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.

623. Old English 1. I, II. 3 Hr. Study of Anglo-Saxon with selected readings from the literature of the period.

624. Old English 2. I, II. 3 Hr. PR: ENGL 623. Beowulf and other texts in Old English.

631. Studies in Nonfiction Prose. I, II. 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.
632. *Studies in Poetry*. I, II. 3 Hr. Advanced study in the 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.

634. *Studies in Drama*. I, II. 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.

635. *Studies in the Novel*. I, II. 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.

636 A-Z. *Study of Selected Authors*. I, II. 3 Hr. Advanced study of one or more major authors.

646. *American Literature to 1865*. I, II. 3 Hr. Readings in the literature of America from its beginnings to 1865; attention to major writers and genres; focus on literary history.

647. *American Literature, 1865-1915*. I, II. 3 Hr. Readings in the literature of America from 1865-1915; attention to major writers and genres; focus on literary history.

648. *American Literature, 1915-Present*. I, II. 3 Hr. Readings in the literature of America from 1915 to the present; attention to major writers and genres; focus on literary history.

661. *Medieval Literature*. I, II. 3 Hr. Readings in the literature of the Medieval period; attention to major writers and genres; focus on literary theory.

663. *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.

664. *Renaissance Literature*. I, II. 3 Hr. Readings in the literature of the English Renaissance; attention to major writers and genres; focus on literary history.

666. *Restoration and Eighteenth-Century Literature*. I, II. 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.

668. *Romantic Literature*. I, II. 3 Hr. Readings in the literature of England during the Romantic period; attention to major writers and genres; focus on literary history.

669. *Victorian Literature*. I, II. 3 Hr. Readings in the literature of England during the Victorian period; attention to major writers and genres; focus on literary history.

671. *Twentieth-Century British Literature*. I, II. 3 Hr. Readings on the literature of England during the twentieth century; attention to major writers and genres; focus on literary history.

680. *Introduction to Literary Research*. I, II. 1-6 Hr. Bibliography; materials and tools of literary investigations; methods of research in various fields of literary history and interpretation; problem of editing. Practical guidance in the writing of theses.

682. *Recent Literary Criticism*. I, II. 3 Hr. Brief survey of theories of major schools of recent criticism and an application of these theories to selected literary works.

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

692 A-Z. *Directed Study*. I, II. 1-6 Hr. Directed study, reading, and/or research.

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

695. *Independent Study*. I, II. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

698. *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 student’s reports, thesis, or dissertations. (Grading may be S/U.)

761. Seminar in Medieval Studies. I, II. 3 Hr. Topics in English literature, 900-1500.

764. Seminar in Renaissance Studies, 1550-1660. I, II. 3 Hr. Studies in major authors and special topics in the Renaissance.

766. Seminar in Restoration and Eighteenth-Century Studies. I, II. 3 Hr. Studies in major authors and special topics in the period.

768. Seminar in British Romanticism. I, II. 3 Hr. Studies in major authors and special topics in the field of British Romanticism.

769. Seminar in Victorian Studies. I, II. 3 Hr. Research and discussion in selected topics in the literature and history of the period.

771. Seminar in Twentieth-Century British Studies. 3 Hr. Seminar in principal authors and movements in twentieth-century British literature.

782. Current Directions in Literary Study. I, II. 3 Hr. PR: Advanced graduate standing (prior completion of ENGL 682 is 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.

789. Folger Seminar. 1-6 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 in Washington, D.C. Topics vary.

790. 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.)

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

794. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

798. 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 student’s reports, thesis, or dissertations. (Grading may be S/U.)

799. Graduate Colloquium. I, II. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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., Chair
205-B Chitwood Hall
Jeffrey Bruner, Graduate Coordinator
216 Chitwood Hall
http://www.as.wvu.edu/forlang

Degree Offered
Master of Arts

Nature of the Program

The Department of Foreign Languages offers the degree of master of arts with emphasis in the following areas: French, German, Spanish, linguistics, and teaching English as a second language (TESOL). Students also have the option of combining two of these areas for their degree. The master’s degree is intended for those students who seek more specialized knowledge in order to teach in their chosen area, as well as for students who plan to prepare for doctoral studies or other professional employment. The graduate program in foreign languages offers courses in language teaching methodology and applied linguistics as well as in theoretical linguistics, literary criticism, literature, and culture. Students also have the opportunity to engage in research projects that reflect their interests within a given subject and that 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 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 limited opportunities to teach during the University’s summer sessions. Assistantships are awarded annually to those students who have demonstrated 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 3.0 (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.

In addition to the above, the department requires that all applicants submit an extended writing sample in the language to which they are applying.

- For students applying to French, German, and Spanish, this document should be an essay or other composition done for a course in the student’s undergraduate major.
- The department recognizes that few undergraduates may have the opportunity to major in linguistics and TESOL; those students may submit an essay or other composition, written in English, done for a course during their undergraduate studies.
- Students applying for a combined degree must submit a writing sample for their primary area.
- Those students whose undergraduate studies were completed over five years prior to their application to the department may submit (with the permission of the department) another, more recent, writing sample.
All international students whose native language is not English must demonstrate proficiency in English by scoring a minimum of 550 on the paper version or 217 on the computer version of the TOEFL Test in order to be admitted to the university. Note: international students whose native language is not English applying to study TESOL (and TESOL combination areas) must score a minimum of 580 on the paper version or 237 on the computer version of the TOEFL Test in order to concentrate in that area of study.

To be considered for a graduate teaching assistantship (GTA), students must complete the GTA Application Form and submit a cassette tape in the language to which they are applying. In addition, they must have three letters of recommendation forwarded by the writers to the Department of Foreign Languages. Note: consideration for an assistantship 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 Information

Advising All graduate students will have a primary advisor (usually assigned by the chairperson 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 and the Office of International Students and Scholars 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 Office of International Students and Scholars for the necessary application papers and any possible changes in policy.

Academic Requirements for Graduation

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. No more than twelve hours of coursework done at the 400 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 credits (697/698) can be applied to the degree.
• A 3.0 GPA is required for graduation. Note: no course for which the grade of D or below is recorded can be counted for graduation credit.
• 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, or a TESOL combination, must demonstrate proficiency in a second language prior to graduation by: 1.) completing one course of level 204 or above, with a grade of B or better, or 2.) passing the departmental foreign language examination in one language. Non-native speakers of English in TESOL, linguistics, or a TESOL combination must achieve a TOEFL score of 580 on the paper version or 237 on the computer version.

Areas of Emphasis

Students must sign a formal Plan of Study (available in 205 Chitwood) by mid-term of their first semester of graduate work. This document lists the requirements within the individual areas of emphasis, and it is the student’s responsibility to fulfill these requirements. Students can change their area of emphasis prior to the semester they intend to graduate. Please note, however, that teaching assistantships are awarded on the basis of students’ area of emphasis, and a change may affect reappointment. The areas of emphasis are divided into five content areas of specific requirements, according to the outline given below (for a complete list of courses, consult the departmental Graduate Program Handbook).

French, German, Spanish, and Linguistics

I. Research and Theoretical Bases (6 hrs.)
   All students are required to complete BIBY 615 as well as the appropriate theory-based course for their area.

II. Knowledge/Applications (12 hrs.)
   This grouping is comprised of several courses designed to provide students with an appropriate and adequate foundation in their area of emphasis.

III. Cultural/Social/Historical Context (3 hrs.)
   Students must complete one course which will provide them with knowledge of the cultural, social, and/or historical developments pertinent to their area of emphasis.

IV. Language Structures (3 hrs.)
   Students must complete one course designed to give them in-depth knowledge of the developmental or structural aspects of the language.

V. Extensions (12 hrs.)
   Four courses of approved electives are required, which will allow students to pursue coursework related to a particular interest they have or to expand their general knowledge in their program. Students may also choose to write a thesis, which will count for six of the hours in this group.

Teaching English to Speakers of Other Languages (TESOL)

I. Research and Theoretical Bases (6 hrs.)
   Students are required to complete BIBY 615 and LANG 622.

II. Knowledge/Applications (9-12 hrs.)
   Students must complete LANG 521 and two or three additional courses designed to provide them with an appropriate and adequate foundation in their area of emphasis.

III. Cultural/Social/Historical Context (6 hrs.)
   Students must complete a course in American culture (ESL 630) and one course in American literature.

IV. Language Structures (6 hrs.)
   Students must complete LING 511 and one additional course in ESL phonetics or in phonology.

V. Extensions (6-9 hrs.)
   Students will complete two or three courses of approved electives to expand their individual interests. Students who elect to write a thesis will count their six thesis credits here.
Combination Degree

This area of concentration serves those students who seek graduate work in two areas. All students must complete BIBY 615 (3 hr.). Beyond that, students will select a primary concentration of 18 hours and a different secondary concentration of 15 hours to fulfill the 36 hours of required coursework for the degree according to the following outline.

I. Primary Area of Concentration (18 hrs.)
   a. Twelve hours of coursework from research and theoretical bases and knowledge/applications.
   b. Three hours of coursework from cultural/social/historical context.
   c. Three hours from language structures.

II. Secondary Area of Concentration (15 hrs.)
   a. Nine hours of coursework from research and theoretical bases and knowledge/applications.
   b. Three hours of coursework from cultural/social/historical context or language structures.
   c. Three hours of coursework from extensions or other approved electives in the secondary area of concentration. (GTA’s who do not teach in TESOL should count LANG 621 here)

There is no thesis option provided in the 36 hours of required courses for the combination degree. Students who wish to write a thesis may do so in addition to the 36 hours of course requirements.

Comprehensive Examinations

The comprehensive examinations are intended to evaluate students’ knowledge, including the ability to synthesize and evaluate ideas in their area of emphasis. The examinations are based on standardized reading lists (available in 205 Chitwood) and coursework. Although many of the works on the reading lists will be covered in coursework, independent reading will be necessary. Students must take the comprehensive examinations the semester they intend to graduate.

Thesis

A student may elect to write a thesis and prepare an oral defense. Under this option, the student is not required to take the written comprehensive examinations but may be asked to comment on coursework and the reading lists, particularly as they relate to the thesis. For more information about this option, see the document Information Regarding Theses (available in 205 Chitwood).

Information for Graduate Teaching Assistants

The department values the contributions made by our graduate assistants and strives to help them become effective teachers. Graduate assistants normally teach two courses (six class-hours per week). They work under the direct supervision of the course coordinator in the language area, but they are fully responsible for their courses (including evaluating their students’ work). 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.

All graduate assistants must register for a LANG 621 (LANG 521 for TESOL students) during their first semester. In addition, graduate assistants must register for LANG 690 each semester of employment. (Please note that this course 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), he or she 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.
Bibliography and Research (BIBY)

590. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of bibliography. 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.)

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

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

611. Introduction to Research. 1-3 Hr. PR: Graduate standing. Pro-seminar in graduate-level research in foreign languages, literature, and linguistics.

615. Methods of Research. 3 Hr.

690. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of bibliography. Note: this course is intending 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.)

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

692. Directed Study. 1-6 Hr. Directed study, reading, and or research.

693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

698. 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.)

791. Advanced Study. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

797. 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.)
Classics (CLAS)

590. 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.)

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

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

596. 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.

597. 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.)

598. 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.)

599. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

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

English as a Second Language (ESL)

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

630. American Culture. 3 Hr. Advanced readings concerning the diversity of American culture with a focus on critical inquiry.

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

697. 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)
591. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

594 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

610. Comparative Literature: Theory and Practice. 3 Hr. PR: Reading fluency in at least one foreign language. Conceptual bases of comparative literature and their application to literary interpretation.

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

694 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

697. 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.)

French (FRCH)
501. French Stylistics. 3 Hr. Development of written communication in French through intense study of French grammar, stylistics, and translation.

532. Early French Literature. 3 Hr. PR: 18 Hr. of French or consent.

533. Seventeenth Century Literature. 3 Hr. PR: 12 Hr. of French or equiv.

534. Eighteenth Century Literature. 3 Hr. PR: 18 Hr. of French or consent. Survey of major literary works of eighteenth century France.

535. Nineteenth Century Literature. 3 Hr. PR: 12 Hr. of French or equiv.

536. Twentieth Century Literature. 3 Hr. Introduction to the major tendencies, authors, and works of Twentieth Century French Literature. Analysis of the most representative works of this period and of the cultural and artistic movements to which they belong.

538. Francophone Literature. 3 Hr. PR: Consent. Readings in French literature from regions outside of metropolitan France, such as Africa, Quebec, and the Caribbean.

590. 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.)

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

611. Literary Criticism. 3 Hr. PR: B.A. in French or consent.

635. The Romantic Movement. 3 Hr. PR: 18 Hr. of French or consent.

636. French Realism. 3 Hr. PR: 18 Hr. of French or consent.

639. French Women Writers. 3 Hr. PR: B.A. in French or consent. Selected works of French women writers.

647. The Modern Novel to 1930. 3 Hr. PR: B.A. in French or consent.

648. The Novel After 1930. 3 Hr. PR: B.A. in French or consent.

690. 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.)
691. **Advanced Topics.** 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

692. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

693. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694 A-Z. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

695. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. **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.

697. **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.)

698. **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.)

699. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

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

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**German (GER)**

545. **Enlightenment Through Romanticism.** 3 Hr. PR: 18 Hr. of German or consent. Critical study of German literature from 1750 to 1830.

546. **The Liberal Age.** 3 Hr. PR: 18 Hr. of German or consent. Critical study of German literature from 1830 to 1870.

547. **The Age of Crisis.** 3 Hr. PR: 18 Hr. of German or consent. A critical study of German literature from 1870 to 1945.

548. **Postwar German Drama.** 3 Hr. An exploration of postwar German drama with discussion and analysis of noted plays since 1945.

590. **Teaching Practicum.** 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.)

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

592. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

593. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594 A-Z. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

595. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

611. **Literary Criticism.** 3 Hr. An introduction to the most important theories within modern literary criticism.

649. **The German Novel.** 3 Hr. A study of representative novels from various periods.
650. German Democratic Republic Literature. 3 Hr. A literary-historical study of representative works from the German Democratic Republic (1945-1990).

690. Teaching Practicum. 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.)

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

692. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

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

Language Teaching Methods (LANG)

521. ESL Methods. 3 Hr. Theory and practice of teaching English as a second language; techniques and approaches for teaching speaking, listening, reading, and writing skills.

590 A-Z. Teaching Practicum. 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.)

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

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

621. Teaching Foreign Language in College. 3 Hr. Methods and techniques of teaching a foreign language at the college level.

622. ESL Theory. 3 Hr. PR: LING 101 or 311. Explores factors and processes involved in the acquisition of English as a second language and their implications for classroom instruction.
623. **ESL Materials and Syllabus Design.** 3 Hr. PR: LANG 521. Theory and design of syllabi and materials applied to diverse ESL & EFL teaching situations. Students produce and evaluate all aspects of integrated instructional units.

624. **Second Language Writing.** 3 Hr. PR: LING 101 or equivalent. A study of how adults learn to write in a second language and how to help them improve their writing.

690 A-Z. **Teaching Practicum.** 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.)

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

692. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

693. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694 A-Z. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

695. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. **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.

697. **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.)

698. **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 if their student's reports, thesis, or dissertations. (Grading may be S/U.)

699. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

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

**Linguistics (LING)**

511. **ESL Linguistics.** I. 3 Hr. PR: LING 101 or LING 301. 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.

512. **Applied Linguistics.** 3 Hr. PR: LING 311 and prior second language study. Study of the application of linguistic analysis in the areas of language acquisition, instruction, and use.

513. **History of Linguistics.** 3 Hr. PR: LING 311 or consent. Development of linguistics from Greeks and Romans to contemporary researchers with concentration on major linguists and schools of the nineteenth and twentieth centuries.

514. **Sociolinguistics.** 3 Hr. PR: LING 101 or LING 311. Linguistic study of geographical and social variation in languages; effects of regional background, social class, ethnic group, sex, and setting; outcomes of conflict between dialect and between languages.

516. **Discourse Analysis.** 3 Hr. PR: LING 101 or equivalent. A study of the structural properties of spoken and written texts and how they are related to the contextual factors involved in text production.

590. **Teaching Practicum.** 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.)
591 A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

601. History of the Spanish Language. 3 Hr. PR: 18 Hr. of Spanish and LING 311 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.

602. Old Spanish. 3 Hr. PR: Consent.

603. History of the French Language. 3 Hr. PR: 18 Hr. of French and LING 311 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.

604. Old French. 3 Hr. PR: Consent. Study of the oldest monuments of the French language including the Chanson de Roland and Aucassin et Nicolette in an effort to trace the evolution of Francien, Anglo-Norman, and Picard and Vulgar Latin.

605. History of the German Language. 3 Hr. PR: 18 Hr. of German and LING 311 or consent. Historical development of standard German languages and dialects.

606. Middle High German. 3 Hr. PR: 18 Hr. of German and LING 311 or consent. Study of the linguistic developments of Middle High German from the eleventh to the fifteenth centuries with illustrative readings from the Niebelungenlied.

607. History of the Russian Language. 3 Hr. PR: 18 Hr. of Russian and LING 311 or consent. Development of Russian from Indo-European to the present.

611. Advanced Phonology. 3 Hr. PR: LING 411. 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.

612. Advanced Syntax. 3 Hr. PR: LING 412 or consent. Examination and discussion of theoretical issues in generative-transformational syntax. Focus on specific proposals advanced within the framework of government-binding theory.

322. ESL Phonetics. 3 Hr. PR: LING 311. 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.

614. Psycholinguistics. 3 Hr. PR: LING 311 or consent. Provides an insight into the many areas of psycholinguistics study, including language acquisition, sentence processing, animal communication, dichotic listening, aphasia, and semantics.

615. Language Change and Reconstruction. 3 Hr. PR: LING 311 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.

690. Teaching Practicum. 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.)

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

692. Directed Study. 1-6 Hr. Directed study, reading, and/or research.
693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. Graduate Seminar. 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.

697. 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.)

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in his/her departments 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.)

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

Russian (RUSS)
591. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

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

597. 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.)

Spanish (SPAN)
590. 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.)

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

592. Directed Study. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

593. Special Study. 1-6 Hr. Directed study, reading, and/or research.

594 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

611. Literary Criticism. 3 Hr. Introduction to the main tendencies of contemporary literary theory as applied to Spanish literature; literary theory and practice. Review and evaluation of the main critical approaches from a practical standpoint.

630. Latin American Culture. 3 Hr. A study of history, culture, politics, economics, and development of the Latin American continent.

631. Latin American Short Story. 3 Hr.

632. Latin American Novel to 1960. 3 Hr.
633. Latin American Novel Since 1960. 3 Hr.

634. Latin American Poetry. 3 Hr.

635. Latin American Theatre. 3 Hr.

636. Latin American Nobel Prize Winners. 3 Hr.

647. Lyric Poetry. 3 Hr. PR: 24 Hr. of Spanish or equivalent.

650. Spanish Civilization. 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.)

651. Medieval and Golden Age. 3 Hr. In depth reading in Spanish literature of the Middle Ages, Renaissance, and Baroque periods, in narrative, drama, and poetry, within its historical context. Non canonical works will also be included and studied.

652. Cervantes. 3 Hr. PR: 24 Hr. of Spanish or consent.

653. 18th and 19th Century Literature. 3 Hr. Introduction to the major tendencies, authors, and works of the 18th and 19th Centuries Spanish Peninsular Literature; presentation and analysis of the main literary movements of the period, form the Enlightenment to Naturalism.

654. Spanish Literature 1898-1936. 3 Hr. Survey of the major trends and representative authors and works of the Modernist period in Spain.

655. Spanish Literature 1936-1975. 3 Hr. In-depth study of Spanish literature published between 1936, the outbreak of the Spanish Civil War, and 1975, the end of the Franco dictatorship. Focus on all genres and their historical context.

656. Spanish Literature after 1975. 3 Hr. Survey of the major trends and representative authors and works of Spanish literature since the end of the Franco dictatorship.

671. Latin American Women Writers. 3 Hr.

672. Spanish Women Writers. 3 Hr.

673. Hispanic Literature and Film. 3 Hr.

674. Afrohispanic Literature. 3 Hr. The reading, discussion, and analysis of literature written by Hispanic authors of African descent.

690. Teaching Practicum. 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.)

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

692. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

698. 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 the writing of their student’s reports, thesis, or dissertations. (Grading may be S/U.)
699. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

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

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.

### Geology and Geography

Trevor Harris, Chair

#### Geography

Kenneth C. Martis, Associate Chair for Geography

425 White Hall, P.O. Box 6300

http://www.geo.wvu.edu

#### Degrees Offered

**Master of Arts**

**Doctor of Philosophy with a major in Geography**

#### Nature of the Program

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 science, 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, Geography Graduate Program, West Virginia University 425 White Hall, P.O. Box 6300, Morgantown, WV 26506. All application materials must be received by April 15 for fall admission. International students should submit their materials at least three months in advance of all deadlines.

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.

Degree Requirements

The program is designed so that full-time students should satisfy all program requirements within two years. Students are expected to be well grounded in one or more of the program’s three areas of specialization (regional development and planning; environmental and resource geography; and geographic information science and remote sensing). Students will be awarded an M.A. after fulfilling the following requirements:

- Obtain 30 hours of graduate credit.
- Complete the course Geographic Traditions (GEOG 601, 3 hours).
- Complete the course Geographic Research Design (GEOG 602, 3 hours).
- Complete the Colloquium Series (GEOG 600) for four semesters (total of 4 hours).
- Complete 9 hours of geography graduate courses (400 level and above), but excluding GEOG 689-695 and GEOG 697-699

Note: with the approval of the Graduate Committee, courses from other programs may also be used to fulfill this requirement.

- Select one of:
  A. Thesis option
     Complete and successfully defend a written research thesis (GEOG 697, 6 hours).
  B. Non-thesis option
     Complete a one-semester project (GEOG 697, 3 hours) and an additional graduate course (400 level and above, 3 credit hours, but excluding 691 and 791 courses).

The First Year for all M.A. Students

Each incoming student is interviewed before the fall semester to identify the student’s interests and any academic deficiencies that require remedial work before graduate studies continue. All students are initially supervised by the graduate coordinator.

Once the student develops a more clearly defined research interest, but no later than the middle of the spring semester, the student should request a faculty member to be an advisor. The student should discuss with the advisor whether to pursue the thesis or non-thesis option. The student and the advisor together select an Advisory Committee. A minimum of two of the three committee members (including the advisor) must be geography faculty members at WVU. Students may change advisor or committee members after consultation with the advisor and the Graduate Committee. The progress of every student is reviewed toward the end of the spring semester. In cases where a student is performing significantly below expectations, the student may be required to leave the program.

The M.A. Thesis Option

The M.A. thesis is an independent research project undertaken by the student. The thesis research should:

- Demonstrate knowledge of the literature in the student’s chosen field.
- Use data and methods appropriate to the research.
- Draw conclusions from the research endeavor.

M.A. thesis option students develop a thesis proposal toward the end of the first year and during the first summer. The first step is to develop a written thesis proposal. This must be completed to the satisfaction of the student’s advisor and Thesis Committee no later than October 1 of the student’s second year. This is followed by an oral presentation to all students and faculty in the geography program no later than October 31 (unless there are scheduling conflicts). Presentations must be advertised within the department for at least two weeks. Students should aim to complete the thesis proposal process well before the October deadlines in order to ensure progress towards graduation the following semester. Students not able to meet this schedule should seek a meeting with their advisor to resolve the issue prior to the deadline dates.
The defense of the thesis takes place when the advisor and the committee agree that a defendable copy of the thesis is complete. The defense date must be advertised at least two-weeks in advance. Only in exceptional circumstances will the Thesis Committee waive the two-week requirement for advertising thesis proposals and defenses. The thesis examination is graded on a pass/provisional pass/fail basis. To pass the examination, there can be no more than one unsatisfactory grade from the committee members. A student who fails may submit another thesis or a revised version upon the approval of the student's committee. No student may be re-examined more than once. A student who is given a provisional pass will generally be required to make minor revisions or corrections to the thesis.

Thesis proposals and defenses are not normally scheduled between June 15 and August 15.

The M.A. Non-Thesis Option

Overview The non-thesis option consists of an additional graduate course and a three-credit-hour project (GEOG 692). The non-thesis option is designed for students interested in a more focused project than the traditional research thesis option. It is not recommended for students considering entering a Ph.D. program. The thesis project has strict deadlines and must be completed in one semester—after the completion of GEOG 601 and 602.

Deadlines and Timetable

Students planning on selecting the non-thesis option are must make a written request to the Geography Graduate Committee no later than two weeks before the start of the semester in which the thesis project is undertaken. The request should be endorsed by the student's advisor. Only after the written request has been received will the geography graduate director issue a permit for the course. It is strongly recommended that the project topic be selected prior to the beginning of the semester.

A written project plan is to be submitted to the advisor and committee no later than three weeks after the start of the semester. The project plan includes an objective, methods, and timetable. No public presentation of the proposal is required.

The student is required to have meetings with the advisor and the committee in weeks seven and eleven to present progress reports.

The project must be completed and successfully defended by the end of the semester in which the project was undertaken. If the student completes the project, passes the defense, and submits the project to the library by the end of the semester, the student will be given a grade of S (satisfactory) for the project (GEOG 692).

If the student completes and defends the project, but is unable to submit the project to the library by the University deadline for doing so, the student will be assigned an I (incomplete) for the project. The student then has up to two weeks after the last day of exam week to submit the project to the library; otherwise the I is converted to a U (unsatisfactory).

If the student completes the project and fails the defense, or the project is not completed and defended by the end of the semester, the student will be given a grade of U for the GEOG 692 course.

Students who receive a grade of U may reapply to do a different project the following semester. Students cannot reapply more than once.

The Graduate Committee may grant an extension to the one semester deadline under exceptional circumstances.

Project Topic and Defense

The choice of a project topic is to be determined by close interaction and agreement between the student advisor and committee. The project may comprise a wide range of activities, but is usually either (a) an applied problem-solving exercise with minimal literature review, (b) an empirical test of an idea from the literature, with minimal literature review, or (c) a literature review or development of a conceptual idea using the literature.

The project is defended in a public presentation at the end of the project semester, but no later than the University deadline for a thesis defense. The defense time and location must be published in the department no less than two weeks in advance. The standard for passing will be that the majority of the Advisory Committee (two or more of the three members) evaluate the work as substantially meeting the goals identified in the written research plan.
Most projects are expected to be in written form (15 to 20 pages). Other forms of presentation may be acceptable, such as maps, software, video, land-use plan, image classification, field-trip guide, work of art, etc; however, a written document explaining the project is still required.

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.

Coursework The courses Geographic Traditions (GEOG 601) and Geographic Research Design (GEOG 602) 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 a number of 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 February 14. International students should submit their materials at least three months in advance of this deadline.

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 consists of twenty-five PCs. The system has in excess of one-hundred gigabytes of on-line storage as well as magnetic tape drives. It supports four large format 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. WVU has ESRI ARC-INFO and ERDAS Imagine site licenses. TYDAC SPANS raster GIS operating under OS/2 is supported on the personal computers. The laboratory has SAS, SAS-Graph, Surface III, Oracle, and extensive database, graphics, spreadsheet, and statistical packages.

The remote sensing program operates two full-range, portable spectroradiometers, including an ASD full range, and a GER MK IV. An ADAR Aerial Digital Imaging System is shared with resources management and the Department of Biology.

**Geography (GEOG)**

525. *Problems in Geomorphology*. 1-4 Hr. (Also listed as GEOL 525.)

530. *Land Use Policy*. 3 Hr. PR: GEOG 425 or consent. Basic concepts of land use policy at the national, regional, county, and local level are examined. Environmental and land use policies are analyzed.

600. *Geography Research Colloquium*. 1 Hr. PR: Consent. Lectures and presentation on recent and current research by resident and visiting scholars.


609. *Advanced Industrial Geography*. 3 Hr. PR: GEOG 309 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.

615. *Development Geography*. 3 Hr. PR: Consent. An analysis of the concept and practice of development. Alternative people-centered approaches to social change are investigated.

621. *Advanced Fluvial Geomorphology*. 4 Hr. PR: GEOL 321 or GEOG 321 or consent. Analysis of stream processes, landforms, deposits, including paleohydrology and Appalachian surficial geology. Required weekend field trip at student’s expense. (Also listed as GEOL 621.)

622. *Surficial and Glacial Geology*. 4 Hr. PR: GEOL 321 or GEOG 321 or consent. Analysis of late Cenozoic landscapes, especially those caused by glaciers or otherwise influenced by global climate change. Required weekend field trips at student’s expense. (Also listed as GEOL 622.)

625. *Planning Theory and Process*. 3 Hr. PR: GEOG 425 or consent. A survey of the historical development of planning theory, the various roles planners play, and the ethical dilemmas they face.


689. *Geography Graduate Student Internship*. 1-6 Hr. PR: Consent. Internship in the private or public sector designed for practical application of geographic training.

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

692. *Directed Study*. 1-3 Hr. Directed study, reading, and/or research.

693. *Special Topics*. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694 A-Z. *Seminar*. 1-6 Hr. Seminars arranged for advanced graduate students.

695. *Independent Study*. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
696 A-Z. 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.

697. 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.)

698. 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.)

711. Regional Development. 3 Hr. PR: Consent. Review of contemporary geographic theories of uneven spatial development of capitalism.


752. Advanced Geographic and Information Science. I, 3 Hr. PR: GEOG 452 or GEOG 651 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.

755. Advanced Remote Sensing. 3 Hr. PR: GEOG 455 or GEOL 455 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 755.)

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

792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796 A-Z. 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.

797. 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.)

Geology
Thomas H. Wilson, Associate Chair for Geology
425 White Hall
http://www.geo.wvu.edu/programs/geology.php

Degrees Offered
Master of Science
Doctor of Philosophy

Nature of the Program
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, shallow geophysics, floods, and debris flows.
• Basin analysis and sedimentary geology, 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 or download it from the web site (see above).

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 101, 102, 103, 104, 284, 285, 311, 341, and 404. Similar courses from other universities or relevant experiences may be substituted if approved during admission review. A requirement may be waived by the committee if the student can demonstrate competence in that subject area.

GPA Requirements

During graduate study 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. A student who fails to maintain the required average at the completion of any semester will be placed on probationary status and allowed one academic year (two semesters) to attain the required average. If this is unsuccessful the student will be dropped from enrollment in the graduate program.

Master of Science

Distribution Requirements Students are required to take specific courses specified by their Advisory Committee, with whom they meet at the beginning of each semester. Students must take approved graduate courses from at least five different faculty from any department in the University.

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) or seeking employment in an area of geological research should choose this option. A minimum of 24 formal course hours and six research hours are required for graduation. A thesis based on original research under direction of a research committee also is required. With consent of the candidate’s Research Committee, the field work need not be done while in residence at WVU. Required to graduate: 30 hours (24 course, six research) 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 typically expect to seek professional employment in the profession using the master’s as their terminal degree. A minimum of 34 formal course hours and eight problems hours (GEOL 697) 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 (34 course, eight problems) 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 Research Committee. A candidacy preliminary examination must be successfully completed within one year after enrollment. Written and oral comprehensive examinations must also 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. No formal course requirements exist. These are chosen by the student in conjunction with his or her Research Committee.

Cooperative Projects
The National Research Center for Coal and Energy (NRCCE) 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 (NMLRC) and Water Research Institute. Close cooperation between the West Virginia Geological and Economic Survey (WVGES), 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. The department also has a number of cooperative projects with the National Energy Technology Laboratory (NETL) of the U.S. Department of Energy, based in Morgantown and Pittsburgh. 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. The department also owns research-grade x-ray fluorescence and x-ray diffraction instruments.

Computing Facilities
Hardware and Network
The research and teaching computing facilities are state-of-the-art and outstanding for a department of less than 100 graduate students. These facilities are centered around a Windows 2000 client-server network. The research cluster has access to nearly a terabyte of redundant networked storage based on a Sun RAID, as well as networked printers (QMS 860, HP Deskjet 1120C, DesignJet 650C, DesignJet 1050C, Tektronix Phaser 480), large format digitizers, and scanners. 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 Windows 2000. Both clusters are linked across the Windows 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, ARC-MAP, ARC VIEW, 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, ARC VIEW, 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)**

**525. Problems in Geomorphology.** 1-4 Hr.

**543. Tectonics.** 3 Hr. PR: GEOL 341 and GEOL 311; 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.

**554. Environmental and Exploration Geophysics 2.** 3 Hr. PR: PHYS 102 and (MATH 156 or GEOL 351) 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.


**564. Environmental Hydrogeology.** 4 Hr. PR: GEOL 101 and GEOL 102 and GEOL 463 and (PR: or CONC: GEOL 562). Seminar reviewing groundwater occurrence, flow, quality, and exploration in various geologic terrains; groundwater pollution and dewatering; and groundwater technology. Includes topical literature review.

**585. Optical Mineralogy and Petrology.** 3 Hr. PR: GEOL 285. 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.)

**588. Aqueous Geochemistry.** 3 Hr. PR: GEOL 101 and CHEM 112 or CHEM 116, 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.

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

**610. Advanced Stratigraphy.** 3 Hr.


**615. Stratigraphy of Porous Media.** 3 Hr. PR: GEOL 311. Advanced discussion of the deposition of clastic sediments, chemistry of carbonates, sequence stratigraphy, porosity development in sandstones and limestones, flow of oil through rock.

**616. Advanced Sedimentation.** 4 Hr. PR: GEOL 311 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.

**621. Advanced Fluvial Geomorphology.** 4 Hr. PR: GEOL 321 or GEOG 321 or consent. Analysis of stream processes, landforms, deposits, including paleohydrology and Appalachian surficial geology. (Required weekend field trips at student’s expense; also listed as GEOG 521.)
622. *Surficial and Glacial Geology.* 4 Hr. PR: GEOL 321 or GEOG 321 or consent. Analysis of late Cenozoic landscapes, especially those caused by glaciers or otherwise influenced by global climate change. (Required weekend field trips at student’s expense; also listed as GEOG 522.)

632. *Paleoecology.* 3 Hr. PR: GEOL 331 and GEOL 311 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.

642. *Advanced Structural Geology.* 3 Hr. PR: GEOL 341. Theoretical and observational aspects of the development of geological structures. Problems ranging from the microstructural to the orogenic scale will be addressed.

645. *Basin Structures.* 4 Hr. PR: GEOL 341 and GEOL 311 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.

659. *Quantitative Methods in Geoscience.* 3 Hr. PR: STAT 312 or STAT 511 or consent. Brief review and introduction to multivariate quantitative techniques as applied to geology and geography.


666. *Karst Geology.* 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.


690. *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.)

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

693. *Special Topics.* 1-6 Hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

695. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

697. *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.)

698. *Thesis and 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.)

755. *Advanced Remote Sensing.* 3 Hr. PR: GEOG 455 or GEOL 455 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 755.)

790. *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.)

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

794. *Seminar.* 1-6 Hr. Seminars arranged for advanced graduate students.

795. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
796. 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.

798. Thesis and 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.)

799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 M. Maxon, Chair
202 Woodburn Hall
http://www.wvu.edu/history

Degrees Offered

- Master of Arts
- Doctor of Philosophy

Nature of the Program
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 a combined score of 1500 on the Graduate Record Examination General Aptitude Test.

Requirements This program requires the completion of a minimum of 30 hours of coursework 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 coursework 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 799 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 697 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.

Doctor of Philosophy

Admission 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 799 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)

610. Historic Site Interpretation and Preservation. 3 Hr. PR: HIST 412. 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.

611. Archival Management. 3 Hr. PR: HIST 412. 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.

612. Practicum in Historical Editing. 3 Hr. PR: HIST 412. Principles and practices of historical editing in a laboratory context. Includes lectures and readings with illustrations from ongoing editing projects.

613. 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.


697. Research. I, II, S. 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.)

701. 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.)

702. Seminar in Medieval History. 3 Hr. PR: HIST 701; (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.

705. 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.

706. 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.

708. 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)
709. **Seminar in Central European 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.)

714. **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 217 and 218, or their equivalents. Primarily designed for graduate students and selected undergraduates.

715. **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.)

717. **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.)

718. **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.

721. **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 425 and 426, or their equivalents; reviews, as well as bibliographical and historiographical essays, required. (May be repeated once.)

722. **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 425 and 426 or their equivalents. (May be repeated once.)

725. **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.)

726. **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.)

729. **Readings in Latin American History.** 3 Hr. Critical examination of selected sources and topics for understanding and interpreting Latin American history. (May be repeated once.)

730. **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.)

731. **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.)

732. **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.)

745. **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.)

755. **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.)

756. **Seminar In American History:1763-1830.** 3 Hr. PR: HIST 755 or consent. Advanced readings and research in revolutionary and early national American history. (May be repeated once.)

757. **Readings In U.S. History:1787-1850.** I. 3 Hr. Critical examination of major works and themes on the political, economic, social, and legal formation of the nation. (May be repeated once.) (Alt. yrs.)

758. **Seminar In U.S. History:1787-1850.** II. 3 Hr. Directed research in early United States history. Research will include primary and secondary sources. (May be repeated once.) (Alt. yrs.)
759. 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.

760. Seminar In U.S. 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.)

763. Readings In U.S. History: 1898-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.)

764. Seminar In U.S. History: 1898-Present. 3 Hr. Directed research in recent American history including guidance in methods of research and manuscript preparation. (May be repeated once.)

773. 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.)

774. 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.)

775. 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.)

776. Seminar in Science and Technology. 3 Hr. PR: HIST 775 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.)

782. Readings in U.S. Social History. 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.)

785. Readings in Environmental History. II. 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.) (Alternate years.)

786. Seminar in Environmental History. II. 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.) (Alternate years.)

789. 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 793.)

790. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practices in college teaching of history. Note: this course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibilities. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)


792 A-Z. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

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

794. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. 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.

797. 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.)
798. 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.)

799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 grades 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.

Humanities (HUM)
Although humanities has no graduate program, the following graduate courses are available.

692. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

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 structured program, but without an exclusive concentration in one discipline. Studies for this degree focus primarily on issues in the liberal arts disciplines of fine arts, social sciences, or 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 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 breadth of the course offerings that are available in the relevant graduate programs at WVU and by the applicant’s imagination. This program is administered by the multi-disciplinary M.A.L.S. Committee which is appointed by the program director and approved by the dean of the Eberly College of Arts and Sciences. The 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, serve on the M.A.L.S. Committee and are also eligible to serve as members of a M.A.L.S. student’s Master’s Committee.
Admission Requirements and Procedures

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 demonstrates 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.
5. Confidential letters of recommendation from at least two individuals. Letter writers need not be faculty members but must be able to assess the applicant’s ability to undertake the plan of study that he or she has proposed.
6. Written agreement from a member of the regular graduate faculty at West Virginia University to serve as chair of the applicant’s Master’s Committee.

Those interested in applying for the M.A.L.S. Program who have not found a chairperson for their Master’s Committee, or who are not ready to complete a detailed plan of study, are encouraged to register as non-degree graduate students while they explore their options. These individuals are invited to seek the help of the M.A.L.S. program director or the M.A.L.S. Committee in finding a suitable faculty member to serve as Master’s Committee chair and in honing their application essays.

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.
2. Submit to the M.A.L.S. program director 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.
3. Arrange for confidential submission to the M.A.L.S. program director of two letters of recommendation.
4. Arrange for submission to the M.A.L.S. program director of a written statement by the WVU graduate faculty member who agrees to serve as Master’s Committee chair.
5. As a part of the admissions process, the M.A.L.S. program director will contact the directors of graduate studies for each of the programs in which an applicant wishes to take graduate courses in order to confirm the applicant’s eligibility to enroll in the courses the applicant has proposed.
6. Members of the M.A.L.S. Committee may, at their discretion, request that an interview with the applicant be conducted and that the results be included with the application materials.

The applicant’s central focus or theme, as described in the application essay, is essential to the degree plan. It insures 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 the application essay, the applicant must also indicate why the course of study with the 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 the applicant’s 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, applicants should check the WVU Graduate Catalog to determine whether the course offerings are adequate in the applicant’s area of interest; in some cases the necessary courses may not be available. Once admitted to the M.A.L.S. program, the successful applicant chooses the remaining members of the Master’s Committee with the assistance of the M.A.L.S. Committee, and then draws up a final plan of study with the help of the Master’s Committee chair, who also serves as the student’s advisor. It is recommended that the full Master’s Committee be chosen by the time the student completes the first nine to 12 hours of courses within the program. The full committee, and any changes in the committee, must
be approved by the M.A.L.S. program director. (If, before completing an application, the applicant is able to make informal agreements with additional faculty members to serve on Master’s Committee, these should be mentioned in the application essay. Such information provides further evidence that the plan of study can be carried through at WVU. Check the WVU Graduate Catalog to determine who is eligible to serve on a Master’s Committee.)

Degree Requirements
There are several general requirements, listed in the WVU Graduate Catalog, for all graduate programs at WVU; the most important of these are listed below, but applicants should check the Catalog to be sure their 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.

General University Requirements
1. Graduate credit is awarded only for courses at the 400 level or above.
2. No more than 40 percent of course credits counted toward a graduate degree may be at the 400 level.
3. A maximum of 12 hours of coursework taken before admission to a graduate program may be approved for credit toward that degree.

Specific Requirements for the M.A.L.S. Degree
1. At least 36 semester hours of approved coursework, 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.
   c. The program must include three hours of coursework in research methodology.
2. A minimum 3.25 grade-point average for all coursework 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, a portfolio of creative work).

Legal Studies
Joan Gorham, Associate Dean
201 Woodburn Hall

Degree Offered
Master of Legal Studies

Nature of the Program
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 under-
graduate 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 (Contact Dr. Pamela Cutright. Phone: (304) 558-
  3471. E-mail: pcutrigh@wvu.edu)
• Graduate Education Office, WVU Eberly College of Arts and Sciences, 103
  Woodburn Hall, P.O. Box 6286, Morgantown, WV 26506-6286 (Contact 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, Coordi-
nator, WVU Extended Learning Office—Kanawha Valley Center, 101 Cox Hall, University of
Charleston. 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, encyclope-
dias, 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.

- 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 semester (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 691 course number.

691. Advanced Topics. 3 hrs.

692. Directed Study. Variable 1-3 hrs. Legal studies internship, directed study, reading, and/or research.

693. Special Topics. Variable 1-6 hrs. Study of contemporary topics selected from recent developments in the field.

697. Research. 3 hrs. Research activities leading to a scholarly project applying and extending knowledge gained across master of legal studies program coursework.

Linguistics (LING)

511. ESL Linguistics. I. 3 Hr. PR: LING 101 or LING 301. 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.

512. Applied Linguistics. 3 Hr. PR: LING 311 and prior second language study. Study of the application of linguistic analysis in the areas of language acquisition, instruction, and use.

513. History of Linguistics. 3 Hr. PR: LING 311 or consent. Development of linguistics from Greeks and Romans to contemporary researchers with concentration on major linguists and schools of the nineteenth and twentieth centuries.

514. Sociolinguistics. 3 Hr. PR: LING 101 or LING 311. Linguistic study of geographical and social variation in languages; effects of regional background, social class, ethnic group, sex, and setting; outcomes of conflict between dialect and between languages.

516. Discourse Analysis. 3 Hr. PR: LING 101 or equivalent. A study of the structural properties of spoken and written texts and how they are related to the contextual factors involved in text production.

590. Teaching Practicum. 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.)

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

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

601. History of the Spanish Language. 3 Hr. PR: 18 Hr. of Spanish and LING 311 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.

602. Old Spanish. 3 Hr. PR: Consent.

603. History of the French Language. 3 Hr. PR: 18 Hr. of French and LING 311 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.

604. Old French. 3 Hr. PR: Consent. Study of the oldest monuments of the French language including the Chanson de Roland and Aucassin et Nicolette in an effort to trace the evolution of Francien, Anglo-Norman, and Picard and Vulgar Latin.

605. History of the German Language. 3 Hr. PR: 18 Hr. of German and LING 311 or consent. Historical development of standard German languages and dialects.
606. Middle High German. 3 Hr. PR: 18 Hr. of German and LING 311 or consent. Study of the linguistic developments of Middle High German from the eleventh to the fifteenth centuries with illustrative readings from the Niebelungenlied.

607. History of the Russian Language. 3 Hr. PR: 18 Hr. of Russian and LING 311 or consent. Development of Russian from Indo-European to the present.

611. Advanced Phonology. 3 Hr. PR: LING 411. 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.

612. Advanced Syntax. 3 Hr. PR: LING 412 or consent. Examination and discussion of theoretical issues in generative-transformational syntax. Focus on specific proposals advanced within the framework of Government-Binding Theory.

322. ESL Phonetics. 3 Hr. PR: LING 311. 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.

614. Psycholinguistics. 3 Hr. PR: LING 311 or consent. Provides an insight into the many areas of psycholinguistics study, including language acquisition, sentence processing, animal communication, dichotic listening, aphasia, and semantics.

615. Language Change and Reconstruction. 3 Hr. PR: LING 311 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.

690. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of linguistics. Note: this course is intended to assure 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.)

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

692. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694 A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. Graduate Seminar. 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.

697. 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.)

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in his/her departments 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.)

791. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.
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 sciences 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 590/690/790 may not be counted for credit to satisfy graduate course hour requirements.

Examinations/Theses/Projects Upon beginning graduate study all M.S. students are given a basic exam in advanced calculus and linear algebra for purposes of course placement. Depending on the program chosen, students must complete examinations, 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 coursework. 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 for the Ph.D. program 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, by the end of their third semester after enrolling. Students choose two areas in which to be examined from among the four areas of algebra, real analysis, topology, and differential equations.
Twenty-six hours of coursework are required of all doctoral students. The distribution of these courses is as follows:

- Twelve hours at the 700 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 500 to 600 level.
- Two hours of MATH 796 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 700-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 for the graduate program 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 [http://www.math.wvu.edu](http://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)**


522. **Numerical Solution of PDE.** 3 Hr. PR: MATH 261 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.

530. **Introduction to Applied Mathematics.** S. 1-6 Hr. PR: MATH 251. (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.

533. **Modern Algebra for Teachers 1.** I, S. 3 Hr. PR: MATH 251. (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.

534. **Modern Algebra For Teachers 2.** II. S. 3 Hr. PR: MATH 341 or MATH 533. Further investigation of algebraic structures begun in MATH 533. (Emphasis on topics helpful to secondary-school mathematics teachers.) Topics include Sylow theory, Jordan-Holder Theorem, rings and quotations, field extensions, Galois theory, and solution by radicals.

535. **Foundations of Geometry.** S. 3 Hr. PR: MATH 251 (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.
536. Transformation Geometry. S. 3 Hr. PR: MATH 341 or MATH 533. (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.

541. Modern Algebra. I, II. 3 Hr. PR: MATH 341 Concepts from set theory and the equivalence of the Axiom of Choice. Zorn’s Lemma and the Well-Ordering Theorem; a study of the structure of groups, rings, fields, and vector spaces; elementary factorization theory; extensions of ring and fields; modules and ideals; and lattices.

543. Linear Algebra. II. S. 3 Hr. PR: MATH 441. Review of theory of groups and fields; linear vector spaces including the theory of duality; full linear group; bilinear and quadratic forms; and theory of isotropic and totally isotropic spaces.

545. Number Theory 1. I, II. 3 Hr. PR: MATH 155 or MATH 156. Introduction to classical number theory covering such topics as divisibility, the Euclidean algorithm, Diophantine equations, congruences, primitive roots, quadratic residues, number-theoretic functions, distribution of primes, irrationals, and combinatorial methods. Special numbers such as those of Bernoulli, Euler, and Stirling.

551. Real Variables 1. I, II. 3 Hr. PR: MATH 451. A development of Lebesgue integral, function spaces and Banach spaces, differentiation, complex measures, the Lebesgue-Radon-Nikodym theorem.

555. Complex Variables 1. I, II. 3 Hr. PR: MATH 451. 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.

557. Calculus of Variations. II. 3 Hr. PR: (MATH 261 and MATH 452) or MATH 568. Necessary conditions and sufficient conditions for weak and strong relative minimims of an integral, Euler-Lagrange equation. Legrende condition, field construction, Weierstrass excess function, and the Jacobi equation.

561. Geometric Modeling-Curves/Surf. 3 Hr. PR: MATH 261 and linear algebra. Mathematical techniques used in CAD/CAM environments, including conics, cubic splines, Bezier splines, B-splines rational Bezier and B-splines, interpolation, geometric continuity, and data exchange.

563. Mathematics Modeling. 3 Hr. PR: MATH 261 and MATH 465. 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.


565. Wave Propagation. 3 Hr. PR: MATH 465 or MATH 567 or consent. 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.

567. Advanced Calculus. I. 3 Hr. per semester. PR: MATH 261. 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.

568. Advanced Calculus. II. 3 Hr. per semester. PR: MATH 567. 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.

569. Seminar in Applied Mathematics. 1-12 Hr. PR: Consent. Selected topics in applied mathematics. Topics previously offered include applied linear algebra, computational fluid dynamics, numerical partial differential equations, ordinary differential equations, perturbation methods, and stochastic processes.

571. Combinatorial Analysis 1. I, II. 3 Hr. PR: One year of calculus. Permutations, combinations, generating functions, principle of inclusion and exclusion, distributions, partitions, compositions, trees, and networks.
573. Graph Theory. 3 Hr. PR: MATH 343 and MATH 283. 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.

578. Applied Discrete Mathematics. 3 Hr. PR: MATH 375 or MATH 378 or MATH 341 or MATH 343 or MATH 283. Topics may include combinatorial optimization, applied coding theory, integer programming, linear programming, matching, and network flows.

581. Topology 1. I, II. 3 Hr. PR: MATH 452. 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.

590. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of mathematics. 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.)


592. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and or research.

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

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

641. Modern Algebra 2. II. 3 Hr. PR: MATH 545. Concepts from set theory and the equivalence of the Axiom of Choice. Zorn’s Lemma and the Well-Ordering Theorem; a study of the structure of groups, rings, fields, and vector spaces; elementary factorization theory; extensions of ring and fields; modules and ideals; and lattices.

645. Number Theory 2. II. 3 Hr. PR: MATH 305. Introduction to classical number theory covering such topics as divisibility, the Euclidean algorithm, Diophantine equations, congruences, primitive roots, quadratic residues, number-theoretic functions distribution of primes, irrationalals, and combinatorial methods. Special numbers such as those of Bernoulli, Euler, and Stirling.

651. Real Variables 2. I, II. 3 Hr. PR: MATH 551. A development of the Lebesgue integral, function spaces and differentiation, complex measures, the Lebesgue-Radon-Nikodym theorem.

655. Complex Variables 2. I, II. 3 Hr. PR: MATH 555. 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.

661. Geometric Modeling-Solids. 3 Hr. PR: MATH 561. 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.


677 A-Z. Topics in Discrete Mathematics. 3 Hr. PR: MATH 571 or MATH 543 or MATH 573. Topics may include algorithmic graph theory, combinatorial designs, matroid theory, (0,1)-matrics, and permanents.

681. Topology 2. II. 3 Hr. PR: MATH 581. 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.

683. Set Theory and Applications. 3 Hr. PR: MATH 541 or MATH 551 or MATH 581. The course concentrates on the typical methods of set theory, transfinte induction, and Zorn’s Lemma with emphasis on their applications outside set theory. The fundamentals of logic and basic set theory are included.

690. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of mathematics. 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.)
691 A-Z. *Advanced Topics*. I, II. S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

692. *Directed Study*. I, II. S. 1-6 Hr. Directed study, reading, and/or research.

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

694. *Seminar*. I, II. S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

696. *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.

697. *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.)

698. *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.)

699. *Graduate Colloquium*. I, II. S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in his/her department. 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 requirements for master’s programs.)

740. *Seminar in Number Theory*. I, II. 1-12 Hr.


745. *Analytic Number Theory 1*. I, II. 3 Hr. PR: MATH 555 and MATH 645. Selected topics in analytic number theory such as the prime number theorem, primes in an arithmetical progression, the Zeta function, the Goldbach conjecture.

746. *Analytic Number Theory 2*. II. 3 Hr. PR: MATH 745. Selected topics in analytic number theory such as the prime number theorem, primes in an arithmetical progression, the Zeta function, the Goldbach conjecture.

750. *Seminar in Analysis*. 1-12 Hr.

751. *Functional Analysis 1*. I, II. 3 Hr. PR: MATH 551. 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.

752. *Functional Analysis 2*. I. 3 Hr. PR: MATH 751. 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; C*-algebras; spectral theory.

753. *Special Functions*. I, II. 3 Hr. PR: MATH 261 and MATH 452. Operational techniques, generalized hypergeometric functions, classical polynomials of Bell, Hermite, Legendre, Noerlund, etc. Introduction to recent polynomial systems. Current research topics.


764. **Asymptotic Methods.** 3 hr. PR: MATH 564. 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 eigenvalues; the difference between singular and regular perturbations; multiple scale analysis; the method of matched asymptotic expansions; perturbations of periodic systems.

773. **Advanced Topics in Graph Theory.** 3 Hr. PR: MATH 573. Topics may include: Algebraic graph theory, random graph theory, extremal graph theory, topological graph theory, and structural graph theory. (May be repeated for credit with consent.)

777. **Advanced Topics in Combinatorics.** 3 Hr. PR: MATH 571 or MATH 677. Topics may include: Combinatorics on finite sets, probabilistic methods in combinatorics, enumerations, Polya Theory, combinatorial matroid theory, coding theory, combinatorial identities, infinite combinatorics, transversal theory, and matroid theory. (May be repeated for credit with consent.)

780. **Seminar in Topology.** 1-12 Hr.

781. **Continuum Theory 1.** I, II. 3 Hr. PR: MATH 581. The fundamental properties of continua (compact, connected, metric spaces), including boundary bumping, space filling curves, structure of special continua, and inverse limits.

782. **Continuum Theory 2.** 3 Hr. PR: MATH 781. The fundamental properties of continua (compact, connected, metric spaces), including boundary bumping, space filling curves, structure of special continua, and inverse limits.

783. **Set Theory and Applications.** 3 Hr. PR: MATH 683. 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.

790. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of mathematics. 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.)

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

792. **Directed Study.** I, II, S. 1-6 Hr. Directed study, reading, and or research.

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

794. **Seminar.** I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. **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.

797. **Research.** I, II, S. 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.)

798. **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.)

799. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 requirements for master’s programs.)
Philosophy (PHIL)

Although philosophy has no graduate program, the following graduate courses are available.

501. Metaphysics. 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.

502. Theory of Knowledge. 3 Hr. Definitions of knowledge, truth, and belief. Problems associated with skepticism, induction, perception, introspection, memory, and a prior knowledge.

510. Philosophy of Science. 3 Hr. Philosophical problems associated with the concepts and methodology of science.

512. Philosophy of Social Science. 3 Hr. PR: Consent. Philosophical problems associated with the concepts and methodology of the social sciences.

520. Ethics. 3 Hr. An examination of selected theoretical and applied problems in the field of professional ethics.

531. Health Care Ethics. 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.

532. Ethics of the Marketplace. 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.

540. History of Philosophy. 3 Hr. Selected topics in the history of Western philosophy, usually with concentration on one of the following periods: ancient, medieval, modern, or recent.

590. Teaching Practicum. 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 assistantship to gain college teaching experience. (Grading may be S/U.)

692. Directed Study. 1-6 Hr. PR: Consent. Directed study, reading, and/or research.

695. Independent Study. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.

697. 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.)

698. 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.)
Physics
Larry E. Halliburton, Chair
209 Hodges Hall
http://www.as.wvu.edu/phys/index2.html

Degrees Offered
Master of Science
Doctor of Philosophy

Nature of the Program
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 (611); Quantum Mechanics (651); Advanced Classical Mechanics (631); Electromagnetism (633); 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 electromagnetism exam. 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 600 level or above, including physics 611, 631, 633, 651, and 761.

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 600 level or above, including physics 611, 631, 633, 651, and 761.

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 or 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 coursework at the 600 level or above. These twelve courses must include the seven basic courses 611, 631, 633, 634, 651, 652, and 761 plus any two of the following: 726, 763, 764, 773, 783, 784, or 791.
Research Groups

Research groups consist of a professor and several graduate students and/or postdoctoral 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 coursework and research and more rapid progress toward the degree.

Physics (PHYS)

554. Outline of Modern Physics. 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.

555. Workshop for Physics Teachers. 3 Hr. 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.

556. Workshop for Physics Teachers. 3 Hr. 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.

558. Light. 3 Hr. PR: One year of college physics equivalent. (Primarily for education majors; not open to physics majors.) A demonstration course designed to illustrate the basic concepts covering light and optics.

559. Astrophysics. 3 Hr.

611. Intro Mathematical Physics. 3 Hr. PR: Calculus, differential equations, PHYS 111 and PHYS 112 or equivalent. Complex variables: series, contour integration and conformal mapping; ordinary differential equations; Laplace transforms; Fourier transforms, special functions; Bessel functions and Legendre, Hermite, differential equations; Poisson’s equation, Wave equation, and Laguerre polynomials; introduction to partial differential equations.

612. Intro Mathematical Physics. 3 Hr. PR: Calculus, differential equations, PHYS 111 and PHYS 112 or equivalent. Continuation of PHYS 611.

621. Optics. 3 Hr. PR: PHYS 112 or equivalent and MATH 251. A basic course in physical optics covering radiation theory, diffraction, interference, polychromatic waves, scattering, polarization, double refraction, and selected topics in quantum optics.


Eberly College of Arts and Sciences


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

693 A-Z. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

697. **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.)


761. **Statistical Mechanics.** 3 Hr. PR: PHYS 461 and PHYS 651. 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, magnetic transitions.


772. **Intermediate Solid State Physics** 2. 3 Hr. PR: PHYS 471 or equivalent. Optical properties of materials. Ferromagnetism, paramagnetism, and magnetic resonance. Defects and dislocations.


781. **Principles of Plasma Physics.** 3 Hr. Plasmas occur naturally in electrical discharges and in space and are produced artificially in laboratory devices. This course is a survey of plasma phenomena using fluid and kinetic models.

782. **Computer Simulation of Plasma.** 3 Hr. PR: (PHYS 481 or PHYS 781) and PHYS 633; programming proficiency in C, FORTRAN, or BASIC. Projects teach mathematical and physical foundations of computer simulation algorithms and develop and refine physical understanding and intuition of phenomena encountered in plasma research.


790. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of physics. 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.)

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

792. Directed Study. 1-6 Hr. Directed study, reading, or a research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework credit but who wish to meet residence requirements, use the University’s facilities, and participate in its academic cultural program. Note: graduate students not actively involved in coursework 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.)

Political Science
Allan S. Hammock, Chair
316-A Woodburn Hall
http://www.polsci.wvu.edu

Degrees Offered
   Master of Arts
   Doctor of Philosophy

Nature of the Program
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 799 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:

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<tr>
<th>Public Policy Option</th>
<th>General Option</th>
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<tr>
<td>Public policy core (18 hrs.)</td>
<td>Public policy (15 hrs.)</td>
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<tr>
<td>Policy research methods (15 hrs.)</td>
<td>Research methods (12 hrs.)</td>
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<tr>
<td>Economics (6 hrs.)</td>
<td>Elective specialty I (15 hrs.)</td>
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<tr>
<td>Policy field (18 hrs.)</td>
<td>Elective specialty II (15 hrs.)</td>
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<tr>
<td>Dissertation (24 hrs.)</td>
<td>Dissertation (24 hrs.)</td>
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<td>Total: 81 hrs.</td>
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In addition to the formal coursework, students must also pass written and oral comprehensive examinations in their specialty fields. All coursework completed for the M.A. at West Virginia University also counts toward the Ph.D. Coursework 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 799 *Colloquium* each semester in residence.

**Faculty**

The Department of Political Science has 17 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)

530. 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. sem.)

531. 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. sem.)

536. 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. sem.)

545. Public Administration and Policy. II. 3 Hr. Decision-making and policy development in the administrative process. (3 hr. sem.)

551. 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.)

555. 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.)

560. International Theory and Policy. I. 3 Hr. Survey of theoretical approaches in the study of international relations, covering major works in the realist, neo-liberal, and foreign policy literature. Emphasis on the place of foreign policy explanations within the wider, systemic international relations literature. (3 hr. sem.)


600. 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.

601. Quantitative Political Analysis. II. 3 Hr. PR: POLS 600 and STAT 511, or equivalent. 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.

602. Advanced Quantitative Methods. I. 3 Hr. PR: POLS 601 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.

611. 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.)

630. 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.)

635. 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. sem.)

638. Seminar: Policy Implementation. II. 3 Hr. Research seminar focusing on how the intentions of policymakers are transformed into programs and policies which have both intended and unintended consequences. Topics include traditional implementation studies, rational choice approaches, neo-institutionalism, and principal-agent theory. (3 hr. seminar.)

639. 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 is conducted following the completion of the department’s research methods sequence.

650. Professional Seminar in Comparative Politics. 3 Hr.

670. Professional Seminar in Political Theory. 3 Hr.

703. Internship. I, II. 6-9 Hr. per semester; students may enroll more than once. PR: Consent.
710. 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.)

711. Read Research American National Government. 2-4 Hr.

719. Seminar in American National Government. 3 Hr.

721. Read Research State Government. 2-4 Hr.

729. Seminar: State and Local Government. I, II. 3 Hr. Examination of selected topics in state government and politics. (3 hr. seminar.)

741. Directed Reading and Research in Public Administration. I, II. 2-4 Hr. per semester; students may enroll more than once.

749. Seminar in Public Administration. 3 Hr.

759. Seminar in Comparative Government. 3 Hr.

761. Read Research International Relations. 2-4 Hr.

769. Seminar in International Relations. 3 Hr.

771. Read Research Political Theory. 2-4 Hr.

779. Seminar in Political Theory. 3 Hr.

790. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of political 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.)


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

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

794. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular college offerings.

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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, Chair
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 coursework 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)

511. Research Design and Data Analysis 1. 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.

512. Research Design and Data Analysis 2. 3 Hr. PR: PSYC 511. 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.

524. Fundamentals of Gerontology. 3 Hr. 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 738.)

531. Experimental Analysis of Behavior. 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.

532. Human Behavior. 3 Hr. PR: PSYC 531. 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.

533. Applied Behavior Analysis. 3 Hr. PR: PSYC 531. Methodological, empirical, and conceptual issues in the application of basic research in behavior analysis to problems of social significance.

541. Infant Development. 3 Hr. Examination of psychological literature on prenatal and infant development. Topics include physical, cognitive, perceptual, language, and socioemotional development.

542. Child and Adolescent Cognitive Development. 3 Hr. Examination of psychological literature on child and adolescent cognitive development. Topics include perception, learning, language, problem solving, and social cognition.

543. Child and Adolescent Social Development. 3 Hr. Examination of the psychological literature on child and adolescent social/emotional development. Topics include peer and family relationships, gender, moral development, friendship, aggression, and altruism.

544. Adult Development and Aging. 3 Hr. Examination of psychological literature on adulthood and aging. Topics include health, cognition, family relationships, personality, psychopathology, work, and retirement.

545. Conceptual Issues in Developmental Psychology. 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.

546. Methodological Issues in Developmental Psychology. 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.

601. Professional Issues in Behavior Analysis. 1-3 Hr. (May be repeated for credit.) Survey of professional issues in behavior analysis.

602. Professional Issues in Developmental Psychology. 1-3 Hr. (May be repeated for credit.) Survey of professional issues in developmental psychology. (Grading may be S/U.)

603. Professional Issues in Clinical Psychology. 1-3 Hr. (May be repeated for credit.) Survey of professional issues in clinical psychology. (Grading may be S/U.)

604. Ethical Issues in Psychology. 1-3 Hr. (May be repeated for credit with consent.) The ethical standards for psychologists as applied to research and clinical problems.

605. Legal Issues in Clinical Psychology. 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.

606. Seminar on Teaching Psychology. 1-3 Hr. (May be repeated for credit with consent.) PR: Consent. Review and discussion of methods and issues in college teaching of psychology.

611. Single-Subject Research Methods. 3 Hr. PR: PSYC 511 and PSYC 531. 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.
612. Multivariate Analysis. 3 Hr. PR: PSYC 511. 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 541.)

613. Quasi-Experimental Design. 3 Hr. PR: PSYC 511 and PSYC 512. Consideration of the statistical procedures used with quasi-experimental group and single-subject designs.

614. Program Evaluation and Intervention. 3 Hr. Examines the nature, method, and process of evaluative research, especially as it applies to social and behavioral treatment and service delivery programs.

630. Behavior Analysis Practicum. 3 Hr. PR: PSYC 533 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.)

651. Behavior Pathology. 3 Hr. Advanced study of diagnostic classification, functional analysis, and experimental research in psychopathology of child, adult, and geriatric adjustment problems.

652. Introduction to Clinical Psychology. 3 Hr. Basic interviewing skills and current problems in the practice of clinical psychology.

653. Behavioral and Psychological Assessment 1. 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.

654. Behavioral and Psychological Assessment 2. 4 Hr. PR: PSYC 653. Evaluation of clinically relevant behavior and environments by means of testing and other methods. Includes test selection, administration, and report writing.

660. Adult Clinical Psychology Practicum. 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.

661. Adult Behavior Therapy. 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.

670. Child Clinical Psychology Practicum. 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.

671. Child Behavior Modification. 3 Hr. Assessment, intervention, and evaluation strategies appropriate for childhood disorders and based on behavior principles.

698. 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, theses, or dissertations. (Grading may be S/U.)

701. Advanced Professional Issues in Psychology. 1-3 Hr. (May be repeated for credit.) PR: Consent. Discussion of professional issues in psychology relevant to advanced doctoral students. (Grading may be S/U.)

711. Seminar in Methodology. 1-3 Hr. (May be repeated for credit with consent.) Current problems and techniques in research design, data analysis, and research methods.

721. History and Systems. 3 Hr. Study of the history of psychology from its roots in physics, biology, and philosophy. The development of American psychology is emphasized.

722. Biological Aspects of Behavior. 3 Hr. PR: Consent. Overviews of the areas of psychological investigation that pertain to the relation between biology and psychology, including neuroscience, psychobiological theories of personality and development, neurological and neuropsychological assessment, psychophysiology, and biologically-based treatment strategies, including basic psychopharmacology.

723. Psychophysiology. 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.
725. **Social Psychology.** 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.

730. **Advanced Behavior Analysis Practicum.** 1-6 Hr. PR: PSYC 630 or consent. Supervised applied behavior analysis experience in an approved setting.

731. **Research Issues in Behavior Analysis.** 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.

732. **Behavior Theory and Philosophy.** 3 Hr. PR: PSYC 531 or equivalent. Critical consideration of contemporary concepts, theories, and methods of psychology.

733. **Stimulus Control and Memory.** 3 Hr. PR: PSYC 531 or consent. Critical review of basic research and theory in discrimination learning, stimulus generalization, and memory.

734. **Reinforcement and Punishment.** 3 Hr. PR: PSYC 531. Examination of theories of response acquisition, maintenance, and suppression in the context of recent experimental work with animals and humans.

735. **Social Behavior.** 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.

736. **Advanced Experimental Analysis of Behavior.** 3 Hr. (May be repeated for credit with consent.) PR: PSYC 531. Selected topics and research issues in the experimental analysis of behavior.

737. **Advanced Applied Behavior Analysis.** 3 Hr. (May be repeated for credit with consent.) PR: PSYC 533. Application of research and theory of behavior analysis to social problems; other selected topics.

740. **Practicum in Developmental Psychology.** 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.

742. **Seminar in Cognitive Development.** 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.

743. **Seminar in Social Development.** 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.

745. **Seminar in Life-Span Development.** 3 Hr. (May be repeated for credit with consent.) Current issues in life-span development or selected periods of the life span.

751. **Integrative Behavioral Psychotherapy.** 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.

752. **Family and Marital Therapy.** 3 Hr. Examines both theoretical and practical aspects of the assessment and treatment of family and marital difficulties.

753. **Clinical Neuropsychology.** 3 Hr. Neuroanatomical foundations, neurobehavioral disorders, neuropsychological assessments, and psychopharmacological principles and practices relevant to clinical psychology.

754. **Clinical Psychopharmacology.** 3 Hr. Survey of the ways in which psychotropic drugs are used to treat behavioral and psychological disorders.

762 A-Z. **Seminar in Adult Clinical Psychology.** 1-3 Hr. (May be repeated for credit with consent.) Research and problems in clinical psychology.

772. **Seminar in Child Clinical Psychology.** 1-3 Hr. (May be repeated for credit with consent.) Current issues and research related to a particular area of clinical psychology involving children.

790. **Teaching Practicum.** 1-3 Hr. PR: Consent. Supervised practice in college teaching of 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 may be S/U.)
Public Administration
David G. Williams, Chair
209 Knapp 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 600).
- Foundation courses (13 credit hours): Public management theory and practice (PA 610), public financial management (PA 620), methods for public administration research (PA 630), and legal and political foundations (PA 640).
- Advanced courses (nine credit hours): Public budgeting (PA 720), applied research in public administration (PA 730), and human resource systems (PA 741).
- 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 751) and project paper (PA 752).
• Integrative capstone (two credit hours): Application of course concepts to planned change in public organizations (PA 700).

Degree Completion
It usually takes four semesters for full-time students to complete the M.P.A. degree. Coursework 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.

Dual Degrees
The division has established both joint degree and dual degree programs with a number of other graduate programs. A dual 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 dual 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 coursework 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. Coursework 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 coursework (PA 610, 620, 640, and one advanced course). At the doctoral level, 15 hours of coursework is required (PA 610, 620, 640, 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)

600. Professional Skills Seminar. 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.

610. Public Management Theory and Practice. 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.

611. Public Planning. 3 Hr. Principles and practices of government planning including development and management of policy, political and economic context of strategic planning, and social planning.

620. Public Financial Management. 3 Hr. PR: Consent. Principles and practices of public sector financial management including management control concepts, governmental financial accounting and reporting, analytical and managerial techniques, and microcomputer applications to public financial management.

630. Methods for Public Administration Research. 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.

631. Information Management in Public Administration. 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.

640. Legal and Political Foundations. 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.

645. Public Administration and Policy Development. 3 Hr. Policy development examined in terms of values, process, specific policy cases, alternative "futures" analyses, and policy science.

700. Capstone Seminar: Strategies for Change. 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.

710. Administrative Behavior in Public Organizations. 3 Hr. Introduces and familiarizes the student with the nature of individual and group behavior in public organizations and bureaucratic settings.

712. Administrative Ethics and Justice. 3 Hr. PR: PUBA 610 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.

720. Public Budgeting. 3 Hr. PR: PUBA 620. 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.

730. Applied Research in Public Administration. 3 Hr. PR: PUBA 630. Completion of an original, quantitative, applied research project dealing with issues and/or problems in the public sector.

741. Human Resources Systems. 3 Hr. PR: Consent. Examines competing values, systems, processes, and methods for managing human resources in government and non-profit organizations; including merit, patronage, professional, collective bargaining, and entrepreneurial models.

743. Conflict Management. 3 Hr. PR: Consent. Explores the nature and causes of organizational, personal, and policy conflict in the public and non-profit sectors; develops approaches and tools for managing, negotiating, and resolving conflicts.

751. Public Service Internship. 1-6 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 coursework situation. (Graded S or U.)
752. Public Service Internship Analysis. 3 Hr. PR: PUBA 751. Designed for students enrolled in PUBA 751. Students undertake in-depth analysis of elements of their internship (Policy matters, organizational questions, administrative dilemmas, etc.) and prepare a written report.

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


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

Health-Care Administration Courses

670. Health Systems. 3 Hr. Graduate-level introduction to the development, structure, and current issues in the healthcare in the United States including health promotion, disease prevention, epidemiology, delivery and utilization of health services, financing, policy, regulation, and ethical concerns.

671. Health-Care Organization and Operations. 3 Hr. PR: PUBA 670 or PR or CONC: CHPR 635. Examines the organization and management of health-care settings including system influences, leadership, communication, organization behavior, team development, organization design, evaluation, productivity, performance improvement.

672. Health-Care Finance. 3 Hr. PR or CONC: PUBA 670 or CHPR 635. Examines financing of health care, financial management concepts, insurance mechanisms, reimbursement, cost accounting, budgeting, and staffing for healthcare organizations, including integrated networks and managed care. The course focuses on concepts needed by first line and mid-level managers.

673. Alternative Health-Care Delivery Systems. 1 Hr. PR or CONC: PUBA 670. Examines the key management issues in a variety of nontraditional settings, such as but not limited to, birthing centers, physician practice management, PATCH. Settings chosen will be determined from current developing areas in healthcare.

674. Rural Health-Care. 1 Hr. PR or CONC: PUBA 670 or CHPR 635. Provides an overview of the issues affecting healthcare in rural settings, the health status of rural populations, and initiatives to provide improved access and address issues in service delivery and administration of rural health-care settings.

675. Organization Performance Improvement. 1 Hr. Introduces tools used to measure and improve organizational performance. The focus is on health-care organizations, with general application to public management. Techniques of total quality management and continuous quality improvement are covered.

770. Managed Care. 1 Hr. PR or CONC: PUBA 670. Examines the key management issues in the managed care environment. General organization of managed care entities, key management control issues, financing, and reimbursement mechanisms and trends in managed care will be covered.

774. Health-Care Law and Ethics. 1 Hr. PR or CONC: PUBA 670. Explores legal and ethical issues in the healthcare setting for administrative and medical managers.

775. Health-Care Policy. 1 Hr. PR or CONC: PUBA 670. Provides an introduction to policy issues in health care including state and federal roles in health care, the policy process, and various health-care policies. Explores values and American political processes as they influence health policy.

776. Health-Care Planning/Marketing. 1 Hr. PR: PUBA 670. Examines planning and marketing for health-care settings. Includes strategic planning. Serves to introduce key issues for administrators.

779. Special Topics in Health Care. 1-6 Hr. PR: PUBA 670. Focuses on those subjects of most topical concern in health care administration.

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

Religious Studies (RELG)

Although Religious Studies has no graduate programs, the following graduate courses are available.

590. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of religion. 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.)

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.
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 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.)

School of Applied Social Sciences

Social Work

Virginia Majewski, Chair
117 Knapp Hall
http://www.wvu.edu/~socialwk

Degree offered

Master of Social Work

Nature of the Program

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 non-profit 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 the Charleston Center off-campus site. 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, WV 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 program on the main campus in Morgantown, 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 coursework 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 healthcare 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 coursework 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.

Dual M.S.W/M.P.A.
A dual 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 dual degree requirements. For a student admitted to the advanced standing M.S.W. program, a total of 67 credit hours are required to meet dual 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. Acceptance by one program does not guarantee acceptance by the other.

Additional information and descriptive materials about the dual 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 from a program accredited by the council on Social Work education 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>Hrs.</th>
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<tbody>
<tr>
<td><strong>Foundation Courses</strong></td>
<td></td>
</tr>
<tr>
<td>SW 621 <em>Introduction to Human Growth and Behavior</em></td>
<td>3</td>
</tr>
<tr>
<td>SW 633 <em>Social Policy Analysis</em></td>
<td>3</td>
</tr>
<tr>
<td>Social Research Methods (SW 616 or 618)</td>
<td>3</td>
</tr>
<tr>
<td><strong>Required Practice Track (select one option)</strong></td>
<td></td>
</tr>
<tr>
<td>Direct Practice (SW 643 and 649)</td>
<td>6</td>
</tr>
<tr>
<td>COSA (SW 651 and 654)</td>
<td>6</td>
</tr>
<tr>
<td><strong>Practice Track Crossover</strong></td>
<td></td>
</tr>
<tr>
<td>Direct practice students take either SW 645, 651, or 654</td>
<td></td>
</tr>
<tr>
<td>COSA students take either SW 643 or 649</td>
<td></td>
</tr>
<tr>
<td><strong>Required Field of Practice (select one option)</strong></td>
<td>3</td>
</tr>
<tr>
<td>Aging and Health Care (SW 681)</td>
<td></td>
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<tr>
<td>Children and Families (SW 677)</td>
<td></td>
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<tr>
<td>Mental Health (SW 674)</td>
<td></td>
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<tr>
<td><strong>Field of Practice Electives (determined by student interest)</strong></td>
<td>6</td>
</tr>
<tr>
<td>Field Instruction</td>
<td>16</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>46</td>
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Summary of Degree Requirements for Regular M.S.W. Program

**Curriculum Area**

**Foundation Courses**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Human Behavior and Social Environment (SW 621 and SW 547)</td>
<td>6</td>
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<tr>
<td>Social Welfare Policy and Services (SW 531 and 633)</td>
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<tr>
<td>Social Research Methods (SW 513 and either 616 or 618)</td>
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<tr>
<td>Social Work Methods (SW 540)</td>
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**Required Practice Track (select one option)**

<table>
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<tr>
<th>Track</th>
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<tbody>
<tr>
<td>Direct Practice (SW 643 and 649)</td>
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<td>COSA (SW 651 and 654)</td>
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**Practice Track Crossover**

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<td>Direct practice students take either SW 645, 651, or 654</td>
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<td>COSA students take either SW 643 or 649</td>
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**Required Field of Practice (select one option)**

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<td>Aging and Health Care (SW 681)</td>
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<tr>
<td>Children and Families (SW 677)</td>
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<td>Mental Health (SW 674)</td>
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**Field of Practice Electives**

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**Field Instruction**

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<td>19</td>
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**Total**

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<td>46</td>
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### Social Work (SOWK)

513. *Social Work Research Methods.* 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.

520. *Introduction to Human Growth and Behavior 1.* 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.

531. *Social Welfare Policy and Services.* 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.

540. *Introduction to Social Work Practice.* 3 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.

547. *Multicultural Social Work Practice.* 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.

581. *Advanced Field Instruction 1.* 1-14 Hr. PR: Consent. Graduate field instruction in selected settings under the general direction of the faculty.

616. *Evaluation Research in Social Work.* 3 Hr. (Research course.) PR: SOWK 513 or consent. 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.


618. *Personal Practice Assessment.* 3 Hr. PR: SOWK 513 or consent. 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.

621. *Introduction to Human Growth and Behavior 2.* 3 Hr. PR: Consent. 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.

623. *Social Support Systems.* 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.

641. Social Treatment Groups. 3 Hr. (Practice course.) PR: SOWK 540. The use of social relationships in small groups in treating personal problems and addressing social issues.

642. Task Group Processes. 3 Hr. (Practice course.) PR: SOWK 540. The use of task group activities to address a range of community level concerns is reviewed.

643. Psychopathology and Social Work Practice. 3 Hr. (Practice course.) PR: SOWK 540 or consent. 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.

645. Supervision in Social Work. 3 Hr. (Practice course.) PR: SOWK 540 or consent. Functions, conflicts, and dynamics of supervision of professionals, and the relationship of ethical and value principles.

649. Advanced Practice with Individuals and Families. 3 Hr. (Practice course.) PR: SOWK 540 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.

651. Social Work Practice in Rural Communities. 3 Hr. (Practice Course.) PR: SOWK 540 or consent. Practice issues in skill development and community organization and development with special emphasis on rural communities.

652. Social Planning. 3 Hr. (Practice course.) PR: SOWK 540 or consent. Practice issues and skill development related to social components of comprehensive planning and functional planning systems in health, aging, manpower, social service, and other areas.

654. Social Agency and Program Administration. 3 Hr. (Practice course.) PR: SOWK 540 or consent. Practice issues and skill development in programming, budgeting, staffing, organization, and control of social agencies and programs.

655. Social Work with the Aged. I. 3 Hr. (Field of Practice course.) Human aging as an issue in theory, research, and practice.

656. Concepts and Theories in Social Gerontology. 3 Hr. (Field of practice course.) PR: SOWK 671 or consent. Major conceptual and theoretical perspectives in social gerontology are applied to social work practice for the aged.

657. Community Mental Health. 3 Hr. (Field of practice course.) An overview of the field of mental health which addresses major policy, program, practice, theory, and research issues. Current federal and state issues are examined.

658. Primary Prevention in Social Work. 3 Hr. (Practiced course.) PR: SOWK 540 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.

659. Introduction to Family Social Work. 3 Hr. (Field of practice 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.

660. Family Victimology. 3 Hr. (Practice course) 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, domestic violence, and related topics.

661. Social Work with Couples/Families. 3 Hr. (Practice course.) PR: SOWK 540 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.

662. Social Work in Health Settings. 3 Hr. PR: SOWK 540. Comprehensive strategies for serving clients, including the aged, with physical and/or emotional problems and their families with an emphasis on direct practice approaches. Practice in traditional and nontraditional settings is examined.

663. Advanced Field Instruction 2. I, II, S. 1-14 Hr. PR: Consent. Graduate field instruction in selected settings under the general direction of the faculty.

664. Directed Study. 1-6 Hr. Directed study, reading, and/or research.
693 A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

695. Independent Study. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

Sociology and Anthropology
F. Carson Mencken, Chair
307 Knapp Hall, P.O. Box 6326
http://www.as.wvu.edu/soc_a

Degree Offered
Master of Arts

Nature of the Program
The Division 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. Students pursue individually-tailored plans of study that include training in research design and data analysis, along with advanced work in substantive areas and a grounding in policy analysis. Graduates of the program have obtained. The Division of Sociology and Anthropology is part of the School of Applied Social Sciences, which also includes the Divisions of Public Administration and Social Work. Students in the Applied Social Research program may take approved courses from these other divisions as part of their program of study.

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 coursework 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 coursework 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 or 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)

304. Complex Organizations. 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.

311. Social Research Methods. 3 Hr. PR: Junior status or consent. Logic of social research, elements of research design, and problems of measurement, with emphasis on survey research methodology and data analysis.

322. Third World Development. II. 3 Hr. PR: SOCA 222 or SOCA 240 or consent. Provides a macroscopic view of political and social change in the Third World and specific knowledge of Third World development for issues related to population, food, debt, health, education, environment, and human rights.


330. The Criminal Justice System. 3 Hr. PR: SOCA 232 or consent. A sociological introduction to the criminal justice system. Focuses on analysis of police work, court activities, and corrections within the context of American social organization and societal definitions of crime and justice.

331. Sociology of Law. 3 Hr. PR: SOCA 232 or SOCA 233 or 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.

332. Sociology of Education. 3 Hr. PR: SOCA 101 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.

333. Sociology of Work and Work Places. 3 Hr. PR: SOCA 101 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.
353. Anthropology of Religion. 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.

358. Anthropology of Health and Illness. 3 Hr. PR: 6 Hr. SOCA or consent. Health and disease, diagnosis, and healing in cross-cultural perspective; analyses of social, cultural, political, and economic factors in modern and traditional medical systems.

401. Sociological Theory. 3 Hr. PR: Junior standing or consent. Systematic analysis of major sociological theories viewed from the historical perspective and in terms of current research.

461. Issues in Crime and Justice. 3 Hr. PR: Junior standing or consent. Senior seminar on crime and social organization of justice. Focus on problems of prevention, enforcement, corrections, and institutional reform. Emphasis on recent research, emerging trends, and policy.

493 A-Z. Special Topics. 1-6 Hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

495 A-Z. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

510. Principles of Research Design. 3 Hr. Foundation skills central to research process: identify research topics, develop research questions, review literature, refine concepts, make design decisions, data collection and analysis decisions, critique published articles, prepare and orally defend research proposals.

511. Survey Research Methods. 3 Hr. PR: Intended for majors only. Provides students with an overview of survey research including problem definition, research design, sampling, measurement, instrument construction, project management, ethical considerations, and report writing.

513. Qualitative Methods. 3 Hr. PR: Intended for majors only. Provides students with supervised field experiences in interviewing, participant observation, and other methods of qualitative data gathering, analysis, and presentation.

515. Comparative Research Methods. 3 Hr.

517. Data Analysis. 3 Hr. PR: STAT 211 or equivalent. 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.

518. Data Analysis. 3 Hr. PR: SOCA 517. Continuation of SOCA 517.

519. Microcomputer Applications. 1 Hr. A directed tutorial in selected social science applications of microcomputer use with emphasis on production of research reports. (SOCA majors only.)


572. Sociology of Health. 3 Hr.

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

593 A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

689. Field Work. 1-6 Hr. PR: Departmental consent. Supervised field work.

690. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of sociology and anthropology. 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.)

691. Advanced study. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

692. Directed Study. 1-6 Hr. Directed study, reading, and/or research.
693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

Statistics
E. James Harner, Chair
424 Hodges Hall
http://www.stat.wvu.edu

Degree Offered
   Master of Science

Nature of the Program
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 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 coursework including three hours of credit for a problem report;
- Thesis Option—at least 36 hours of coursework 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 155, 156, 251 or equiv.).
- Linear or matrix algebra (MATH 441 or equiv.).
- Probability and statistics (STAT 215 or equiv.).
- Knowledge of a high-level programming language.

Required Courses Minimum requirements for either option are:

- STAT 512, 513, 545, 561, 562.
- Nine hours from STAT 541, 551, 555, 631, 645.
- STAT 590, 682, 696, 697.

Credit towards the degree requirements is not given for STAT 511. Students must complete at least one hour of credit for STAT 590, 682, and 696 and at least three hours of credit for STAT 697. Students are expected to attend the graduate seminar every semester even if they are not registered for STAT 696. 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 561 and 562; the other covers the applications taught in STAT 512, 513, and 545. 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 at West Virginia University 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 512, 513, 541, 545, 551, 555, 561, 562, 631, or 645.

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 or her problem report/thesis or demonstrate the ability to apply statistical techniques to a research problem.

Minor in Mathematical Statistics

- MATH 155, 156, 251 (or equiv.), and knowledge of a high-level programming language.
- STAT 561, 562.
- Six hours from STAT 512, 513, 541, 545, 551, 555, 561, 562, 631, 645.

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 155, 156 (or equiv.), and knowledge of a high-level programming language.
- Fifteen hours from STAT 512, 513, 541, 545, 551, 555, 561, 562, 631, or 645.

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 155, 156, 251 (or equiv.), and knowledge of a high-level programming language.
  • STAT 561, 562.
  • Nine hours from STAT 512, 513, 541, 545, 551, 555, 631, 645.
  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)

511. Statistical Methods 1. I, II, S. 3 Hr. PR: MATH 126. 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 613 and PSYC 511.)

512. Statistical Methods 2. I, II. 3 Hr. PR: STAT 511 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 614 and PSYC 512.)

513. Design of Experiments. II. 3 Hr. PR: STAT 512 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.

540. Introduction to Exploratory Data Analysis. I. 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. (Alternate years.)

541. Applied Multivariate Analysis. I. 3 Hr. PR: STAT 511 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 multi-dimensional scaling. (Alternate years.)

545. Applied Regression Analysis. II. 3 Hr. PR: STAT 512 or equivalent. Matrix approach to linear and multiple regression, selecting the “best” regression equation, model building, and the linear models approach to analysis of variance and analysis of covariance.

551. Nonparametric Statistics. I. 3 Hr. PR: STAT 511 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. (Alternate years.)

555. Categorical Data Analysis. II. 3 Hr. PR: STAT 215 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. (Alternate years.)


562. Theory of Statistics 2. II. 3 Hr. PR: STAT 561. 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.

590. Teaching Practicum. 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.)

593. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

631. **Sampling Theory and Methods.** I. 3 Hr. PR: STAT 511 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.

641. **Multivariate Statistical Theory.** II. (Alternate years.) 3 Hr. PR: STAT 541, and STAT 561 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.

645. **Linear Models.** II. 3 Hr. PR: STAT 545 and STAT 362 or consent. Multivariate normal distribution, distribution of quadratic forms, linear models, general linear hypotheses, experimental design models, components of variance for random effects models. (Alternate years.)

682. **Analysis of Experiments.** II. 1 Hr. PR: Consent. Statistical consulting and data analysis.

689. **Professional Field Experience.** 1-6 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.

690. **Teaching Practicum.** 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.)

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

692. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

693. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

695. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. **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.

697. **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.)

698. **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.)

699. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
Women’s Studies
Barbara J. Howe, Director
218 Eiesland Hall
http://www.as.wvu.edu/wmst

Nature of the Program
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.

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. The women’s studies-directed M.A.L.S. program is a special emphasis within the M.A.L.S. program that allows students to focus their work on women’s studies. Interested students should become familiar with the requirements of M.A.L.S. as described on page 155 and contact the director of the Center for Women’s Studies for specific requirements for the women’s studies-directed M.A.L.S. Or, see the center’s web site at http://www.as.wvu.edu/wwmsst/degrees.html#mals

Financial Assistance
Some financial assistance is available to students doing graduate work in women’s studies. Two scholarships are available to students doing graduate coursework 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, P.O. Box 6450, Morgantown, WV 26506-6450. E-mail wvwmst@wvu.edu. Telephone (304) 293-2339.

In addition to the women’s studies courses listed here, other courses focusing on women and gender as well as independent study opportunities are available in several University departments.

Graduate Certificate in Women’s Studies
Students can choose to complete a graduate certificate in women’s studies in conjunction with another graduate degree or as a non-degree graduate student. The certificate consists of 15 hours of graduate-level work in women’s studies, using those courses approved by the WVU Women’s Studies Curriculum Committee as primary or component courses for the women’s studies program. A current list of courses is available from the Center for Women’s Studies.
Women’s Studies (WMST)

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

790. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of women’s 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.)

791. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.

792. **Directed Study.** I, II, S. 1-6 Hr. PR: Consent. Directed study, reading and/or research.

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

794. **Seminar.** I, II, S. 1-6 Hr. PR: Consent. Seminars arranged for advanced graduate students.

795. **Independent Study.** I, II, S. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.

796. **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 her/his program.

797. **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.)

798. **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.)

799. **Graduate Colloquium.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in her/his department’s graduate colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by her/his 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.)
Degree Offered

Master of Science in Journalism

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. Journalism graduate assistants teach laboratories and assist professors with courses. Some journalism graduate students 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, P.O. Box 6010, West Virginia University, Morgantown, WV 26506-6010; telephone: (304) 293-3505. Or those interested may access WVU graduate information at http://www.wvu.edu/~graduate or WVU Admissions and Records, at http://www.wvu.edu/prospective/index.html.
Graduate Faculty
† Indicates regular membership in the graduate faculty.
‡ Indicates associate membership in the graduate faculty.

Professors
George Esper, Ph.D. (WVU). War reporting.

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.

Assistant Professor

Professors Emeriti
Paul A. Atkins, M.A. (U. Va.).
Charles F. Cremer, Ph.D. (U. Iowa).
Robert M. Ours, Ph.D. (C. William and Mary).
Guy H. Stewart, Ph.D. (U. Ill.). Dean.
William R. Summers Jr., M.A. (U. Mo.).

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 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, or 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 does not 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 nonreturnable 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

Prior to enrolling for more than 18 credit hours of graduate courses all students seeking a master’s degree in journalism must demonstrate basic academic competency or extensive professional field experience, as determined by the Graduate Studies Committee, in the following fundamental journalism areas of interest.

- Basic print journalism reporting/writing (JRL 318, BN 318 and/or NE 418).
- Visual communication (ADV 410, ADV 493A, JRL 319, JRL 493A, JRL 493K, PR 319, or other visual communication course(s)).
- Journalism/media ethics (JRL 289 or JRL 689).
- Media law (NE 428).

In addition, a student who does not have a bachelor’s degree in journalism or extensive professional experience may be required to 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.

All M.S.J. students are strongly encouraged to have taken an undergraduate research methods course and/or a statistics course with an algebraic prerequisite. Those students not meeting this criteria may be required by the Graduate Research Committee to remedy this deficiency prior to enrolling in JRL 620 and/or JRL 601.

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 coursework, the student and the advisor draw up a plan of study to show the direction of the student’s coursework. 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 are available in 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 eight years of the start of the first coursework 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 600 Introduction to Graduate Studies (no credit)
JRL 604 Mass Media and Society (3 Hr.)
JRL 620 Advanced Journalistic Writing and Research (3 Hr.)
JRL 601 Research Methods (3 Hr.)

These courses must be taken in the following sequence over a three semester period:

• Semester 1: JRL 600 and JRL 604
• Semester 2: JRL 620
• Semester 3: JRL 601

In both programs, 60 percent of the graduate credits submitted for the degree must be in courses numbered 500-799.

Coursework 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 general 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 coursework 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.

Normally, students will enroll for a total of six credit hours of theses/professional project courses. Any deviations from this norm must be approved in writing, in advance by the director of graduate studies/Graduate Studies Committee.

In addition to this six-credit-hour limit, no graduate student will be permitted to enroll for more than a total of three hours of research and or colloquium courses without the written approval of the Graduate Studies Committee.

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 refinements in the proposal are discussed with the members of the Advisory Committee.
Notices 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 or she cannot sign the approval sheet, he or she may resign from the committee. 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 or 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 includes 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 semester hour each regular (fall and spring) semester. This enrollment may be in coursework 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, requires 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 interviews, 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 journalism 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.
Broadcast News (B-N)
517. Contemporary Issues in Broadcast News. 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.

590. Teaching Practicum. 1-3 Hr. Supervised practice in college teaching of broadcasting. 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. (Course may be graded S/U.)

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

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

594. Special Seminars. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.


698. 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.

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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)
551. 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.

555. 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.

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

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

594. Seminar. 1-6 Hr. PR: Consent. Advanced study of methodological techniques. Research project chosen from area of student’s major interest. A written report of the study undertaken is required.

600. Introduction to Graduate Studies. 0 Hr. (Required of all graduate journalism students.) Designed to orient students to graduate study. (Class meets once a week.)

601. Research Methods. 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.
604. Mass Media and Society. 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.

620. Advanced Journalistic Writing and Research. 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.

639. Seminar in Advanced Advertising Management Problems. 3 Hr. Application of the study of current developments in aspects of integrated marketing communications and advertising, topics may include: message strategy, segmentation, interactive marketing, public relations practices and management, and media strategy. Focus is placed on current industry practices and developments.

640. Corporate Communications. 3 Hr. Conferences to examine the synergistic effects of advertising, journalism, and public relations for different kinds of corporations. Team projects and presentations.

689. Ethics of Mass Communication. 2 Hr. 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.

690. Teaching Practicum. 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 assistantships to gain teaching experience. (Grading may be S/U.)

691. 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.

692. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

693. Special Topics. 1-6 Hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

694. Seminar. 1-6 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

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

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 (NE)

590. Teaching Practicum. 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 assistantships to gain teaching experience. (Grading will be S/U.)

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

692. Directed Study. 1-6 Hr. Directed study, reading, and or research.

693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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)

512. Fund Raising and Foundation Management. 3 Hr. PR: Journalism graduate student or senior standing. Seminar. Studies in fund raising, alumni relations, and foundation management.

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

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

692. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

693. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

695. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. 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.

697. 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.)

698. 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.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 Dentistry
James J. Koelbl, D.D.S., M.S., M.J., Dean
Louise T. Veselicky, D.D.S., M.D.S., M.Ed. Senior Associate Dean, Educational Programs
Richard J. Crout, D.D.S., M.S., Ph.D., Associate Dean, Research
Gordon G. Keyes, D.D.S., M.S., J.D., Assistant to the Dean Institutional Advancement
Shelia S. Price, D.D.S., Ed.D., Assistant Dean, Admissions and Student Affairs
Frank H. Stevens, D.D.S., Assistant Dean, External Affairs

http://www.hsc.wvu.edu/sod

Degrees Offered

**D.D.S. in Dentistry (See the Health Sciences Catalog)**

**M.S. in Dental Specialties (Endodontics, Orthodontics, and Prosthodontics)**

**Master of Science in Dental Hygiene**

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 124 treatment areas and 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 restorative dentistry offers a program of advanced study and clinical training leading to the degree of master of science. The program requires three academic years and two summers of full-time residency. It is designed to qualify dentists for careers in prosthodontic 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 Senior Associate Dean for Educational Programs, 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: uyantz@hsc.wvu.edu.
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.
† Carol A. Spear, M.S. (U. Mich.). Dental hygiene related topics, Instrumentation, Infection control, Education.
† Robert N. Stutchell, D.M.D. (U. Pitt.). Preventive dentistry, Treatment therapy.

Associate Professors
† Joan Gibson-Howell, Dental hygiene.

Assistant Professor

Dental Hygiene
Christina B. DeBiase, Ed.D., Director
e-mail: cdebiase@hsc.wvu.edu
1189 Health Sciences North
http://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.

Inquiries concerning this program should be directed to the Senior Associate Dean for Educational Programs for Academic and Postdoctoral Affairs, School of Dentistry. Applications should be filed by July 1 for fall admission and by October 15 for spring enrollment.
Admission Requirements

- Meet WVU requirements for admission to graduate study.
- 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.
- 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 on a 4.0 scale on all college work attempted is required.
- Completion of one of these standardized tests: the Graduate Record Examination (GRE) general aptitude test with a minimum 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.
- Submission of all information requested in the graduate application to the Office of the Senior Associate Dean for Educational Programs.

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.
- Provision of 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>
</tr>
</thead>
<tbody>
<tr>
<td>EDP 610 Test and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>EDP 613 Statistics</td>
<td>3</td>
</tr>
<tr>
<td>DTHY 680 Critical Issues in Health Care</td>
<td>3</td>
</tr>
<tr>
<td>DTHY 681 Expanded Functions</td>
<td>3</td>
</tr>
<tr>
<td>DENT 691B Computer Applications in Dentistry</td>
<td>2</td>
</tr>
<tr>
<td>DTHY 697 Research (Thesis)</td>
<td>6</td>
</tr>
<tr>
<td>DENT 791 Research Methods</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
</tr>
</tbody>
</table>
Elective area(s) of dental hygiene specialization .............................................................. 15

Dental Hygiene 691 and Dentistry 791 courses and
Courses taught by the School/College of:
Business and Economics
Human Resources and Education
Medicine
Multidisciplinary Studies
Total .................................................................................................................................. ........ 36

Dental Hygiene (DTHY)
680. Dental Hygiene Seminar and Practice 1. 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.

681. Dental Hygiene Seminar and Practice 2. 3 Hr. Expanded services for the dental hygienist with emphasis on restorative and periodontal functions.

690. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Dental Hygiene. 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.


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

697. 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.

698. 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.

Dentistry (DENT)
690. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of Dentistry. 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.

791. A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled course

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. It 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 Senior Associate Dean for Educational Programs. 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.

Degree/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. A certificate will be awarded only upon satisfactory completion of the research and thesis.
• Satisfactory completion of a final oral examination.
• Completion of a minimum of 63 credit hours, including 39 hours of endodontic courses, a minimum of 15 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)
600. Advanced Oral Surgery. I, II, S. 1-12 Hr. PR: Consent. Advanced study of therapeutics, hospital protocol, and surgical aspects of oral surgery involving lectures, seminars, demonstrations, and clinical applications. (Grading may be S/U.)


788. Clinic Completion Practicum. 1-15 Hr. Supervised patient care in selected clinical areas specified for each individual student according to their clinical competency requirements. (Grading will be S/U.)

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

Endodontics (ENDO)
688. 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.

689. Endodontic Theory. I, II, S. 2 Hr. (May be repeated for credit.) PR: Consent. Provides seminar discussions in the topics of: basic endodontic techniques, advanced endodontic techniques, endodontic literature review, case presentation, and advanced endodontic theory.

690. Teaching Practicum. I, II. 1-3 Hr. PR: Consent. Supervised practice in college teaching of dentistry.

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

697. 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.)

Microbiology (MICB)
Pathology (PATH)
601. Special Studies in Oral Pathology. (For dental and graduate students, residents, and interns.) I. 1-3 Hr. PR: PATH 738 and PATH 753. Advanced study of local or systemic disease processes affecting oral structures through seminars, assignment of specific topics, or research activities.

782. Advanced Oral Histopathology. (For dental and graduate students, residents, and interns.) I, II. 1-2 Hr. PR: PATH 738 and PATH 753 or consent. An elective seminar stressing the significant microscopic features and diagnosis of various oral lesions.

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.

Public Health (PUBH)
611. 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.

Orthodontics
Peter Ngan, D.M.D., Chair
1077 Health Sciences North
http://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. It is designed to qualify dentists for careers in orthodontic clinical practice, teaching, and research.

Inquiries concerning this program should be directed to the Senior Associate Dean for Educational Programs. 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 general WVU graduate study requirements.

Degree Requirements
• 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 passage of a final oral examination.
• Completion of a minimum of 77 credit hours, including 49 hours of orthodontic courses, a minimum of 13 hours of selected basic sciences subjects, two hours of teaching practicum, and a research/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.
Neuribiology and Anatomy (NBAN)
716. Craniofacial Growth and Maturation. 1 Hr. PR: Consent. The current concepts of craniofacial growth and maturation are presented and integrated for application to clinical problems.

Orthodontics (ORTH)
616. 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.


619. 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.


622. 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.


697. 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.

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.)
Degree Offered

Master of Science

The School of Dentistry and its Department of Restorative Dentistry offers a three-year program of advanced study and clinical training in the dental specialty of prosthodontics. The program requires a minimum of 33 months (three academic years and two summers) leading to a certificate in prosthodontics and a master of science degree. The purpose of this program is to train well-qualified dentists in all aspects of prosthodontics and is designed to qualify them for careers in prosthodontic clinical practice, teaching, and research.

Inquiries concerning this program should be directed to the Office of the Senior Associate Dean for Educational Programs. Completed applications are due by September 15 and those applicants approved for admission to the program will be notified after December 1.

Admission Requirements

• Graduation from an accredited U.S. or Canadian 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 School of Dentistry application form by September 15.

Degree Requirements

• Fulfillment of general WVU graduate study requirements.
• Thirty-three months (three academic years and two summers) of consecutive full-time advanced prosthodontic study and clinical training 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. This includes 49 credit hours of prosthodontic courses, a minimum of 13 credit hours of selected basic science subjects, two hours of teaching practicum, and 13 credit hours for completion of a master's thesis.
• Demonstration of satisfactory clinical competence in advanced prosthodontics.
• 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)

688. 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 prosthhetics and implant prosthodontics.

689. 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.
School of Medicine
Robert M. D’Alessandri, M.D., Dean
Thomas M. Saba, Ph.D., Associate Vice President, Associate Dean for Research and Graduate Studies
Kevin A. Halbritter, M.D., Associate Dean, Hospital Affairs
James P. Griffith, M.D., Assistant Dean, Student Services, Charleston Division
Anthony DiBartolomeo, M.D., Associate Dean, Clinical Affairs
Norman D. Ferrari, M.D., Associate Dean, Student Services and Academic Progress, Interim Vice President, Charleston Division
James K. Hackett, M.B.A., Associate Dean, Finance and Administration
Charles R. Craig, Ph.D., Associate Dean, Research and Graduate Studies
Mary Beth Mandich, Ph.D., Associate Dean for Professional and Undergraduate Programs
James M. Shumway, Ph.D., Associate Dean, Medical Education
James Stevenson, M.D., Associate Dean, Development and Continuing Medical Education
G. Anne Cather, M.D., Associate Dean, Student Services and Professional Development
John E. Prescott, M.D., Associate Dean for Clinical Enterprise

http://www.hsc.wvu.edu/som

Degrees Offered

Doctor of Medicine

Master of Science, Doctor of Philosophy in Biochemistry (Medical)

Master of Science, Doctor of Philosophy in Microbiology, Immunology, and Cell Biology

Master of Science, Doctor of Philosophy in Neurobiology and Anatomy

Doctor of Philosophy in Pharmacology and Toxicology

Master of Science, Doctor of Philosophy in Physiology (Medical)

Master of Science in Exercise Physiology

Doctor of Philosophy in Exercise Physiology

Master of Science in Community Health Education

Master of Occupational Therapy

Master of Public Health

Master of Physical Therapy (entry-level)

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 imagery, lithotripsy, laser surgery, and the necessary support technology. The Ruby Memorial Hospital also houses the Jon Michael Moore Trauma Center and the WVU Children’s Hospital. The Chestnut Ridge Psychiatric Hospital treats the entire spectrum of psychiatric and behavioral problems. The Mary Babb Randolph Cancer Center provides a facility totally dedicated to the diagnosis and treatment of cancer. The Mountainview Regional Rehabilitation Hospital offers students the opportunity to investigate rehabilitative and physical medicine as a career. The Department of Human Performance and Applied Exercise Sciences has recently evolved to incorporate exercise physiology, physical therapy, and occupational therapy; these programs complement all of the other existing programs. Laboratories and teaching areas allow scientists to work toward their goals. Research areas of neurobiology and anatomy, biochemistry, cellular biology, medical technology, microbiology and immunology, pathology, pharmacology and toxicology, exercise physiology and physiology support study toward masters of science and doctor of physiology degrees. The Clark K. Sleeth Family Medicine Center opened new facilities in 1999.

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.

Departments
- Neurobiology and Anatomy
- Anesthesiology
- Behavioral Medicine and Psychiatry
- Biochemistry and Molecular Pharmacology
- Community Medicine
- Emergency Medicine
- Family Medicine
- Human Performance and Applied Exercise Science
- Medicine
- Microbiology, Immunology, and Cell Biology
- Neurology
- Neurosurgery
- Obstetrics and Gynecology
- Ophthalmology
- Orthopedic Surgery
- Otolaryngology
- Pathology
- Pediatrics
- Physiology and Pharmacology
- Radiology
- Surgery

Committees
- Academic Standards
- Research Development Grant Committee
- Curriculum Committee
- Executive Faculty
- Faculty Promotion and Tenure
- Student Leadership
- Admissions Committee, M.D. Degree
- E. J. Van Liere Student Research Convocation
- Continuing Medical Education
- Admissions Committee/Medical Technology
- Admissions Committee/Physical Therapy
- Committee on Women’s Issues
- Distinguished Teacher Committee
- Coordinating Counsel on Graduate Medical Education
- Admissions Committee/Occupational Therapy
- High School Summer Research Program
- Clinical Research

Graduate Faculty

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

Biochemistry
Professors
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.). Emeritus. Regulation of genes by estrogen.
Jeffrey S. Fedan, Ph.D. (U. Ala.). Adjunct. Photo affinity labeling of receptors, Mechanisms of airway hyperactivity.
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.
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.
Knox Van Dyke, Ph.D. (St. Louis U.). Chemiluminescence in human cells, Effects of antiinflammatory drugs on chemiluminescence.

Associate Professors
James E. Mahaney, Ph.D. (U. of Va.). Physical mechanisms of calcium transport regulations.
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.
Timothy S. Tracy, Ph.D. (Purdue U.). Substrate specificity, Regulation and binding site characteristics of cytochrome P450 2C9.
William F. Wonderlin, Ph.D. (Johns Hopkins U.). Ion channel pharmacology, Physiological development of ion channels.

Assistant Professors
Peter H. Mathers, Ph.D. (Calif. Inst. of Tech.). Molecular biology of the developing eye.
Karen Woodfork, Ph.D. (WVU). Educational software development.

Community Medicine Professors
Bill Carlton, Ed.D., (U. of Tenn.).
Alan Ducalman, M.D. (Wayne St. U.), M.S.C. (City U. of NY and Mt. Sinai Sch.of Med., NY). Department Chair.
Alvin H. Moss, M.D. (U. of Pa.). Director, Center for Health Ethics and Law.

Associate Professors
Jacqueline J. Glover, Ph.D. (Georgetown U.). Center for Ethics and Law.

Assistant Professors
Cathy Coyne, Ph.D. (Johns Hopkins U.), M.P.H. (Boston U.).
Monica Fisher, Ph.D. (U. of Mich.).
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.
†Irmak Ullrich, M.D. (U. Minn.). Diabetes and exercise, Osteoporosis.
†Rachel Yeater, Ph.D. (WVU). Division chair. Heart disease prevention, Cardiac rehabilitation.

Associate Professors
Matthew Boegehold, Ph.D. (U. of Ariz.). Regulation of the microcirculation; Microvascular alterations in hypertension.
Paul Gordon, Ph.D. (Pitt.). Epidemiology, Physical activity, Lipids.
†W. Guyton Hornsby Jr., Ph.D. (LSU). Diabetes and exercise, Strength and conditioning.

Assistant Professor
Daniel Bonner, M.S. (WVU). Exercise physiology.

Adjunct Assistant Professor

Occupational Therapy

Assistant Professors
Robert Chetlin, M.S. (WVU).
Melanie Collier, O.T.R./L., B.S. (U. of Penn.).
Anne F. Cronin, O.T.R./L., Ph.D. (U. of Fla., Webster U., U. of Mo.).
Randy P. McCombie, Ph.D., O.T.R./L. (Loyola U. of Chi.). Division chair.

Physical Therapy

Professors
MaryBeth Mandich, P.T., Ph.D. (WVU). Interim chair, Pediatric and neuroscience physical therapy.
John J Petronis, P.T., M.S. (WVU). Orthopedics physical therapy.

Associate Professor
Corrie Mancinelli, P.T., Ph.D. (WVU). Anatomy and orthopedic physical therapy.

Assistant Professors
Scott Davis, P.T., P.R., O.C.S. (WVU). Orthopedic physical therapy.
Andy Messaros P.T., Ph.D. (Iowa). Neurosciences.
Anne Swisher, P.T., M.S. (U.N.C. at Greensboro). Graduate and distance education coordinator, cardio-pulmonary physical therapy, Exercise physiology.
Krystal Thomas, P.T., M.S. (WVU). Women's health physical therapy.
Carol Waggy, P.T., Ph.D. (WVU). Anatomy and hand physical therapy.
Ralph Utzman, P.T., M.P.H. (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 Professor
Assistant Professors
Beverly Kirby, M.A. (WVU). Hematology.

Microbiology, Immunology, and Cell Biology

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.
†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.
†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.
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.
†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
†Bing-Hua Jiang (Miss. St. U.). PI-3 Kinase in tumorigenesis.
†Jia Luo, Ph.D. (U Iowa). Cell signalling in brain development.

Neurobiology and 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.). Emeritus. 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
†Ariel Agmon, Ph.D. (Stanford). Electrophysiology and morphology of developing cortex.
†Robert S. Pope, Ph.D. (U.N.D.). Development and implementation of anatomical teaching programs.
†Elizabeth R. Walker, Ph.D. (WVU). Science outreach activities to students at state, national, and international levels.
Assistant Professor

Pharmacology and Toxicology
Professors
Christine Baylis, Ph.D. (Leeds U.). Renal and systemic hemodynamics.
Matthew Boegehold, Ph.D. (U. Ariz.) Regulation of the microcirculation, Microvascular alterations in hypertension.
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.
Peter M. Gannet, Ph.D. (U. Wisc.). DNA structure and conformation, Reactions of radicals with DNA.
Joseph K.H. Ma, Ph.D. (Duquesne U.). Drug interactions with biological systems.
Jeff Fedan, Ph.D. (U. Ala.). Mechanisms of asthma. (Primary appointment with NIOSH.)
Vernon Odom, Ph.D. (U.N.C.). Assessment of visual functions. (Primary appointment in ophthalmology.)
Eddie Reed, M.D. (Yale U.). The link between DNA damage and ovarian cancer.
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.
Eddie Reed, M.D. (Yale U.). The link between DNA damage and ovarian cancer.
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.
Knox Van Dyke, Ph.D. (St. Louis U.). Chemiluminescence in human cells, Effects of antiinflammatory drugs on chemiluminescence.

Associate Professors
James E. Mahaney, Ph.D. (U. Va.). Physical mechanisms of calcium transport regulations.
Lisa M. Salati, Ph.D. (U. Minn.). Regulation of RNA processing by nutritional factors.
Timothy S. Tracy, Ph.D. (Purdue U.). Substrate specificity, Regulation and binding site characteristics of cytochrome P450 2C9.
William F. Wonderlin, Ph.D. (Johns Hopkins U.). Ion channel pharmacology, Physiological development of ion channels.

Assistant Professors
Stanley Hileman, Ph.D. (U. Ky.). Neurobiology of food intake and reproduction.
Grazyna D. Szklarz, Ph.D. (Clarkson U.). Structure and function of cytochrome P450 2C8.

Physiology And Pharmacology
Professors
Matthew Boegehold, Ph.D. (U. Ariz.). Physiology and pathophysiology of the microcirculation, Spinal cord physiology, Tactile discrimination.
Paul B. Brown, Ph.D. (U. Chi.). Environmental toxicology.
Vincent Castranova, Ph.D. (WVU). Pulmonary cell physiology. (Primary appointment with NIOSH.)
Jeff Fedan, Ph.D. (U. Ala.). Mechanisms of asthma. (Primary appointment with NIOSH.)
Vernon Odom, Ph.D. (U.N.C.). Assessment of visual functions. (Primary appointment in ophthalmology.)
Anna A. Shevdova, Ph.D., D.Sc. (Moscow U). Mechanism of chronic allergic skin and lung disease. (Primary appointment with NIOSH.)


Associate Professors


Pingnian He, Ph.D., M.D. (U. Calif., China Med.) Cardiovascular physiology, Microcirculation. Robert Mercer, Ph.D. (U.N.C.-Chapel Hill). Physiology and patho-physiology of the lungs (Primary appointment with NIOSH)


Bernard Schreurs, Ph.D. (U. Iowa). Learning, Memory, Synaptic plasticity, Functional imaging. (Primary appointment with Blanchette Rockefeller Neurosciences Institute.)


Eisuke Murono, Ph.D. (Rutgers U.). The examination of the potential effects of occupational chemicals. (Primary appointment with NIOSH.)

Bernard Schreurs, Ph.D. (U. Iowa). Learning, Memory, Synaptic plasticity, Functional imaging. (Primary appointment with Blanchette Rockefeller Neurosciences Institute.)

George Spiro, Ph.D. (U. of Fla.). Sound localization, Axonal guidance, Development of synaptic connections. (Primary appointment in otolaryngology)

Assistant Professors


Research Associate Professor


Associate Professors


Assistant Professors


Center on Aging/Education Unit
http://www.hsc.wvu.edu/coa

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 738 and psychology 524, and nine elective hours selected on the basis of appropriateness to the individual student’s goals from an approved pool of aging-related courses. In addition 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 212 Introduction to Gerontology. Program participants must maintain a minimum grade-point average of 3.0 in certificate coursework.

Other University units involved in teaching and research in human aging include the Davis 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, P.O. Box 9127, Morgantown, WV 26506-9127. Telephone (304) 293-2081.

Gerontology (GERN)
512. Public Policy of Aging. 3 Hr. Policy analysis of public programs for senior citizens—Older Americans Act, Medicare-Medicaid and Social Security. Discussion of future of these programs and societal response. Emphasis on senior programs in West Virginia. (Equivalent to GERO 412)

681. The Rural Elderly. 3 Hr. Overview of health, social, and policy issues that impact the quality of life of older adults living in rural environments, contrasted with those in urban areas.

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

Biology/Psychology (BIOL/PSYC)
738. Fundamentals of Gerontology. II. 3 Hr. PR: MDS 212 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 524.)

For a complete listing of aging-related courses including graduate certificate electives, contact the Center on Aging, P.O. Box 9127, Morgantown, WV 26506-9127. Telephone (304) 293-2081.

Biochemistry and Molecular Pharmacology
Diana S. Beattie, Ph.D., Chair
Lisa Salati, Ph.D., Graduate Coordinator
3123 Health Sciences North
http://www.hsc.wvu.edu/som/bmp

Degrees Offered
Master of Science
Doctor of Philosophy

Graduate study in biochemistry is 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 at http://hsc.wvu.edu/som/bmp.

Admission Requirements
A prospective graduate student should hold a bachelor’s degree with a science major
and should have successfully completed courses in organic chemistry, calculus, physics, biology, and physical chemistry. In some cases, a deficiency in the above may be made up after admission into the program.

Application is made by submission of the following items to the Department of Biochemistry and Molecular Pharmacology:

- 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.

Owing to the sequence of courses, entrance in the fall is preferred, but exceptions may be made as necessary. Application materials and program details may be obtained by writing the Graduate Coordinator, Department of Biochemistry and Molecular Pharmacology, School of Medicine, P.O. Box 9142, West Virginia University, Morgantown, WV 26506-9142. They are also available at http://www.hsc.wvu.edu/som/bmp. 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 January 15.

Doctor of Philosophy
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 coursework. 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 and to aid in the selection of a dissertation 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 thesis research, and a few formal courses may be 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 large groups of people.

Completion of the Ph.D. program is realized when the student successfully presents the research results to both the department and their Graduate Advisory Committee. Typically, four to five years are required to realize this goal.

Master of Science
The Department of Biochemistry and Molecular Pharmacology offers the thesis master’s degree. This program involves completion of a master’s research project in addition to formal coursework. Students are generally not admitted directly into this program. Two to three years are required to complete the M.S. program.

Research
Research being conducted in the department includes: hormonal regulation of metabolism; regulation of gene expression; RNA processing; structure and function of nucleic acids; chemistry of enzymes and serum proteins; biogenesis of membranes; membrane molecular biophysics; eye development; ion channel physiology; neuropharmacology of pain; cellular growth regulation and cancer therapeutics; and auditory signal transduction.

Biochemistry (BIOC)
531. General Biochemistry. II. 4 Hr. PR: General chemistry, organic chemistry. (For pharmacy students; others by consent.) Consisting of the lecture portion of BIOC 705, this course is designed to be a general introduction to biochemical compounds, processes, and concepts for students in the pharmacy program. Master’s program students and others by consent. Four lectures per week.


552. Cell and Molecular Biochemistry 2. II. 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.

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

690. Teaching Practicum. I, II. 1-3 Hr. Consent of chairperson. Supervised practice in college teaching of biochemistry. (Graded as S/U.)

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

697. 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.)

698. 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.)

705. General Biochemistry. II. 5 Hr. PR: General chemistry, organic chemistry. (For dental students.) 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.

706. General Biochemistry. II. 5 Hr. PR: General chemistry, organic chemistry. (For dental students.) 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.

790. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of biochemistry. 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.)

791. A-Z. Advanced Topics. I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

792 A-Z. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

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

794. Seminar. I, II, S. 1-6 Hr. Seminars arranged for advanced graduate students.

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in his/her departments 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.)

Community Medicine
Educational Programs In Community And Public Health
Alan M. Ducatman, M.D., M.S.C., Chair, Community Medicine
Ruth Kershner, Ed.D., R.N., C.H.E.S., Associate Co-Chair
The Department of Community Medicine offers the master of science 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
The goal of the program is 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 applicant’s demonstrated commitment to community health and her/his educational and professional preparation for the successful completion of the master of science 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.S. program must:
- Submit an Application for Graduate Admission to West Virginia University and attach a nonrefundable check for the amount specified on the application form.
- Submit sealed transcripts of all college coursework to the Graduate Unit, West Virginia University Office of Admissions and Records.
- 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.
- Submit scores for the General Test of the Graduate Record Examination (GRE).
- Complete an official M.S. (Community Health) Program Application.
- 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.
- 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.S. 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
Students in the M.S. program will select either a practicum track or a research track. The course of study includes a minimum 21 hours of required courses, 12 hours of electives, and either a six-hour practicum (CHPR 650) or a six-hour thesis (CHPR 697), for a minimum total of 39 credit hours.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUBH 601 Introduction to Community and Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 611 Applied Biostatistics for Health</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 612 Social and Behavioral Theory</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 634 Health Promotion Research Methods</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 635 Management for Community and Public Health</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 638 Community Health Assessment and Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 648 Intervention Design</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 650 Practicum</td>
<td>6</td>
</tr>
<tr>
<td>CHPR 697 Thesis</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 public health degree program. Since unforeseen circumstances might necessitate a change in our curriculum, we encourage prospective students to visit the educational programs web site at http://www.hsc.wvu.edu/som/cmed/edprog for current requirements.

Community Health Promotion (CHPR)

507. Community Health: Human Sexuality. 3 Hr. PR: Consent. Analysis of sex-related issues including parenting, sex education, sexual sanctions, pornography, sexual dysfunction, and sexual variance. Designed for teachers, health professionals, and interested lay people.

509. 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.

612. 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.

614. Injury Prevention and Control. 3 Hr. The injury control problem is examined as a public health concern. Strategies and programs for injury prevention are studied for implementation with target groups who are overrepresented within the injury problem.

633. Foundations of Wellness. 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.

634. Health Promotion Research Methods. 3 Hr. PR: CHPR 612. This course is designed to introduce students to the basic elements of conducting effective evaluation of health promotion programs.

635. Management for Community/Public Health. 3 Hr. PR: CHPR 612 and PUBH 601. The course provides students with the essential skills to be effective managers in the community and public health environment.

638. Community Health Assessment/Evaluation. 3 Hr. PR: CHPR 612 and PUBH 601. 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.

642. Grant Writing for Health Educators. 3 Hr. PR: CHPR 612. This course addresses various components of the grant writing process, including collaboration, funding sources, proposal preparation, and grants management for the health professional.

648. Intervention Design. 3 Hr. PR: CHPR 638. Students will apply information learned in CHPR 638 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.

650. Practicum. 1-12 Hr. PR: 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. (Grading may be S/U.)

690. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of community health promotions. 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.)


695. Independent Study. I, II. S. 1-6 Hr. Faculty supervised topics not available through regular course offerings.

697. 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.)

782. Supervised Applied Health Education Project. 1 Hr. PR: Advanced graduate standing or consent. Doctoral students only. Plan and conduct a health education intervention in other than a classroom setting, i.e., a defined community.

783. Supervised Health Education Research Report. 1 Hr. PR: Advanced graduate standing and consent. Doctoral students only. A written report of empirical research of either a survey or an experiment.

790. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of health-related learning experiences. 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.)

791. A-Z. Advanced Topics. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses. Study may be independent or through specially scheduled lectures.

792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. Seminars. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 the 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.) These 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.

Public Health

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.

The master of public health 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 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.

Program Description

The future of public health will be shaped by our nation’s public health agencies via health assessment, policy development, and public health services. The WVU School of Medicine addresses these core functions through a generalist M.P.H. degree in community health/preventive medicine offered by the Department of Community Medicine. This degree gives students a thorough understanding of public health theory and application in the core areas of biostatistics, epidemiology, environmental health science, health services administration, and social and behavioral sciences. The M.P.H. program prepares students to fill decision-making roles in managed care and other integrated delivery systems, the medical products industry, health departments and other governmental agencies, consumer groups, and community-based organizations. Our program is accredited by the National Council on Education for Public Health (CEPH).

Mission and Goals

The mission of the M.P.H. program is closely aligned with the educational mission of the WVU School of Medicine. The School of Medicine's mission is to improve the health of West Virginians through the education of health professionals, through basic/clinical scientific research and research in rural health care delivery, through the provision of continuing professional education, and through participation in the provision of direct and supportive health care.

The specific educational mission that relates to the M.P.H. program includes the following goals:

• Educate students and residents to become competent professionals with integrity and compassion with the potential to become community leaders, innovative educators, and creative researchers.
• Promote lifelong learning skills in students and residents.
• Stimulate interest of students and residents to practice in rural areas of West Virginia.
• Emphasize the importance of prevention and healthy lifestyles for students and residents and the populations they will serve.
• Maintain the importance of teaching students and residents, and enhance the recognition and rewards for teaching performance.
• Create an environment that emphasizes a scholarly approach to curricular implementation and evaluation while fostering an atmosphere of improvement and excellence.

Admission Requirements
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.
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 18 hours of required courses, 15 hours of electives, and a six-hour practicum (PUBH 689), for a minimum total of 39 credit hours.

Required Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>PUBH 611 Applied Biostatistics for Health</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 612 Social and Behavioral Theory</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 630 Policy and the Health System</td>
<td>3</td>
</tr>
<tr>
<td>CHPR 635 Management for Community and Public Health</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 650 Environmental Health</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 660 Public Health Epidemiology</td>
<td>3</td>
</tr>
<tr>
<td>PUBH 689 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 (community health education) degree program. Since unforeseen circumstances might necessitate a change in our curriculum, we encourage all prospective students to visit the educational programs web site at http://www.hsc.wvu.edu/
Public Health (PUBH)

595. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

601. 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.

611. 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.

615. 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.

617. Ethical/Legal Issues in Public Health. 3 Hr. 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.

618. Health Services/Outcomes Research Methods. 3 Hr. 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.

625. 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.

630. Policy and The Health System. 3 Hr. 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.

650. Environmental Health. 3 Hr. A review of issues illustrating the responsibilities and roles of the public health work force in identifying, managing, and preventing casualties from environmental causes in air, water, soil, food, pesticides, and related subjects. Problems are illustrated using policy dilemmas facing West Virginia.

660. 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.

689. Practicum. 1-6 Hr. PR: Consent. Under guidance of faculty and field counselors, MPH students will assume major responsibilities for intervention and practice projects during a semester in a community-based organization. (Grading may be S/U.)


Human Performance and Applied Exercise Science

The Department of Human Performance and Applied Exercise Science has three
Divisions:

Division of Exercise Physiology
Includes an undergraduate and a graduate program.

Division of Occupational Therapy
Includes an entry-level master’s program.

Division of Physical Therapy
Includes an entry-level master’s program.

Division of Exercise Physiology
Rachel A. Yeater, Ph.D., Professor and Chair
Stephen E. Alway, Ph.D., Director of Graduate Studies
8707D HSC
http://www.hsc.wvu.edu/som/ep

Degrees Offered

Master of Science
Doctor of Philosophy

Introduction
The master of science program in exercise physiology 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.

Program Requirements
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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</thead>
<tbody>
<tr>
<td>ATTR 419 Gross Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>SS 615 Research Methodology in Physical Education</td>
<td>3</td>
</tr>
<tr>
<td>PSIO 441 Mechanisms of Body Function</td>
<td>4</td>
</tr>
<tr>
<td>PHAR 449 Drugs and Medicines</td>
<td>3</td>
</tr>
<tr>
<td>HN&amp;F 691A ADTP: Nutrition and Fitness</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 567 Exercise Physiology 2</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 668 Diabetes and Exercise</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 670 Laboratory Techniques And Methods 2</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 671 Stress Testing</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 672 Professional Field Placement 2</td>
<td>6</td>
</tr>
<tr>
<td>EXPH 691 Exercise Prescription</td>
<td>3</td>
</tr>
</tbody>
</table>

or if the student chooses the thesis option, the following courses are required:

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>EXPH 797 Research</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 798 Dissertation/Thesis</td>
<td>3</td>
</tr>
</tbody>
</table>

Program Features

1. Admission and Performance Standards
Program requirements typically restrict the admission of first time applicants to the fall semester. The deadline for the fall admission is March 15 of each year. However, the Exercise
Physiology faculty will consider applications to begin work during the fall, spring, or summer semesters.

The general application procedures to the Ph.D. program in exercise physiology follow the published guidelines of the WVU Graduate Catalog. These can be obtained on-line at: http://www.applyweb.com/aw?wvu. In addition to the college/university material for application (see http://www.hsc.wvu.edu/som/ep). Students applying to the Ph.D. program normally have completed a master’s degree with a minimum graduate grade-point average of 3.0. In addition, applicants must submit two letters of recommendation from professors involved with the student’s academic work, including faculty who can comment on the applicant’s research ability and aptitude, 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 1100 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. Students who have not completed a master’s degree but wish to be considered for the Ph.D. program should contact the director of graduate studies (salway@hsc.wvu.edu). Normally, students with a bachelor degree can be admitted to the Ph.D. program, contingent upon completing the master’s requirements. Typically, these students would begin coursework in the master’s program, and when the requirements for the master’s degree have been met, (one to two academic years) the student will be considered for admission to the Ph.D. program.

Normally, students are enrolled for three to five years in the Ph.D. program with the majority of time spent in preparation for dissertation research, and conducting independent dissertation research.

Grade requirements for the doctoral major in exercise physiology include the following.

b. No grade less than B will be accepted for any exercise physiology course.
c. No grade less than C will be allowed in any of the courses on the plan of study.
d. Students may be required to obtain a B in non-exercise physiology courses in which the dissertation committee views as critical for the student’s research success (i.e., students who obtain a C may be required to retake courses to obtain a grade that is B or better)

Failure to meet these requirements will result in dismissal from the program. The exercise physiology graduate faculty will review all petitions to remain in the program according to due process. The faculty may provisionally 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. If a failing student is provisionally retained, the graduate faculty and the Dissertation/Advisory Committee will draft a plan of approach from which the student must follow to regain academic good standing within the specified time period. 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 coursework 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>Basic Science Prerequisites</th>
<th>Hrs.</th>
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School of Medicine
Biology ........................................................................................................................ ........... 8
Physics ........................................................................................................................ .................... 4
General Chemistry .............................................................................................................. .8
Organic Chemistry .................................................................................................................. 4

**Required Doctoral Coursework (or equivalent)**

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Human Function Physiology Module ...........................................................................</td>
<td>9</td>
</tr>
<tr>
<td>*BIOC 399D (or approved equivalent) .........................................................................</td>
<td>8</td>
</tr>
<tr>
<td>EXPH 791A Advanced Study Exercise Physiology I ..................................................</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 791B Advanced Study Exercise Physiology II ..................................................</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 791C Advanced Study of Exercise Physiology III: Neural regulation of muscle structure and function</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 791D Introduction to research methods in Exercise Physiology ......................</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 797 (Must be completed prior to dissertation.) ............................................</td>
<td>15</td>
</tr>
<tr>
<td>EXPH 796 Graduate Seminar .......................................................................................</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 799 Graduate Colloquium ...................................................................................</td>
<td>1</td>
</tr>
<tr>
<td>*Statistics ..................................................................................................................</td>
<td>9</td>
</tr>
</tbody>
</table>

*Specific courses to be determined by doctoral committee.

**Minor Area of Specialization**

Students designate a minor area of specialization such as cardiac rehabilitation, reproductive physiology, molecular biochemistry, aging, nutrition, etc. A minimum of 12 hours of coursework must be taken in the minor area of specialization. Doctoral committees may require additional coursework or research credits, depending on a student's research or professional goals. This will be clearly identified by the graduate advisory committee in the student's program of study.

**Additional Academic Responsibilities**

All doctoral students will be required to present a minimum of three one-hour graduate seminars to faculty and students before graduating. Doctoral students are also required to teach as part of their training. Students are expected to present their research data at national meetings and publish their data in appropriate peer-reviewed journals prior to graduation. However, the student's faculty advisor must give approval before any research or scholarly material is submitted for presentation or publication and the material must recognize all appropriate co-authors and grant sources.

**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. Doctoral students will participate in three research rotations with faculty in exercise physiology during the first two semesters of enrollment. Students are expected to choose a dissertation chair and a Dissertation Committee by the end of the first year of enrollment. Students should work with their dissertation advisor to design appropriate pilot studies and with that data identify a dissertation project and appropriate research questions/hypothesis to be tested by the proposed research. All approved research projects must be hypothesis based, and whenever possible, the research questions should address mechanistic questions that explain biological phenomenon relevant to exercise physiology.

Research is conducted throughout the doctoral program with a goal of having at least one to three manuscripts published or in preparation before graduation. Students should strive to present their research findings at a minimum of one national/international meeting annually beginning no later than the second year of enrollment in the doctoral program.

**Directed Research**

All preliminary research must be collected under the supervision and approval of the dissertation chair. The student is expected to engage in directed research under the supervision of the dissertation chair to learn techniques and collect pilot data that will be the basis of a future dissertation project. Studies to obtain pilot data should be presented to the dissertation committee to demonstrate the student's competency in research.
skills, and, that his/her research ideas and hypotheses are appropriate and justified. This process facilitates progression through the program in a timely and efficient manner. Nevertheless, the Dissertation Committee may require the student to obtain additional pilot data or research skills prior to approving the research proposal as a dissertation topic. The student’s directed research efforts should be progressing towards approval of a dissertation topic from the members of the Dissertation Committee, once they have been identified (before the end of the first semester of year two). This research training will provide the student background data/information from which to base grant proposal and dissertation topic as part of the requirements for completing Part II of the Comprehensive Examination

Comprehensive/Qualifying examination
The Comprehensive (qualifying/candidacy) Examination will 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, has an in-depth knowledge of a specialized area in exercise physiology, has acquired adequate research skills to conduct research experiments, 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 and conduct independent research.

Requirements of the Qualifying/Candidacy Examination
The Qualifying Examination should typically be taken before the beginning of the third academic year, preferably in the summer semester of the second year. Some students may require additional didactic coursework if his/her research/science preparation during his/her master’s degree was considered to be insufficient to prepare the student for work at the doctoral level. When a student has passed the Qualifying Examination, he/she will be admitted to candidacy for the Ph.D.

Prerequisites for the Candidacy Examination
The following are prerequisites for advancement to the qualifying examination:
1. The student must have an approved dissertation advisor and a Dissertation Committee.
2. The student must be in good academic standing (GPA of “B” or better) as defined in the doctoral program and this catalog, and have satisfactorily completed the first two years of course requirements (including those specified by the student’s dissertation committee in the program of study). A minimum of 12 credit hours (or equivalent) of research experience is expected, but more is desirable.
3. Two thirds of the exercise physiology graduate faculty must approve each student for consideration of candidacy before the student is permitted to take Part I. The graduate faculty in conjunction with the Dissertation Committee will evaluate Part I of the qualifying/candidacy examination. The student must receive an overall “B” (80%) grade to pass Part I. Part II (oral and written components) are evaluated exclusively by the Dissertation Committee, and there can be no more than one dissenting vote from this committee for a student to pass Part II.

Type of Examination
The candidacy examination has two parts and students should aim to successfully complete both parts within a single month.

Part I: Comprehensive Integrative Written Examination
This is taken over major areas of exercise physiology, the minor area of concentration and research design. Students typically will write the responses to Part I over four days (e.g., Monday, Tuesday, Thursday, Friday). The examination will be available for the student to begin at 8:00 a.m. each of the scheduled days and normally the exam will be conducted from 8:00 a.m. to 5:00 p.m. on each of the four days. The exam will begin at 8:00 a.m.; however, students may choose to start at another time after 8:00 a.m. if this is arranged in advance. Nevertheless, no student will be permitted to continue the exam beyond 5:00 p.m. even if the student opted to begin writing the exam at some time other than the scheduled time. Thus, it is the student’s responsibility to ensure that he/she has
adequately and appropriately scheduled the block of time between 8:00 a.m. to 5:00 p.m. each day to respond to all questions that were submitted to the student that day.

Part II: Written Research Proposal

Normally Part II will be scheduled within two to four weeks of successful completion of Part I. In Part II graduate students will be required to write and submit a NIH/AHA-fellowship type grant proposal to his/her Advisory Committee as part of the Divisional requirements for the qualifying examination. This grant proposal should detail the intended research dissertation project, hypothesis, specific aims, review or literature, methods, literature citations, etc. The Advisory committee may add other elements to the qualifying examination evaluation. Students should work on Part II throughout the second year of graduate enrollment.

• Part II of the comprehensive/qualifying examination is submission of a NIH style grant proposal that depicts exactly the dissertation project that the graduate student proposes to complete.

• Rather than waiting until Part I is completed, the graduate student should begin preparing for Part II (i.e., writing the grant proposal) concurrent with reviewing material for Part I of the examination. This should be an ongoing process occurring throughout year two.

• It is expected that the student will develop the contents of this proposal by consulting individually with the members of his/her dissertation committee throughout year two. Furthermore, the student should meet at least once with his/her Dissertation Committee prior to the comprehensive examination to establish a dialogue with his/her committee members and to address concerns regarding the general research directions. The student should consult regularly with his/her major (dissertation) advisor throughout year two as they develop and mold his/her proposal for the written component of Part II.

• The Part II written examination (research proposal) can be submitted any time after completing the written examination from Part I. However, the dissertation chair will not distribute the written component of Part II until the Examination Committee for Part I has determined that the student has responded acceptably to the questions posed to him/her during the Part I examination. Normally the student should be prepared to submit the written component for Part II to his/her Dissertation Committee chair no more than seven days after completing the written component of Part I. The student should also submit sufficient copies of Part II for each of the members of the Dissertation Committee. If the student is judged to have passed Part I, the written component of Part II will be graded by the Dissertation Committee. If the student is unsuccessful in passing Part I, Part II and its copies will be returned to the student by his/her dissertation chair.

• The written research proposal will become part of the evaluative tools for the Dissertation Committee’s assessment of the student’s preparation to candidacy. It will also be the means by which the Dissertation Committee evaluates the merit of the proposed research dissertation project.

Part II exam will be submission of an NIH style, modified PHS 398 Research Plan 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. Preliminary Data and Pilot Studies
   • The figures, charts, photographs, gels, raw data signals, etc. will provide evidence of the student having acquired the needed research skills, the accuracy to which the research methods have been used and interpreted, and this should be the basis for proceeding with the larger study (i.e., the pilot data demonstrates the likelihood for success).
IV. Research Design and Methods
• This section requires a thorough description of the research design and experimen-
tal 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 it should include information on how the experimental data will be
analyzed. Anticipated results and his/her interpretation should also be discussed
relative to the proposed hypothesis. One or more figures showing a flow chart of the
research design and the time line of experiments for the study are helpful and
encouraged.

V. References
• The references do not have to be exhaustive but they should be thorough and
include the most recent manuscripts as well as the classical manuscripts from
which the more recent data are based. The length of the written proposal should not
exceed 20 single-spaced pages (excluding budget, references, and pages prior to
“Specific Aims”), with a minimum font size of 11 points.

VI. Budget
• A sample budget should also be constructed according to the PHS guidelines for
an RO1 proposal (not the modular budget form). This will help the dissertation
committee evaluate the student’s grasp of the resources necessary to complete a
dissertation research project.

Appropriate (recommended) lengths for each section (single spaced) are:
• Specific aims: one page
• Background and significance: two to three pages
• Preliminary studies and pilot data: three to five pages
• Research design and methods: six to seven pages
• Budget and Justification (two to four pages including justification pages)
• References: (three to four pages)

Part II: Oral Examination of Research Proposal
Normally the oral examination is set within two to four weeks following the submission
of the Part II written examination. However, the oral exam component of Part II can only be
scheduled if the members of the Dissertation Committee judge the written submission for Part
II to be acceptable (or acceptable pending minor revisions). If Part II is deemed acceptable
by the members of the Dissertation Committee, the chair of the Dissertation Committee will
schedule the oral portion of Part II of the Examination.
The following guidelines should be reviewed by the student and his/her Dissertation
Committee before scheduling the oral examination.

Organizational Structure for the Oral Examination (Part II)
• The Examination Committee will consist of all members of the Dissertation Commit-
tee. The dissertation chair will provide each committee member copies of the
student’s responses for Part I and Part II. The dissertation chair will certify the
original submission by signing or initialing each page before making copies for the
faculty. Other graduate faculty may request that the dissertation chair provide a
copy of the student’s responses (students should not be asked for a copy of his/
her response from a non-Dissertation Committee member), but no copies will be
provided to any graduate student and/or non-graduate faculty.
• The dissertation chair will contact each member of the Dissertation Committee to
determine his or her level of satisfaction of Part II, and to obtain the member’s vote
(pass/no pass). If all committee members are satisfied with written component of
Part II, pending non-fatal revisions, the oral examination will be scheduled.
• The dissertation chair will notify the student whether the oral defense of Part II can
be scheduled. If Part II (NIH grant) is adequate (pending revisions/suggestions
made by the Dissertation Committee etc.) that student will be instructed to secure
an adequate room for the oral defense, and to arrange for notification/advertise-
ment of this oral examination. Notification and scheduling of the oral examination
(Part II) will be made by the student after consulting with the dissertation chair no
less than seven days before the examination. The student should arrange for the announcement to be posted in the division/department and sent to other departments, the Health Sciences Graduate Office and/or distributed by e-mail. The announcement should contain:

- The date, location, and time of the oral presentation and defense.
- The name of the student and each of the members of the student’s dissertation committee (identify the committee chair in the advertisement).
- The title of the student’s research proposal that will be presented and defended during Part II.
- All graduate faculty and graduate students will be invited to participate in the student’s oral examination, (oral defense for Part II) although faculty and students from other departments may also attend. (See Appendix 6 of the Graduate Handbook for Exercise Physiology for an example of this notification).

In the oral examination for Part II, the student will make a professional formal presentation (using slides or Power Point computer slides or similar media, but not overhead acetates) that clearly identifies the research area, hypotheses, and questions that they wish to pursue as part of his/her Ph.D. dissertation and pilot data that they have obtained (about 40 to 45 minutes). The chair of the Dissertation Committee will also chair Part II of the examination. The chair will permit members of the audience (faculty, graduate students, etc.) to ask questions of the graduate presenter for approximately 10 to 15 minutes. Thereafter the guests will be dismissed and the meeting will be closed except for the members of the student’s dissertation committee and other invited (i.e., non-voting) members of the graduate faculty that have been approved by the chair of the Dissertation Committee.

Grading of Part II

- To pass, students must receive not more than one “no” (fail) vote by a member of the Examination Committee on Part II (written grant/dissertation proposal or the oral exam).
- Grading of Part II will be in two phases. Examination Committee members (Dissertation Committee) will grade the student’s written NIH grant proposal/dissertation proposal of Part II as pass; pass with revisions, fail; or suspended without a grade due to inadequate pilot data or evidence of: providing a feasible project.
- If the written component of Part II is satisfactory or satisfactory pending revisions, the student will proceed to the oral presentation and defense of the dissertation proposal. The Dissertation Committee will grade the oral presentation of Part II as satisfactory (pass) or unsatisfactory (fail).
- The Dissertation Committee will grade the student’s performance on the combined written and oral defense components of Part II as a satisfactory (pass), satisfactory pending satisfactory revisions (conditional pass), or unsatisfactory (no-pass). Outstanding efforts may obtain a “pass with distinction” notation from the Dissertation Committee; however, this requires a unanimous vote of all committee members.
- It is anticipated that most students will require revisions to his/her written document before his/her Examination/Dissertation Committee will signify a final “pass” grade to the Completed Comprehensive Examination (i.e., one grade will be submitted for Part I plus Part II). The student should discuss the recommended changes with the members of the Dissertation Committee members who have recommended the changes. It is the student’s responsibility to make the recommended changes. The faculty should review the revised document to ensure that the proper changes have been made to the document prior to accepting the document as satisfactory.
- A final grade of “pass” for the entire Comprehensive Examination Process (Part I plus Part II) will not be assigned until the student has satisfied his/her committee in all aspects of the Comprehensive Examination including revisions required to Part II.
- A final grade of “conditional pass” will not be submitted for the student’s combined efforts for Part I plus Part II. The Dissertation Committee will provide only a grade
of a satisfactory (pass), or unsatisfactory (no-pass) for the completed efforts of Part I plus Part II.

Exceptional students may be awarded a “pass with distinction” notation from the Dissertation Committee if all parts (Part I, Part II written component, and Part II oral component) are deemed by the Dissertation Committee to represent outstanding and exceptional work. However, this is rare and requires a unanimous vote of all committee members.

The Examination/Dissertation Committee will evaluate the following criterion in Part II.

Although the following is not intended to be exhaustive, nor will the evaluation be solely on the following criterion, these provide the significant backbone of faculty assessment of student performance in Part I and Part II.

• 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 student 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.

• In addition to asking questions from Part II, the Dissertation Committee will usually ask questions pertaining to any perceived deficits in the student’s responses to Part I or clarifications in which they wish the student to respond. The student must also be able to clearly articulate this knowledge and to synthesize or integrate known information in new ways.

• The student should provide evidence of having obtained research skills needed to obtain data in his/her research. This evidence is usually demonstrated via pilot data. (Usually if the only major weakness in Part II is the lack of pilot data, the Examination Committee (i.e. the Dissertation Committee) will normally suspend Part II without making a decision on pass/fail and provide the student additional time for acquiring the skills/data needed. Typically decisions to suspend Part II will occur prior to scheduling the oral defense for Part II, by committee members signifying an unsatisfactory vote due to insufficient pilot data or technical experience to evaluate the likelihood/feasibility of completing the study as proposed.

• To successfully pass Part II the student must have adequate pilot data and have demonstrated evidence of acquiring the necessary research skills, and have responded to the satisfaction of the faculty who have asked the student questions from Part I or Part II.

Stopping the Oral Component of Part II

• If it becomes apparent that the student is incapable of answering the questions in a satisfactory manner (e.g., unfamiliarly with specific research methods, insufficient pilot data to provide a sound rationale for the proposal, etc.) the committee may stop the exam without failing the student; however, stopping the examination for reasons other than insufficient pilot data is rare.

• If the Dissertation Committee determines that all areas of the students’ performance are adequate other than providing sufficient evidence of acquiring research skills and pilot data, the oral component of the Part II exam may be terminated (but not graded as a failure) until the student is able to obtain additional/sufficient pilot data. At the point of termination of Part II, the Dissertation Committee will establish a new time line and set a new oral Part II defense date, and this new time line will be given to the student. The Dissertation Committee will be assembled at the newly established date and Part II will begin as if for the first time (including advertisement/notification) once the student had obtained these skills or new data.

• If the student fails to obtain the research skills/data, etc. within the time determined by the Dissertation Committee, the student may be given an overall failing grade for Part II. If the student fails to adequately respond to questions from faculty during the Part II exam (including questions taken from either Part I or the written component of Part II), the committee will give the student a failing grade for Part II. The committee will then relay its expectations to the student, and the exam
will be rescheduled in short order to allow the student to adequately prepare. The Dissertation Committee will establish the time line for re-examination of the student. Normally the meeting will be rescheduled within six weeks of an unsuccessful attempt during Part II.

Course of Action for Students Who Fail the Qualifying Examination

Students who do not achieve an 80 percent (B) as an overall grade in Part I will not be permitted to proceed to Part II of the examination. If the overall Part I examination average is less than 80 percent, the entire exam must be repeated. If the overall Part I examination average is greater than 80 percent, but the score(s) in one or two areas is (are) below 80 percent only the question(s) in that (those) area(s) must be repeated. If the overall examination average in Part I is greater than 80 percent, but the scores in three or more areas are below 80 percent, the entire examination must be repeated. If a portion of the Part I examination or the entire examination must be retaken, the student must do this within a period of two months 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. If the written proposal (Part II) is judged to be acceptable but the student fails the oral exam (Part II) the second oral exam must be taken within four weeks after the failed exam.

Failure of either portion of Part II (the written research proposal or the oral examination) for a second time is ground for dismissal from the program. Students will be permitted due process and the division chair will convene the graduate faculty as a whole, who will consider written appeals from any student who has been dismissed by virtue of failing the qualifying/candidacy examination 1.

Course of Action In the Event of Failure of Part II

• If Part II (the oral exam) is judged by the committee to be acceptable (i.e., passed), the committee will ask the student to revise the Part II written proposal after providing the student with constructive criticism during the oral examination.
• Usually a verbal “conditional” approval will be granted to the student on the day of completion of the oral defense for Part II, contingent upon submission of a revised Part II proposal that carries the approval of all members of the Dissertation Committee (including editorial and scientific changes). The Examining Committee members will not sign the “approval” sections of the graduate school documents until the student has satisfactorily implemented all corrections. A “satisfactory” grade of pass will not be submitted for the student’s performance on the Comprehensive Examination (a single grade for Part I plus Part II) until the student has satisfactorily met all of the requirements of the Dissertation Committee concerning this examination and revisions as needed.
• The student will have two weeks (14 days) after his/her “pass” or “conditional pass” of the oral defense of Part II to complete the revisions required in the written component of Part II and submit it to his/her Dissertation Committee for final approval. If the revisions to the proposal are extensive and/or the student has failed the oral exam on the original proposal, the proposal will be revised (resubmit the written component to Part II) then a second oral exam (Part II) will be held on the revised proposal.
• If the written proposal (Part II) is judged acceptable but the student fails the oral exam (Part II) the second oral exam must be taken within four weeks after the failed exam.

Failure of either portion of Part II (the written research proposal or the oral examination) for a second time is ground for dismissal from the program. Students will be permitted due process and the division chair will convene the graduate faculty as a whole, who will consider written appeals from any student who has been dismissed by virtue of failing the qualifying/candidacy examination 1.

Temporary Committee Substitutions

• Membership on a Doctoral Dissertation Committee signifies the highest level of commitment to all phases of the student’s doctoral training. All committee members must therefore be present for the oral research design exam. If all the members of the committee are not present at the beginning of the oral defense for Part II, the
oral examination cannot continue. 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 another time within the
  next two weeks when all members can be present. 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 require-
  ments). Requests for member substitution will be granted in only very rare and
  exceptional circumstances. The Division Chair must approve any temporary
  substitutions.

- The substitute must have adequate time to read the written proposal and prepare
  for the examination. The substitute must be a suitable graduate faculty with
  established expertise in an area previously represented by the absent committee
  member. It is not appropriate to substitute one faculty with another if a different
  research expertise would be represented by the substitution. Any substitute must
  be acceptable to both the student and the dissertation advisor, and the substitute
  must meet the requirements for dissertation committee membership. The substi-
  tute member will be considered a full-voting member of the Dissertation Committee
  for the purpose of administering and grading the examination. The substitute
  member will also be provided copies of the student’s written responses for
  Parts I and II. The final examining committee may contain no more than one substitute
  member, and the students’ advisor (normally Dissertation Committee chair) may not
  be substituted for.

Qualifications For Advancement to Ph.D. Candidacy

The student must demonstrate:

- A wide base of knowledge in exercise physiology (evaluated in Part I)
- An ability to think independently (evaluated in Part I and Part II)
- Integration of existing knowledge into a practical research question, by identifying
  what is known, what is not known, etc. (evaluated in Part I and Part II)
- Critical evaluation of literature (evaluated in Part II)
- Problem-solving skills (evaluated in Part II and Part II)
- Acceptable written and oral communication skills (evaluated in Part I and Part II)
  including the ability to “think on one’s feet.”

Submission of Part II—Written Research Proposal to a Funding Agency

Part II also serves an additional purpose. Graduate students are expected to submit
at least one grant proposal to an external granting agency by the end of his/her second
year of enrollment. Constructing the proposal is a part of the requirements for graduation.
Part II of the candidacy examination provides the graduate student the opportunity to
complete these requirements for submitting the grant proposal, while also preparing for
the qualifying examination and assembling the ideas for the dissertation project.

The student should wait until successfully negotiating Part II of the candidacy
examination (both written and oral components) and revise the grant according to the
suggestions of his/her dissertation chair and Dissertation Committee. Graduate students
should not submit a grant proposal without input, feedback, and approval of his/her
dissertation committee chair, and Dissertation Committee. It is acceptable and appropri-
ate for the student to obtain feedback from all members of the Dissertation Committee
or other faculty following successful completion of Part II and revise his/her grant (Part
II) appropriately before submitting it to a funding agency.

The submission of the grant proposal (Part II) to a funding agency should be used to:
(a) seek a graduate student stipend and other research supplies as allowed by the
external source; (b) seek funding for travel to national/international meetings if it is
permitted by the funding agency; (c) obtain independent external review of the student’s
research proposal/dissertation project; (d) obtain experience in writing grants for
external funding. The student should also notify the director of graduate studies of the
grant submission. This will be accomplished by submitting a copy of the front page of the
grant proposal (with the title, signatures, etc.), the budget page of the grant to the director
of graduate studies.

General Dissertation Requirements

The purpose of the dissertation is to provide experiences that will assist the student in
becoming an independent investigator and constructing manuscripts from the data collected
in the research process. Typical dissertation projects will be about three years in length.

The student must complete a dissertation in which they have obtained original data that
makes a novel and important contribution to knowledge in the broad field of exercise
physiology. Students must pass an oral examination based upon his/her dissertation.

The dissertation must be constructed in a format suitable to the graduate school and the
advisor. Preferable formats will include writing the chapters as if they were to be submitted
to peer-reviewed journals (including abstract, introduction, methods and materials, results,
discussion and literature cited in each chapter). In addition, the final one to two chapters of
the dissertation should include an integrative discussion concerning the total research project
and evaluation of hypothesis that were tested. The typical doctoral dissertation will yield three
to five peer reviewed manuscripts. To optimize feedback from the co-authors and to ensure
timely publication, the manuscripts originating from dissertation work should be submitted for
peer review prior to graduation, and some manuscripts may be published before the student
graduates. Proper acknowledgment for funding of the research should be noted in both the
dissertation and the manuscripts obtained from dissertation work. It is expected that several
of these manuscripts that will be included in the dissertation will have been published before
graduation. It is further expected that all of the manuscripts will be submitted to a peer-
reviewed journal for consideration for publication before graduation. The process of writing
the chapters as journal manuscripts will facilitate this process.

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 Division of Exercise Physiology.
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)

567. Exercise Physiology 2. I. 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.

660. Biomechanical Analysis of Sport and Physical Activity. 3 Hr. PR: EXPH 364 and EXPH 365 or equivalent; and SS 615. Advanced principles of body mechanics and analysis of muscle and joint actions in coordinated movement and neuromuscular physiology.

668. 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.

670. Lab Techniques and Methods 2. 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.

671. Stress Testing. II. 3 Hr. PR: EXPH 670, consent. In-depth study of graded exercise testing in laboratory or field situations. The course includes protocols for athletes, asymptomatic individuals, and special populations.

672. Professional Field Placement. 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).

693. Special Topics. I, II, S. 1-6 Hr. PR: Consent. A study of contemporary topics selected from recent developments in the field.

697. 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.)


701. 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.

702. A-Z. Directed Study. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

704. Seminar. I, II, S. 1-6 Hr. Special seminars arranged for advanced graduate students.

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

706. 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.)


708. 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 report, thesis, or dissertations. (Grading may be S/U.)

709. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework but who wish to meet residence requirements, use University facilities, and participate in academic and cultural programs.

Division of Occupational Therapy
Randy P. McCombie, Ph.D., OTR/L, Chair
http://www.hsc.wvu.edu/som/ot

Degree Offered
Master of Occupational Therapy

Introduction
In the fall of 1993, the West Virginia Board of Trustees approved the establishment of a new master’s degree program at WVU, leading to an entry-level master’s degree in occupational therapy. 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 60 to 65 hours of prerequisite courses, which in most instances will take two years to fulfill.

The Profession of Occupational Therapy
Occupational therapy is a health profession which provides services 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 on 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.

Occupational therapists work in schools, hospitals, rehabilitation centers, home health
agencies, skilled nursing homes, and private practice.

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 are able to sit for the national certification examination for the occupational therapist administered by the National Board for Certification in Occupational Therapy Inc. (NBCOT). For more information, NBCOT can be contacted at (301) 990-7979. 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.

Prerequisite Courses

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<tr>
<th>Course</th>
<th>Hrs.</th>
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<tr>
<td>ENGL 101</td>
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<td>ENGL 102</td>
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<tr>
<td>PSYC 101</td>
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<td>PSYC 241</td>
<td>3</td>
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<tr>
<td>PSYC 281</td>
<td>3</td>
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<tr>
<td>SOCA 101 or SOCA 105</td>
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<tr>
<td>BIOL 101 and BIOL 103</td>
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<tr>
<td>BIOL 102 and BIOL 104</td>
<td>4</td>
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<tr>
<td>CHEM 115</td>
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<td>MATH 126 or Higher Level Math</td>
<td>3</td>
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<td>PHYS 101</td>
<td>4</td>
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<td>STAT 211</td>
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<td>COMM 100</td>
<td>1</td>
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<td>COMM 102</td>
<td>2</td>
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<td>Appalachian, rural, or West Virginia studies course in any discipline</td>
<td>3</td>
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<tr>
<td>Fulfillment of WVU’s foreign or minority cultures requirement (see WVU Undergraduate Catalog)</td>
<td>3</td>
</tr>
<tr>
<td>Completion of WVU’s LSP requirements—Cluster A courses (see WVU Undergraduate Catalog)</td>
<td>12</td>
</tr>
</tbody>
</table>

WVU students must consult the Undergraduate Academic Services Center prior to enrolling in prerequisite courses. These courses may be taken at any institution which offers equivalent courses. Any questions regarding pre-requisite courses may be directed to the Undergraduate Academic Services Center, (304) 293-5805. Equivalence may be determined by contacting the transfer desk, Admissions and Records, West Virginia University, P.O. Box 6009, Morgantown, WV 26506-6009.

Admission Standards

Normally, 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 pre-requisites listed above. 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, including overall GPA and prerequisites (a higher GPA may be necessary given the competitive nature of the program).
• Minimum of 60 hours of volunteer or work experience with people with disabilities is required. A minimum of 45 of those hours must be with a licensed occupational therapist or a certified occupational therapy assistant (COTA). Students should contact the Division of Occupational Therapy to determine the type of experience required.
• Two letters of recommendation are also required, one from an occupational therapist or COTA who supervised the volunteer/work experience and the other from a professor who has recently taught the applicant.
• Completion of all prerequisite courses by the end of the semester of application (normally, second semester of sophomore year) is normally required.
What to Expect

Like many professional programs, the curriculum in the entry-level master’s 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 Level II Fieldworks. Students are financially responsible for transportation, housing, and meal expenses related to clinical assignments.

### Occupational Therapy Curriculum Plan

#### Junior Year

**Summer Session II**

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OTH 300</td>
<td>4</td>
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<tr>
<td>OTH 480</td>
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<table>
<thead>
<tr>
<th>First Semester Hrs.</th>
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<tbody>
<tr>
<td>PSIO 441</td>
<td>OTH 307</td>
</tr>
<tr>
<td>OTH 301</td>
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<td>OTH 302</td>
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<td>OTH 304</td>
<td>OTH 406</td>
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<td>OTH 306</td>
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#### Senior Year

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<thead>
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<tbody>
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#### Graduate Year

**Summer I and II**

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
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<table>
<thead>
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<td>OTH 697</td>
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</table>

#### Entry-Level Master’s Program in Occupational Therapy

**Summer Session II**

- **OTH 300** *Essentials of Clinical Anatomy*
- **OTH 480** *Current Topics in Occupational Therapy*
Fall Term—First Year
PSIO 441 Mechanisms of Body Function
OTH 301 Professional Foundations
OTH 302 Survey of Clinical Problem Solving
OTH 303 Functional Movement Across the Lifespan
OTH 304 Occupational Sciences 1
OTH 306 Kinesiologic Foundations for Intervention

Spring Term—First Year
OTH 307 Neurobiologic Foundations
OTH 308 Evaluation Procedures
OTH 321 Developmental Life Tasks
OTH 360 Research Methods in OT
OTH 406 Cardio-pulmonary Evaluation and Intervention
OTH 480 Current Topics in Occupational Therapy

Fall Term—Second Year
OTH 384 Level I Fieldwork 1
OTH 401 Occupational Sciences 2
OTH 402 Clinical Decision Making
OTH 417 Occupational therapy in Geriatrics
OTH 430 OT in Mental Health
OTH 435 Therapeutic Activity
OTH 480 Current Topics in Occupational Therapy
OTH 497 Senior Research

Spring Term—Second Year
OTH 386 Level I Fieldwork 3
OTH 408 Tests and Measures in Occupational Therapy
OTH 416 Professional Decision Making
OTH 419 Professional Values
OTH 432 OT Interventions—Mental Health
OTH 480 Current Topics in Occupational Therapy
OTH 497 Senior Research

Summer—Beginning Third Year
OTH 540 Level II Fieldwork 1

Fall Term—Third Year
OTH 480 Current Topics in Occupational Therapy
OTH 500 Health Care Issues in OT
OTH 503 OT in Pediatrics
OTH 505 Prosthetics and Orthotics
OTH 520 OT in the Work Environment
OTH 551 OT in Prevention and Wellness
OTH 697 Supervised Research in OT

Spring Term—Third Year
OTH 480 Current Topics in Occupational Therapy
OTH 501 Management for OT Practice
OTH 550 Education in OT Practice
OTH 640 Level II Fieldwork 2
OTH 697 Supervised Research in OT

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.

321. *Development Life Tasks.* 3 Hr. PR: OTH student status. Life-span human development across cognitive, psychosocial, and neuromotor domains with particular emphasis on applications to physical or occupational therapy interventions. Includes focus on cultural influences in health and illness.


402. *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.

406. *Cardio-Pulmonary Rehabilitation.* 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.

408. *Tests and Measures in Occupational Therapy.* I. 3 Hr. PR: OTH student status. Presentation of tests 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.

416. *Professional Decision-Making.* 2 Hr. PR: OTH student status. 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.


419. *Professional Values.* 3 Hr. PR: OTH student status. 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.


432. *Occupational Therapy Interventions in Mental Health II.* 4 Hr. PR: OTH student status. Interventions commonly used by occupational therapists in the field of mental health. Emphasis on group processes, life skills, reintegration strategies.


480. *Current Topics in Occupational Therapy.* 1-3 Hr. PR: OTH student status. (Not to exceed 18 hr.) A seminar course designed to provide a forum for discussing the frontiers of the occupational therapy profession. Topics may include: research in progress, new developments, and salient professional issues.

500. *Health Care Issues in Occupational Therapy.* 3 Hr. PR: OTH student status. Occupational therapy practice models in diverse health care delivery systems are discussed, including hospital based, home health, outpatient/private practice, long-term care settings, and public schools. (2 hr. lec., 2 hr. other.)

501. *Management for OT Practice.* 4 Hr. PR: OTH student status. This course reviews the structure and recent changes in the United States health care system with attention to those aspects of managed care of importance to the entry-level occupational therapist. (3 hr. lec., 2 hr. lab.)

503. *Occupational Therapy in Pediatrics.* 3 Hr. PR: OTH student status. This course reviews the medical and developmental conditions of pediatric populations commonly encountered by occupational therapists. Emphasis is placed on OT assessment and interventions. (2 hr. lec., 2 hr. lab.)

505. *Prosthetics and Orthotics.* 3 Hr. PR: OTH student status. Principles of practice applications of upper and lower limb prosthetics and orthotics commonly encountered and/or manufactured by the
520. **Occupational Therapy in the Work Environment.** 3 Hr. PR: OTH student status. A holistic approach to evaluation and intervention commonly practiced by occupational therapists in work settings. This course will focus on task analysis in various work settings using an occupational performance frame of reference. (1 hr. lec., 4 hr. lab.)

540. **Level II Fieldwork 1.** 3 Hr. PR: OTH student status. Students are placed full-time for six weeks in a facility under the supervision of a licensed occupational therapist. Students are required to register for OTH 540 during Summer 1 and again during Summer 2 for a full 12-week six-credit fieldwork experience. (Course will be graded S/U.)

550. **Education in Occupational Therapy.** 3 Hr. PR: OTH student status. Principles of community and adult education are provided. Students are taught to prepare instructional materials, workshops/seminars, and how to assess instructional outcomes. Use of various media are used and reviewed.

551. **Occupational Therapy in Prevention and Wellness.** 3 Hr. PR: OTH student status. Students are taught occupational therapy principles and strategies to develop community health promotion and wellness programs in a variety of settings.

640. **Level II Fieldwork 2.** 6 Hr. PR: OTH student status. Students are placed in one 12-week, or two six-week placement(s) depending on the facility and the needs of the student. Students will be placed in facilities where individualized instruction can occur. (Grading will be S/U.)

697. **Research.** 1-5 Hr. PR: OTH student status. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

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**Division of Physical Therapy**

MaryBeth Mandich, PT, Ph.D., Chair
http://www.hsc.wvu.edu/som/pt

**Degree Offered**

*Master of Physical Therapy (entry-level)*

**Nature of Program**

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 program became an entry-level masters degree program in Fall 1997. WVU has begun the process of seeking approval for transition to a D.P.T. program. This degree, planned for students entering the professional program in 2004, will require a baccalaureate degree prior to admission. Prerequisite courses will not change significantly. However, students will be required to complete the GRE before application. Prospective students are advised to contact the program to stay informed.

Thirty full-time students are admitted each year. Preference is given to West Virginia residents and non-residents who have attended a West Virginia college or university or who have ties to West Virginia. All other non-residents who meet program requirements will also be considered for admission.

Students admitted into the program complete ten semesters (four are summer sessions) of combined classroom, laboratory and clinical education, and part-time and full-time supervised clinical practice in various clinics in West Virginia and other states. An entry-level masters degree (M.P.T.) is awarded to those completing the program, and entitles the graduate to apply for examination for state licensure. A license to practice physical therapy is required by all states.

**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 physical therapy 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.

**The Admissions Process**

Courses recommended for high school students in preparation for the preparatory and professional physical therapy program include, but are not limited to, biological sciences (e.g., anatomy, advanced biology, physiology, etc.), chemistry, algebra/trigonometry and/or pre-calculus, physics, and social sciences. Computer literacy is highly recommended.

Because individualized instruction in laboratories and clinics is an essential component of the professional physical therapy program, enrollment must be limited. The physical therapy program selects 30 students per year for entrance into the professional phase of the program. All students who wish to enter the program must apply for admission and must have completed or be enrolled in the pre-requisite coursework detailed below. These courses are available at most colleges and usually require two years to complete. Students with degrees in other fields are welcome to apply but must also complete these courses.

The following requirements must be met to apply to the WVU Physical Therapy program:

1. Applicant must have a minimum cumulative grade-point average (GPA) and a minimum pre-requisite science GPA of 3.0. Pre-requisite science courses used to calculate the pre-requisite science GPA include: the eight hours of biology, eight hours of chemistry, eight hours of physics, and three hours of statistics. (See specific courses below.)
2. Applicant must have a minimum of 60 hours of clinical volunteering or work experience 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, math, verbal ability, and reading comprehension.
4. Applicant must have two recommendations from physical therapists (not relatives) with whom the applicant has volunteered/worked. The recommendation forms will be provided in the admissions packet.
5. Applicant must have a minimum grade of C or better in each pre-requisite course. Any course showing a grade lower than a C must have been retaken prior to application. Those courses currently being retaken will not be considered in the current admissions period.
6. Applicant must have completed or be enrolled in the required courses listed below:

<table>
<thead>
<tr>
<th>Required Pre-requisite Courses</th>
<th>Hrs.</th>
<th>WVU Courses Equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology (with lab)</td>
<td>8</td>
<td>BIOL 101, 102 and 103, 104</td>
</tr>
<tr>
<td>Chemistry (with lab)</td>
<td>8</td>
<td>CHEM 115 and 116</td>
</tr>
<tr>
<td>Physics (with lab)</td>
<td>8</td>
<td>PHYS 101 and 102</td>
</tr>
<tr>
<td>Introductory Statistics</td>
<td>3</td>
<td>PSYC 101</td>
</tr>
</tbody>
</table>
West Virginia University Graduate Catalog

(Inferential and descriptive) 3 STAT 211
Introductory statistics 3 STAT 211
General Psychology 3 PSYC 101
Developmental Psychology 3 PSYC 241

(Life-span)

WVU Liberal Studies Requirements

English Composition 6 ENGL 101, 102
Cluster A courses 12
  (Humanities and fine arts)*
Cluster B courses 6
  (Social and behavioral sciences)*

* Consult the WVU Undergraduate Catalog for further information on cluster requirements. Please note that three hours of either Cluster A or B must focus on foreign, gender, or minority issues. In addition, courses at other institutions must be equivalent to the WVU required courses. You may contact the Office of Admissions and Records to verify equivalency.

The courses listed above are minimum requirements for application to the Physical Therapy program. Other suggested electives are: speech communication, a course dealing with Appalachian or rural studies, a writing intensive course, and/or an introductory computer science course. Students are encouraged to pursue studies in additional courses of interest. Students who wish to substitute a course for one of those listed should contact the Division of Physical Therapy for permission and provide a written description from the school’s catalog or class syllabus of the proposed substitution. Applicants who complete any of their pre-requisite courses at a college or university outside West Virginia must submit the college catalog or a photocopy of the catalog description of those courses. Non-WVU applicants may access the University’s transfer equivalency web page at http://www.arc.wvu.edu/admis-sions/transfer_main.html to determine their course equivalency. Applicants may also contact the Office of Admissions and Records to verify equivalency.

Students who have met, or will have met by the end of the spring semester, all of the above application requirements can obtain an application packet beginning December 1 from the Office of Admissions and Records, WVU Health Sciences Center, PO Box 9815, Morgantown WV 26506-9815, telephone (304) 293-3521. All application materials must be received on or before January 31 for admission consideration into the next accepted class.

Graduation Requirements

Applicants who have met all program requirements will then be interviewed by the Physical Therapy Admissions Committee. Those considered to demonstrate the greatest potential for success are recommended for admission into the program.

Physical Therapy (PT)

500. 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.

501. 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.

502. 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.

503. Pediatric Physical Therapy. 2 Hr. Survey of developmental conditions commonly seen in pediatric physical therapy. Includes laboratory practice of evaluation, treatment, planning, and clinical problem solving.

505. 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. (2 hr. lec., 2 hr. lab.)

506. 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.

550. 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.

551. 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.

580. Case Reports Seminar. 2 Hr. PR: Majors only. Students prepare oral and written case reports based on their patient care experiences.

584. Clinical Education 3. 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.

585. Clinical Education 4. 6 Hr. (Majors only) Students practice full-time for twelve weeks under the direction and supervision of licensed physical therapists.


690. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of physical therapy. 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.)


697. 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.)

Medical Technology
Jean D. Holter, Director, Graduate Coordinator
2163E Health Sciences North

Note: This program will be closing and replaced by Pathology Assistant Program (pending approval from the WVU Board of Governors) in the Fall 2002 semester. For more information contact the pathology website at www.hsc.wvu.edu/som/pathology/ or call (304) 293-2069.

Medicine
http://www.hsc.wvu.edu/som/students

Degree Offered

Doctor of Medicine

The degree of doctor of medicine (M.D.) is granted to students who have completed the prescribed curriculum and who have been recommended for the degree by the faculty of the School of Medicine.

The M.D./Ph.D. program is available to those students who show exceptional interest and scholarly promise. All admission requirements of the School of Medicine and the specific graduate program apply. Students apply for the combined degree program after acceptance into medical school. An M.D./M.P.H. program is available for those interested in public health issues.

It is to be understood that the following information applies only to students in the School of Medicine who are enrolled in the prescribed curriculum which culminates in the M.D. degree. All other students, undergraduates, or graduates enrolled in other programs in the School of Medicine are governed by the policies found elsewhere in the Health Sciences Center Catalog.
Accreditation

The West Virginia University School of Medicine is accredited by the Liaison Committee on Medical Education (LCME).

Admission Requirements

The student preparing for any career in the health professions must have a keen interest in the sciences. Science courses taken in high school should include as many biology, chemistry, and physics courses as possible. A good background in mathematics is strongly recommended.

The following courses are required for consideration of an application to medical school:

- English: 6 semester hours or equiv.
- Biological sciences (with lab): 8 semester hours or equiv.
- Inorganic chemistry (with lab): 8 semester hours or equiv.
- Organic chemistry (with lab): 8 semester hours or equiv.
- Physics (with lab): 8 semester hours or equiv.
- Social or behavioral sciences: 6 semester hours or equiv.

Biochemistry and cell biology are strongly recommended. A total of 90 semester hours, exclusive of ROTC and general physical education, is required. Computer skills are required. All required courses must be passed with a grade of C or better.

An excess of credit hours or higher degrees does little to offset the disadvantage of low grades when being considered for admission to the School of Medicine. The practice of repeating courses to raise the grade is discouraged. Applicants who have been subject to suspension from West Virginia University or other medical schools can be admitted only in very exceptional cases and at the discretion of the Admissions Committee.

Pre-Admission Tests

The scores of the Medical College Admissions Test (MCAT) are one of the factors used by the Admissions Committee in considering an applicant for admission. The MCAT must be taken within two years of applying to medical school. It is recommended that students take the MCAT during the spring of their junior year in college. This allows for a repeat examination in the fall if necessary. Waiting until fall to take the test could jeopardize an applicant's opportunity since no application for admission is given final consideration until MCAT scores are received by the Admissions Committee. The MCAT score must be recorded prior to closing of admissions on November 15.

Information concerning the time and place of the test can be obtained from your premedical advisor, Admissions Committee, or the Office of Admissions and Records.

Application Procedure

The admission process is initiated by completing the on-line American Medical College Application Service (AMCAS) forms. On-line at http://www.aamc.org.

Application for admission in August 2002 should be made at the end of the 2000-2001 school year. The last date for filing an application is November 15. The applicant should file as early as possible, making certain that recent MCAT scores, current transcripts, and letters of recommendation are available to the admissions committee.

Admission preference is given to West Virginia residents and those non-resident applicants who have strong ties to the state. No one specific factor is used to determine admission. However, careful consideration is given to those personal qualifications which apply to the study and practice of medicine. The criteria for admission include academic performance, course load, letters of recommendation, MCAT scores, motivation, interpersonal skills, community service, health care experiences, and a personal interview.

No applicant is admitted before an interview by the Admissions Committee. Residency status is determined by the Board of Trustees Policy Bulletin #36. Interviews and consideration of applicants begin in September.

If an applicant is denied admission or does not enroll after acceptance, he or she must reapply in the regular manner for consideration in a subsequent year.
Advanced Standing

Advanced standing positions are offered only in very exceptional circumstances and only to students currently attending a medical school accredited by the Liaison Committee on Medical Education (LCME). A request for transfer is usually considered during the second year. The application must be received no later than April 1. The applicant must present certification of good academic and professional standing in the school from which he/she is transferring. An official transcript of all prior medical school work is required from all medical schools attended. In addition, successful results of Step I of the United States Medical Licensure Examination must be available before action on an application can be finalized.

Conditions Following Acceptance

An applicant accepted into the first year or in advanced standing is expected to meet all entrance requirements and satisfactorily complete all undergraduate/medical school work in progress. Failure to do so may result in the withdrawal of the acceptance by the Admissions Committee.

The student must be aware that furnishing, or causing to be furnished, false or incorrect information for the purpose of the School of Medicine application constitutes grounds for disciplinary actions, including, but not limited to, expulsion or revocation of the acceptance.

Students in the School of Medicine agree to abide by the provision of an integrity code, which requires ethical and moral standards of conduct in all situations. Each student is required to return a signed statement to the Office of Student Services, indicating the student has read and understands the Student Professional and Academic Integrity Code of the West Virginia University School of Medicine. The code and copies of the statement are available in the Office of Student Services in the School of Medicine, and on the student services web site.

Prior to entering medical school, all students must complete certain prescribed immunization and diagnostic procedures. Personal health insurance is required.

Promotion and Graduation Requirements

Evaluation of Student Progress

Promotion of a student in the M.D. degree program is evaluated in three major areas: 1.) successful completion of all required work; 2.) successful completion of Step 1 and Step 2 of the United States Medical Licensure Examination, and 3.) successful fulfillment of the professional standards of the School of Medicine, including 100 hours of community service.

The following information is only a brief outline of the School of Medicine policies and procedures. Detailed requirements and policies for evaluation of student progress and graduation may be found in the Policy on Academic and Professional Standards Governing the M.D. degree program at West Virginia University School of Medicine on the student services web site. The committee on academic and professional standards administers all promotion and dismissal rules.

Academic Coursework Review

The Committee on Academic and Professional Standards of the School of Medicine reviews the performance of each student in every course at the end of each academic period and makes recommendations to the dean. If a student has been found to have an unsatisfactory performance in any of the required courses, dismissal from the school may be recommended. In selected circumstances, the committee may recommend remedial work of all or a portion of the curriculum. Exceptions may be made only on recommendation of the committee. The application of rules on dismissal is not automatically changed by removal of incomplete (I) grades or by the repetition of courses in other medical courses.

It is the policy of the School of Medicine that the departments conduct examinations to help in the overall evaluation of student progress. In addition to the departmental examinations, other examinations may be conducted for other purposes. At the end of each year a comprehensive examination, designed on an interdepartmental basis, may be required as a test of readiness for promotion.

A student may be subject to remedial work or dismissal on recommendation of the Committee on Academic and Professional Standards to the dean even though no unsatisfac-
tory (U) grade has been received in a required course. Such an unusual event would occur only if, in the opinion of the committee, the student’s overall performance does not meet the academic/professional standards of the School of Medicine.

Readmission of a dismissed student is the prerogative of the Admissions Committee after careful review of the student’s performance, including but not limited to, recommendations of the committee on academic and professional standards.

Grading Policy
All courses required for the M.D. degree are graded as honors (H), satisfactory (S), or unsatisfactory (U) at the completion of the course in lieu of other letter grades. The H, S, and U designations are accompanied by a narrative report of the student’s progress, noting any factors requiring remedial work or counseling. The narrative is submitted by each course and filed in the Office of Student Services. A grade of U shall be regarded as a failing grade and all University regulations regarding a failed course shall apply.

The grade of incomplete (I) is given when the instructor believes that the work is unavoidably incomplete or that a supplementary examination is justifiable. If a grade of I is not removed by satisfactory completion of the work before the end of the next semester in which the student is in residence, it becomes a failure (unsatisfactory) unless special permission to postpone the work is obtained from the Committee on Academic and Professional Standards (University rule). All students who have a health problem which they feel may be causing difficulty with their academic progress are strongly advised to notify an associate dean for student services. It is the responsibility of the student to consult the instructor about the means and schedule for making up incomplete courses.

No student will be permitted to register for any work of the second or subsequent year until all courses for the year before have been completed successfully.

United States Medical Licensure Examination (USMLE)
All states require that physicians be licensed to practice medicine. Satisfactory completion of all portions of the United States Medical Licensing Examination (USMLE) is the only mechanism by which this license may be obtained. The School of Medicine requires a passing grade on Step I and Step II for promotion and graduation. A failing grade will delay progress and require remediation. School of Medicine policy limits a student to three attempts on each step.

Step I is required upon successful completion of all basic science coursework. A passing grade in Step I is required for promotion into the clinical rotations. Step II is required after successful completion of third-year clinical rotations. A passing score on Step II is required before a recommendation can be made to grant the M.D. degree by the School of Medicine faculty and committee on academic and professional standards.

Licensure examinations are administered using a computer-based testing format.

Professional Standards Review
All nondisciplinary matters are governed by the concept of academic due process.

Upon concurrent recommendation of the Admissions Committee, the Committee on Academic and Professional Standards, and the departments concerned, a limited number of students may be admitted to the School of Medicine to follow a special schedule reflecting the student’s individual needs to complete requirements for the M.D. degree.

In view of public and professional responsibilities, the faculty of each of the professional schools of WVU has the authority to recommend to the president of the University the removal of any student from its rolls whenever, by formal decision reduced to writing, the faculty finds that the student is unfit to meet the qualifications and responsibilities of the profession. In all other matters, due process principles shall apply. For further information the reader is referred to the Policy on Academic and Professional Standards Governing the M.D. Degree Program at West Virginia University School of Medicine, which is available at the School of Medicine.
Departure from Scheduled Work

Medical students are registered for all prescribed courses for each semester except by special permission from the Committee on Academic Standards and an associate dean for student services of the School of Medicine. This permission is not valid until it has been reported to the assistant director of admissions and records, Health Sciences Center, and for record, the Office of Student Services, School of Medicine.

Interruption of academic work must be approved by the Office of Student Services.

Curriculum

The field of medicine is rapidly changing. The following curriculum outline is the plan that is presently in place. However, the medical school curriculum at West Virginia University will change as needs dictate.

Medicine

All students of the Health Sciences Center are required to perform community service as a component of their curriculum. Medical students must complete 100 hours of community service prior to graduation.

A Changed Medical Education Program of Study

The medical education curriculum was restructured in 1998. The most significant changes include: 1.) students will begin clinical experiences early in their first year of medical school; 2.) the basic science disciplines have been integrated; 3.) incoming medical students will be required to lease a windows-based laptop to use in the new curriculum that will incorporate information and academic technologies in the delivery of instruction.

With these principles in mind, the old semester (college-like) schedule of the first year, for example, physiology, gross anatomy, biochemistry, neurobiology, microanatomy, epidemiology, and psychiatry have been replaced. Now there are three blocks of basic science (human function, human structure, and neuroscience) along with two other courses—patient-centered health care and introduction to the patient, running concurrently for the entire first year.

First Year

Medical students’ first year: thirty-eight week academic year divided into three blocks (16 weeks, 15 weeks, and seven weeks). Approximately 24 scheduled hours per week. Each block contains three courses: a basic science multidisciplinary course, patient-centered health care (2.5 hours per week with half of that time being spent in small group), and physical diagnosis and clinical integration (two hours large group per week alternating every other week with small groups). While patient-centered health care and physical diagnosis and clinical integration run throughout the year, the basic science component changes each block. First block (16 weeks) contains a multidisciplinary run course: human function (physiology, biochemistry, and genetics: 12 hours large group, six hours small group per week). Second block (15 weeks) consists of human structure (seven gross anatomy and microanatomy: seven hours large group, 11 hours laboratory). Third block (seven weeks) consists of multidisciplinary neuroscience (10 hours large group, eight hours laboratory and small group). A weekly problem-based learning group (PBL) is maintained throughout the first year.

Second Year

Medical students’ second year: thirty-four week academic year divided into three blocks (ten weeks, 16 weeks, eight weeks). Approximately 26 scheduled hours per week. Each block contains three courses: a basic science multidisciplinary course, physical diagnosis and clinical integration (four hours per week), and epidemiology and biostatistics ethics and public health (2.5 hours per week). Physical diagnosis and clinical integration runs throughout the year; the basic science component changes each block. The first block (ten weeks) is a single
## Medicine I

### Fall (16 wks.)
- **CCMD 730**
  - Human Function
  - Integrated: Biochemistry, Physiology, Genetics
  - (18 hrs./wk.)

### Winter (15 wks.)
- **ANAT 703**
  - Human Structure
  - Integrated: Gross Anatomy, Histology, Embryology
  - (18 hrs./wk.)

### Spring (7 wks.)
- **CCMD 775**
  - Neurobiology
  - (18 hrs./wk.)

### Problem-Based Learning (1.5 hrs./wk.)

### Medicine II

### Fall (10 wks.)
- **MBIM 701**
  - Immunity, Infection, and Disease
  - Integrated: Microbiology, Immunology, Pharmacology
  - (18 hrs./wk.)

### Winter (16 wks.)
- **PATH 751**
  - Mechanisms of Disease
  - Pathology
  - (18 hrs./wk.)

### Spring (8 wks.)
- **PCOL 761**
  - Medical Pharmacology
  - Pharmacology and Toxicology
  - (18 hrs./wk.)

### Includes Problem-Based Learning

### CCMD 712
- **Epidemiology and Biostatistics**

### CCMD 721
- **Physical Diagnosis and Clinical Integration 2**

### CCMD 725
- **Ethics**

### CCMD 713
- **Health of the Public**

### CCMD 722
- **Physical Diagnosis and Clinical Integration 2**
### Medicine III Clerkships

<table>
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<th>Specialty</th>
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<tr>
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<td>Medicine</td>
</tr>
<tr>
<td>8</td>
<td>Surgery</td>
</tr>
<tr>
<td>8</td>
<td>Behavioral Medicine and Psychiatry with two weeks of Neurology</td>
</tr>
<tr>
<td>8</td>
<td>Obstetrics and Gynecology</td>
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<tr>
<td>8</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>8</td>
<td>Family Medicine including Rural Rotation</td>
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### Medicine IV Rotations

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<td>Two-Month Rural</td>
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<td>Subinternship</td>
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<td>Critical Care/Anesthesia</td>
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<td>12</td>
<td>Electives</td>
</tr>
<tr>
<td>32</td>
<td>Total</td>
</tr>
</tbody>
</table>
course integrating microbiology and immunology (18 hours per week). The second block (16 weeks) consists of mechanisms of disease (pathology: 18 hours per week), and the third block (eight weeks) consists of medical pharmacology (18 hours per week). Problem-based learning is used throughout the year to provide a clinical orientation to these medically important basic science blocks.

Clinical Years

The last two years of study take place in the clinics and hospitals where students have the opportunity to help diagnose and treat patients under supervision of the full-time faculty and staff. All students will serve a significant portion of the clinical years training at an off-campus or rural site.

Third Year

In the third year the student must spend a designated period of time in each of the major clinical disciplines: internal medicine, surgery, pediatrics, obstetrics and gynecology, psychiatry and neurology, and family medicine. This gives the student a foundation in history-taking, examination, patient relations, laboratory aids, diagnosis, treatment, and use of the medical literature in the major clinical disciplines.

Approximately one-third of each class is selected during their first year to spend the third and fourth year at the Charleston Division of the Robert C. Byrd Health Sciences Center of West Virginia University. A percentage of students will also complete their clinical work on the Eastern Panhandle Campus.

Fourth Year

The fourth year is a partially structured and partially elective year. Each student works with an advisor to select the program best suited to the individual’s abilities and goals. The courses selected are subject to the approval of an associate dean in the Office of Student Services.

Five months of the senior year are committed to required clerkships which include one month in internal medicine, family medicine, or pediatric sub-Internship; one month in critical care/anesthesia; one month of surgery or surgical sub-specialties; and two months of rural primary care. The remaining five months of the senior year is elective.

Three months of the senior year must be spent at clinical sites on the campuses at Morgantown and Charleston, or at approved teaching sites throughout West Virginia. A catalog is available on the web that lists the approved electives and selection guidelines at http://www.wvu.edu/ms4catalog/.

Students interested in other extramural opportunities are advised to consult with the fourth-year curriculum coordinator in the Office of Student Services. Elective time must be spent in LCME (Liaison Committee on Medical Education) or JCAH (Joint Council of American Hospitals) accredited institutions. Foreign rotations, regardless of sponsorship, are limited to one month credit.

Microbiology, Immunology, and Cell Biology

John B. Barnett, Ph.D., Chair
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2095 Health Sciences Center North
The Department of Microbiology, Immunology, and Cell Biology offers programs of study leading to the degrees of master of science and doctor of philosophy in microbiology, immunology, and cell biology. The department also offers a master 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 the department is research training. The basic philosophy of the department is that the students acquire a strong foundation in the basic concepts of microbiology, immunology, and cell biology, and have flexibility in choosing advanced coursework in their specific areas of interest. A major emphasis of the graduate program is extensive laboratory research in microbiology, immunology, and cell biology. Each student will complete an original, in-depth research investigation. The overall aim of the program is to produce students capable of designing and doing independent research and teaching.

Admission Requirements

Applicants to either the Ph.D. or M.S. graduate programs in microbiology, immunology, and cell biology should have had at least four upper-level courses in the biological sciences, two semesters of organic chemistry, two semesters of physics, and a strong background in mathematics (including calculus) in order to be considered for admission. Applicants must submit a departmental application form, three letters of recommendation, and general Graduate Record Examination (GRE) scores to the Graduate Coordinator, Department of Microbiology, Immunology, and Cell Biology, P.O. Box 9177, School of Medicine, West Virginia University, Morgantown, WV 26506-9177. In addition, 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 and must take the general GRE. GRE scores are used as one of several selection criteria for admission to the department’s graduate program. Although no minimum score is required for selection, successful applicants usually have a combined score of 1500 or greater on the general GRE. International students must have a TOEFL score of at least 550 by paper exam or 260 by computer exam. Early application is encouraged. Applicants desiring financial aid should complete their application before March 1. All applications must be completed by June 1 for fall admission. No mid-year admissions are made.

Program Requirements

Every student must take the following courses or demonstrate proficiency by examination in each of the following areas: MICB 784A, 784B, and 784C Graduate Microbiology, Immunology, Virology; BIOC 693D, Cellular and Molecular Biochemistry I and II (offered by the Department of Biochemistry); and MICB 691 Advanced Topics (laboratory rotations). The remainder of the coursework is selected by the student and the Advisory Committee from the microbiology and immunology advanced study courses (MICB 791). Enrollment in MICB 796 Seminar and MICB 793 Special Topics (Journal Club) is required each semester that the student is in residence. All full-time students in the Department of Microbiology, Immunology and Cell Biology are required to participate in teaching at least one semester a year for two years (MICB 790 Teaching Practicum).

Master of Science

The master of science program requires 30 hours of coursework, of which at least 20 hours must be in microbiology and immunology. Six hours must be in research (MICB 697). A grade-point average of at least 3.0 must be maintained. A thesis representing original research and a final oral examination are required.
Doctor of Philosophy

Students with either a bachelor’s or master’s degree can apply to the Ph.D. program. Those with a bachelor’s degree must complete the basic course requirements expected of an M.S. candidate. The doctoral candidate with an M.S. degree from another department must have had coursework 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 coursework as determined by the student’s Graduate Research Advisory Committee. A minimum of nine hours in MICB 791 courses or selected advanced courses from other departments is required. Where appropriate, coursework in related subjects such as computer science, cell biology, biochemistry, physical chemistry, and statistics will be required. MICB 796 Seminar is a required course each semester that the student is in residence. The student will maintain a grade-point average of 3.0. The doctor of philosophy program requires a dissertation representing the results of an original research investigation and the passing of a written qualifying and final oral examination. The qualifying examination is given at the end of the first year of study. The final oral examination is given after completion of research and an acceptable dissertation. All full-time students are required to participate in teaching at least one semester a year for two years.

The Department of Microbiology, Immunology, and Cell Biology has informal journal clubs in immunology and microbiology. These are designed to help the students develop skills in reading, interpreting, and discussing current research articles. All students are expected to participate in one or more.

For application materials, a description of faculty research interests, guidelines for graduate study in the Department of Microbiology and Immunology, or additional information, write to the Chairperson, Admissions and Scholarship Committee, Department of Microbiology and Immunology, P.O. Box 9177, West Virginia University, Morgantown, WV 26506-9177, or visit our web site at http://www.hsc.wvu.edu/micro/.

Research

Cell Biology: oncogenes and cell signalling.
Genetics: basic studies in the mechanisms of genetics including transfer of genetic information; recombinant DNA studies.
Immunology: immunopathology of pulmonary disease and microbial inhalants; developmental immunology; mechanisms of T cell function; immunogenetics; immunotoxicology; mucosal immunology; immunology of infectious microbes.
Mycology: pathobiology of medical mycoses; antibiotic susceptibility testing; environmental health implications of fungal and algal toxicooses.
Parasitology: host parasite relationships between helminths and insects with vertebrate hosts; protozoan endosymbionts.
Pathogenic Bacteriology: mode of action of microbial products in pathogenicity; ecology of clinical microbiology; antibiotic mode of action; immunomodulation of cystic fibrosis.
Physiology: nutrition and metabolism of a variety of pathogenic micro-organisms; growth and protein synthesis of intracellular bacteria.
Virology: retroviral recombination, oncogene transduction, and human gene therapy.

Microbiology, Immunology (MICB)

511. Pathogenic Microbiology. 4 Hr. PR or CONC: Biochemistry. Pathogenic microorganisms, including immunology and antimicrobial agents.

592. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.


697. 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.)

698. 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.)


711. *Principles of Pathogenic Bacteriology*. 1-5 Hr.

714. *Structure and Activities of Selected Microorganisms*. 2-7 Hr. PR or CONC: biochemistry and consent. Molecular biology of E-coli and other selected organisms.

784. A-Z. *Special Problems in Microbiology*. 1-6 Hr. PR: Consent.

790. *Teaching Practicum*. 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.)


792. *Directed Study*. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

793. *Special Topics*. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. *Seminar*. 1-6 Hr. PR: Consent. Seminars arranged for advanced graduate students.

795. *Independent Study*. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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.

797. *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.)

798. *Thesis and 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.)

799. *Graduate Colloquium*. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)

**Neurobiology and Anatomy**
Richard C. Dey, Chair
e-mail: rdey@hsc.wvu.edu
Adrienne K. Salm, Graduate Program Coordinator
e-mail: asalm@wvu.edu
4052 Health Sciences North
Degrees Offered

Master of Science
Doctor of Philosophy

General Description

The Department of Neurobiology and 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. A course of study focused on neuroscience is also now available. 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 Neurobiology and Anatomy requires that each applicant complete a departmental application form available on the Internet at http://www.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 master’s 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 and 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; developmental neurobiology of anxiety disorders; 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; functional imaging of the human visual cortex in health and disease.

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 study consists of coursework and introduction to research in two
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 ten 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 program to the individual student's interests and research needs. Students concentrating in neuroscience may substitute neuroscience electives for gross anatomy and histology. 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 coursework, the student must complete a thesis based on original research and defend the thesis at an oral comprehensive examination.

**Neurobiology and Anatomy (NBAN)**

- **301. Principles of Human Anatomy.** 3 Hr. PR: Admission to WVU's Dental Hygiene, Nursing, or Pharmacy program or consent. Lectures and demonstrations on the gross and microscopic anatomy of the human body including development.

- **302. Gross Anatomy.** 3 Hr. PR: NBAN 301 and consent. Functional gross anatomy of the back, extremities, head, and neck. (For physical therapy students.)

- **309. Oral Histology.** 2 Hr. PR: NBAN 301. Histological structure and embryological development of the teeth, tissues, and organs of the oral cavity. (Electronic delivery.)

- **701. Advanced Gross Anatomy.** 2-6 Hr. PR: NBAN 703 or NBAN 724 and consent. Morphological and functional analysis of a selected region, with dissection.

- **702. Advanced Developmental Anatomy.** 2-6 Hr. PR: NBAN 703 or NBAN 724 and consent. Detailed developmental anatomy of the fetal period and infancy. With dissection and analysis of variations and malformations.

- **703. Human Structure.** 1-17 Hr. PR: Admission to the School or Medicine or medical basic science graduate program or 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.

- **704. Experimental Embryology.** 3 Hr. PR: Embryology and cellular physiology and biochemistry and consent. Development, differentiation, and regeneration.
705. Microanatomy. 5 Hr. PR: Admission to Medical Basic Science graduate program or consent. Study of cells, tissues, and organs.

706. Advanced Neuroanatomy. 2-4 Hr. PR: CCMD 775 and consent. (Course may be repeated.) Detailed study of selected areas of the nervous system.

707. Histochemistry. 3 Hr. PR: Histology, biochemistry, and consent. Histochemical theory and techniques.

708. Neuroanatomy. 2 Hr. PR: Admission to physical therapy or other health sciences graduate programs or consent. Gross and microscopic structure of the central nervous system.

709. Microanatomy and Organology. 5 Hr. PR: Admission to the School of Dentistry or medical basic science graduate program or consent. Study of cells, tissues, and organs.

712. Special Topics in Anatomy. 2-4 Hr. PR: Consent. Different topics of current interest in anatomy that are not included in the regular graduate courses.

714. Applied Anatomy. 2-6 Hr. PR: Consent. Detailed study of anatomy adapted to the needs of the individual student.

716. Craniofacial Growth and Maturation. 1 Hr. PR: Consent. The current concepts of craniofacial growth and maturation are presented and integrated for application to clinical problems.

718. Oral Histology and Embryology. 2 Hr. PR: Admission to the School of Dentistry or medical basic science graduate program or consent. Structure, function, and development of oral tissues.

720. Electron Microscopy. 4 Hr. PR: Consent. (For graduate students and medical students.) Interdisciplinary. Introduction to cell fine structure and function. Preparation of biological specimens for electron microscopy.

724. Human Gross Anatomy. 7 Hr. PR: Admission to the School of Dentistry or medical basic science graduate program or consent. Human anatomy including cadaver dissection for dental students. (4 hr. lec., 3 hr. lab.)

751. Advanced Microanatomy and Organology. 2-4 Hr. PR: NBAN 705 or NBAN 709 and consent. An extension of the major topics included in NBAN 705 or 709. Special emphasis on recent contributions.

790. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of anatomy. 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.)

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

792. Directed Study. 1-6 Hr. PR: Consent. Directed study, readings, and/or research.

793. Special Topics. 1-6 Hr. PR: Consent. A study of contemporary topics selected from recent developments in the field.

794. Seminar. 1-6 Hr. PR: Consent. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. PR: Consent. Faculty supervised study of topics not available through regular course offerings.

796. 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. (Grading may be S/U.)

paper or equivalent scholarly project, or a dissertation. Grading may be S/U.

798. 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 students reports, theses, or dissertations. (Grading may be S/U.)

799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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
Bernard Schreurs, Ph.D., Graduate Coordinator, Department of Physiology and Pharmacology
Lisa Salati, Ph.D., Graduate Coordinator, Department of Biochemistry and Molecular Pharmacology

Degrees Offered
Master of Science
Doctor of Philosophy

General Description and Admissions Process
This interdepartmental program combines broad exposure to the disciplines of pharmacology and toxicology while allowing the student to specialize in either the integrative or molecular sub-disciplines. Based on his or her interests and goals, a student pursuing a graduate degree in pharmacology and toxicology will apply to either the Department of Physiology and Pharmacology or the Department of Biochemistry and Molecular Pharmacology. Students specifically interested in toxicology should apply to the Department of Physiology and Pharmacology. Each department will define its specific requirements for admission, such as minimum grade-point average, GRE scores, and prerequisite coursework. Undecided students may apply to both departments, and during the interview process faculty will work with those students to ascertain which department would best meet the each student’s needs.

Course Requirements
Students will fill the general course requirements of their home department. In addition, all students in the Pharmacology and Toxicology graduate program, regardless of the home department, will take two common courses during the first year: cellular and molecular biochemistry and graduate physiology and pharmacology.

In the second and subsequent years, students will fulfill the requirements for advanced coursework in their home department by selecting from a menu of courses, including molecular pharmacology, advanced principles in pharmacology, occupational toxicology and advanced toxicology.

Throughout the training period, students enrolled in this graduate program are required to participate in various inter-departmental activities to broaden their understanding of pharmacology and toxicology as disciplines. These activities may include pharmacology and toxicology journal clubs, pharmacology and toxicology seminars, and research talks.

Research
Pharmacology and toxicology students will participate in a series of laboratory rotations designed to help each student learn more about faculty research interests and decide on a faculty advisor. A student may do a rotation in any funded laboratory within either the Department of Physiology and Pharmacology or the Department of Biochemistry and Molecular Pharmacology. If a student selects a laboratory for his or her dissertation research that is outside of that student’s home department, then he or she will be transferred into the
other department and become subject to the requirements of that department.

**Pharmacology and Toxicology (PCOL)**

562. *Occupational Toxicology.* 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.

743. *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, toxicity’s, and interactions between drugs.

744. *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.

760. *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.

761. *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.

762. *Literature Survey.* 1 Hr. per semester. PR: Graduate status in pharmacology and toxicology or consent. Current literature pertinent to pharmacology and toxicology including journals of allied biological sciences.

764. *Advanced Pharmacology.* 1-6 Hr. PR: PCOL 761 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. Alt. yrs.)

767. *Advanced Neuropharmacology.* 1-6 Hr. PR: PCOL 761 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. Alt. yrs.)

790. *Teaching Practicum.* 1-3 Hr. PR: Consent. Supervised practice in college teaching of pharmacology. 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.


792. *Directed Study.* 1-6 Hr. Directed study, reading, and/or research.

793. *Special Topics.* 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

795. *Independent Study.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. *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.

797. *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.)

798. *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 students’ reports, thesis, or dissertations. (Grading may be S/U.)

799. *Graduate Colloquium.* 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.)
Physiology and Pharmacology
Robert L. Goodman, Chair
Bernard Schreurs, Graduate Coordinator
3051 Health Sciences North
http://www.hsc.wvu.edu/som/physio/

Degrees Offered
- **Master of Science**
- **Doctor of Philosophy in Physiology**
- **Doctor of Philosophy in Pharmacology and Toxicology**

The doctor of philosophy programs are designed to produce scientists of high quality, capable of conducting independent research, and being effective teachers. Students are exposed to all aspects of physiology and pharmacology and to 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 in physiology is an introduction to research 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; 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 and Pharmacology, Robert C. Byrd HSC of WVU, P.O. Box 9229, Morgantown, WV 26505-9229. Although applications may be submitted as late as April 1 of the year of matriculation, applications must be received before March 1 to be considered for financial aid.

**Master of Science in Physiology**
The first two semesters are devoted largely to coursework in graduate physiology and pharmacology, and a two-semester course in cellular and molecular biochemistry. Students are also introduced to the research interests of the faculty through 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 in Physiology or Pharmacology and Toxicology**
The first year curriculum familiarizes students with the basic information and principles that form a background for advanced work in physiology, pharmacology, or toxicology. Much of the first year is devoted to graduate physiology and pharmacology, and cellular and molecular biochemistry. In the second year, the student will take advanced coursework in physiology, pharmacology, or toxicology. This work emphasizes critical appraisal of the
current research literature.

**Faculty Research** In addition to the above coursework, students are introduced to the research interests of the 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.

During the first summer, students are expected to begin research projects in a 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 coursework with the continuing development of research interests. A graduate advisor is selected during this year. Courses include: advanced coursework in physiology, pharmacology or toxicology, graduate colloquium, graduate seminar, 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 and Pharmacology, 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, pharmacology, and/or toxicology, 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 systems.

**Physiology (PSIO)**


743. *Fundamentals of Physiology*. I. 5 Hr. PR: College physics, algebra, chemistry, and consent. (For dental students and a limited number of regular, full-time graduate students in the Health Sciences
Center’s basic sciences departments.) Analysis of basic facts and concepts relating to cellular processes, organ systems, and their control. (3 lec., 1 conf., 1 lab.)

744. Graduate Seminar. I, II. 1-3 Hr. PR: Graduate standing and consent. (Grading may be S/U.)

746. Neurophysiology. II. 1-4 Hr. PR: (MATH 126 or MATH 341) and (PHYS 101 and PHYS 102) or Consent. (For graduate students in the Health Sciences Center’s basic sciences departments and a limited number of regular full-time graduate students.) Properties of excitable tissues (nerve and muscle), synaptic transmission, reflexes and central nervous system function, and behavior. (1-3 lec., 1 conf.)

750. 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.

790. Teaching Practicum. I, II. S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of physiology. 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.)


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

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

794. Seminar. S. 1-6 Hr. Seminars arranged for advanced graduate students.

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

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. I, II. S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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 Nursing

E. Jane Martin, Ph.D., R.N., F.A.A.N., Dean
Mary Jane Smith, Ph.D., R.N., Associate Dean for Graduate Academic Affairs
Nancy Alfred, D.S.N., R.N., Associate Dean for Undergraduate Academic Affairs
Cynthia Armstrong Persily, Ph.D., R.N., Associate Dean for Academic Affairs,
Southern Region; Chairperson, Charleston Division
Michelle Janney, Ph.D., R.N., Associate Dean for Health Science Center
Clinical Nursing Services
Suzanne W. Gross, Ph.D., R.N., Assistant Dean for Student Services

http://www.hsc.wvu.edu/son

Degrees Offered

Bachelor of Science in Nursing
Master of Science in Nursing
Doctor of Science in Nursing

Introduction

The mission of the WVU School of Nursing is to serve the people of West Virginia and
the larger society through education, research, and service, including faculty practice. This
mission is responsive to changing healthcare needs and emerging national and state changes
in health-care delivery. The faculty’s educational effort is directed at providing high quality
programs of instruction which prepare professional nurses to promote, restore, and maintain
health for people of all age groups in diverse settings.

The School of Nursing offers undergraduate, graduate, and post-master’s programs of
study. The baccalaureate program (B.S.N.) is available for high school graduates who aspire
to a career in nursing (basic students) and to registered nurses (R.N.) who are licensed
graduates of associate degree or diploma nursing programs seeking to continue their career
development. The basic B.S.N. program can be completed in four years at WVU’s Morgantown
campus or at WVU Institute of Technology in Montgomery. Consortium programs with
Glenville State College and WVU Potomac State College allow students to complete the first
two years at those schools. Glenville students complete the program at WVU Tech; WVU
Potomac State students complete the program in Morgantown. Selected courses of these
programs are offered via satellite television, other advanced telecommunications systems,
and the Internet.

The master of science in nursing, offered at the WVU Health Sciences Center in
Morgantown and at the Charleston Division, prepares graduates for roles in rural primary
health care advanced practice (nurse practitioner), oncology advanced practice, or nurse
educator.

Post-graduate nurse practitioner certification programs in these specialties is available
for those who already have an M.S.N. R.N. to M.S.N. and a B.S./B.A. to B.S.N./M.S.N. track
for non-nurse college graduates are also offered in Morgantown and Charleston.

The doctor of science in nursing prepares nurse scholars/educators for roles in teaching,
serve, and research in nursing. The program prepares graduates who will advance the
development of nursing knowledge in significant life transitions, empowerment, or health
system outcomes that will improve health for diverse populations. The nursing component of
the D.S.N. program is offered in Morgantown during six-week summer sessions. Students
attend class two days a week, taking six credits of nursing courses for four summers. Up to
18 credits of cognates/electives can be taken in the fall and spring semesters at a school near
the student’s home.
Accreditation

The baccalaureate program received initial accreditation with graduation of the first class in 1964. The master’s program was initially accredited in 1981. Currently, all programs are fully accredited by the national accrediting agency, the Commission on Collegiate Nursing Education, and approved by the West Virginia Board of Examiners for Registered Professional Nurses.

Fees, Expenses, Housing, Transportation, Immunization

Students enrolling at the Morgantown campus pay the fees shown in the WVU Health Sciences Center Catalog charts, plus special fees and deposits as required. Students enrolling at other sites pay the fees shown in the catalog for that site. Fees are subject to change without notice. Students’ expenses vary according to the course of study and individual tastes. Information concerning financial assistance, application forms, and the Free Application for Federal Student Aid (FAFSA) form may be obtained from the Financial Aid web site: http://www.hsc.wvu.edu/fin/ or by contacting the HSC Financial Aid Office, Health Sciences North, P.O. Box 9810, Morgantown, WV 26506-9810, telephone (304) 293-3706.

The University Housing and Residence Life Office, telephone (304) 293-3621, provides information concerning University-owned housing. The Student Life Office in E. Moore Hall, telephone (304) 293-5611, provides information concerning privately owned, off-campus housing.

Students are expected to provide their own transportation, equipment, and instruments for the clinical courses. Some clinical experiences require travel in a multi-county area. Proof of specific immunizations is required for all health sciences students.

Scholarships

The School of Nursing offers several scholarships. These scholarships are administered by the University’s Student Financial Aid Office and require completion of the Free Application for Federal Student Aid (FAFSA) form in order to be considered for financial aid.

Additional Information

For additional information consult the WVU Graduate Catalog on-line at www.wvu.edu:8888/ and visit the School of Nursing web site at www.hsc.wvu.edu/son. Call the WVU School of Nursing Office of Student Services at 1-866-wvunurs or (304) 293-1386. Write to WVU School of Nursing, P.O. Box 9600, Morgantown, WV 26506-9600.

Faculty

*=Regular graduate faculty
#=Associate graduate faculty
SN=Clinical track appointment

Nancy Alfred, D.S.N., R.N. (U. of Ala.). Associate Professor and Associate Dean for Undergraduate Academic Affairs.
*Laurie Badzek, J.D., M.S.N., R.N. (WVU). Associate Professor.
Barbara Banonis, M.S.N., R.N. (WVU). Adjunct Instructor.
M. Sharon Boni, D.N.Sc., R.N. (Catholic U. of America). Adjunct Associate Professor.
Karen Campbell, M.S.N. (Vanderbilt U.). Adjunct Instructor.
Ann Cleveland, Ed.D., R.N. (WVU). Assistant Professor.
SN Sandra Cotton, M.S., C.R.N.P. (U. of Md.). Assistant Professor and Director of Faculty Practice Plan.
Theresa Cowan, M.N., R.N.C.S. (WVU). Coordinator, GSC/WVU Joint Program; Assistant Professor.
Pamela Deiriggi, Ph.D., R.N., P.N.P., C.P.N.P. (U. Tex.). Associate Professor.
*Rose Ann DiMaria, Ph.D., R.N., C.N.S.N. (NYU). Assistant Professor, Charleston Division.


Imogene P. Foster, Ed.D., R.N. (WVU). Associate Professor and Coordinator of Rural Health Nursing Education.

Mary Gibson, C.N.M., M.S.N. (Yale U.). Adjunct Professor.


Suzanne Gross, Ph.D., R.N. (U. Tex.) Assistant Professor and Assistant Dean for Student Services.

Patricia Harman, M.S.N., R.N., C.N.M. (U. of Minn.). Adjunct Instructor.


Joan B. Harvey, R.N., M.S.N. (U. of Md.). Lecturer.


Diana Higginbotham, M.S., R.N. (WVU). Adjunct Instructor.

Jean Hoff, M.P.H., R.N. (U. Pitt.). Associate Professor Emerita.

Patricia Horstman, M.S.N., R.N. (WVU). Adjunct Instructor.

Laure Hughes, M.S.N., R.N. (WVU). Lecturer, Charleston Division.

Elizabith Hupp, M.S.N., R.N. (WVU). Adjunct Instructor.


Michelle Janney, Ph.D., R.N. (U. of Toledo). Associate Dean for HSC Clinical Services.


Dorothy M. Johnson, Ed.D., R.N. (WVU). Assistant Professor.

Patricia Johnston, Ed.D., R.N., M.S.N. (WVU). Adjunct Assistant Professor.


Judith K. Klingensmith, M.S.N., R.N. (U. of Pitt.). Adjunct Assistant Professor.

Nancy A. Koontz, M.S.N., R.N. (U. of Md.). Associate Professor Emerita.

Michelle L. Kopf, M.S., R.N. (Georgetown U.). Adjunct Instructor.


Barbara Kupchak, Ph.D., R.N. (U. Tex.). Associate Professor.


June Larrabee, Ph.D., R.N. (U. of Tenn.). Associate 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., F.A.A.N., C.S. (U. Pitt.). Professor and Dean.

Dianna McCarty, M.S.N., R.N. (WVU). Visiting Assistant Professor.

Susan H. McCrone, Ph.D., R.N. (U. of Ut.). Associate Professor and Chair, Department of Health Promotion/Risk Reduction.


Alice A. Mingyar, M.S.N., R.N., N.N.P. (WVU). Adjunct Instructor.


Marsha Mitchell, Ed.D., R.N. (WVU). Assistant Professor, Charleston Division.

Lois Morgan, B.S.N., R.N. (U. Wash.). Adjunct Instructor.


Cynthia A. Neely, M.S., R.N. (WVU). Adjunct Instructor.


Mary Nemeth-Pyles, M.S.N., R.N.C., F.N.P. (WVU). Lecturer, Charleston Division.

Susan Newfield, Ph.D., R.N., C.S. (U. Tex.). Visiting Assistant Professor.

Barbara Jean Nightengale, M.S.N., R.N. (WVU). Adjunct Instructor.


Barbara Nunley, M.S.N., R.N., C.S. (Ohio St. U.). Lecturer, Charleston Division.


C. Lynne Ostrow, Ed.D., R.N. (WVU). Associate Professor, Chair of Department of Health Restoration.


Mary Ellen Pauley, M.S.N., R.N., F.N.P. (WVU). Lecturer, Charleston Division.

Cynthia Persily, Ph.D., R.N. (U. of Penn.). Associate Professor, Associate Dean for Academic Affairs, WVUSON—Southern Region, and Chair/Charleston Division.

Drema Pierson, M.S.N., R.N., C.N.A. (Bellarine Coll.). Adjunct Instructor.

Judith Polak, M.S.N., R.N., N.N.P. (U. of Fla.). Adjunct Instructor.

Master of Science in Nursing

The functional areas of study available in advanced practice nursing are family nurse practitioner, oncology advanced practice, and nurse educator. The school also offers post-graduate family nurse practitioner and oncology practitioner certification programs for those who already have an M.S.N. The programs are offered at the West Virginia University Health Sciences Center main campus in Morgantown and at the Health Sciences Center Division in Charleston. Courses are offered using a variety of media including: interactive television, web-based modalities, and face-to-face meetings. The televised courses are scheduled in the late afternoon at times convenient for working students and may require that students attend special sessions in Morgantown or Charleston two or three times each semester.

The master’s 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 process 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 and participation in a guided research experience.

The pattern and duration of the student’s study plan is determined in consultation with a faculty advisor and is based upon the student’s background and goals. The 44-credit program can be completed in four semesters, including a summer session of full-time study. The average full-time load is nine to 12 credit hours per semester. Completion of the program in part-time study includes six semesters and two summer sessions. The average part-time load is three to six credits.

Master's education in nursing prepares clinicians and educators capable of leadership in developing and expanding nursing knowledge, skills, and practice competencies. Preparation at the master’s level provides the opportunity for students to demonstrate self-direction and effective interactions with other health professionals in promoting and restoring health.

Graduates meet all requirements to sit for the national certification examination in their specialty area of family nurse practitioner or oncology advanced practice. They are prepared to offer care at the advanced practice level to select populations, and are able to perform all activities encompassed in the traditional scope of practice.

Graduates of the nursing education track are prepared to plan and direct the learning activities of individuals and groups in classroom and clinical settings. They have appropriate advanced practice skills as well as beginning instruction expertise.
Goals of the Master’s Program
1. Synthesize theories, research findings, and broad-based perspectives for application in the advanced practice of nursing.
2. Utilize systematic inquiry and refined analytical skills in the provision of health care services.
3. Create a relationship with clients that builds and maintains a supportive and caring partnership.
4. Articulate viewpoints and positions in order to improve the quality of health care delivery and outcomes of successful care.
5. Consult and collaborate in interdisciplinary and interagency endeavors to advance culturally sensitive health care to clients, groups, and communities.
6. Integrate prior and current learning as a basis for growth and accountability in enacting the role of the advanced practice nurse.

Application Process
The application process should be completed by June 1. The beginning sequence of courses in the M.S.N. program starts in the fall semester only. Class size may be limited based on available faculty resources and space. Applicants for graduate study need to complete the following steps in order to be considered for admission:

1. Complete two application forms as indicated below and return to the appropriate offices by the deadline.
   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 Graduate Study in the School of Nursing (available from Student Services Office in the School of Nursing or School of Nursing Charleston Division offices). Students should be certain that all materials are sent to the appropriate office. WVU School of Nursing, Student Services Office, P.O. Box 9600, Morgantown, WV 26506-9600 or WVU Charleston Division, Office of Student Affairs, 3110 MacCorkle Ave. SE, Charleston, WV 25304-1129.

2. Request an official transcript of records from each college or university attended. Transcripts and records should be sent directly to: WVU Office of Admissions and Records, P.O. Box 6009, Morgantown, WV 26506-6009 or WVU Charleston Division, Office of Student Affairs, 3110 MacCorkle Ave., SE, Charleston, WV 25304-1129.

3. Send three letters of recommendation directly to: WVU School of Nursing, Student Services Office, P.O. Box 9600, Morgantown, WV 26506-9600 or WVU Charleston Division, Office of Student Affairs, 3110 MacCorkle Ave. SE, Charleston, WV 25304-1129.

   The parameters used for review of applicants include: academic achievement, GRE scores, career goals, and recommendations.

   For more information, write to the Assistant Dean for Student Services, West Virginia University School of Nursing, P.O. Box 9600 Morgantown, WV 26506-9600; phone (304) 293-1386.

Admission Criteria
The following criteria must be met for regular admission to graduate study in the School of Nursing.

1. Satisfy 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 an acceptable score on the Graduate Record Exam.
4. Have a current, unrestricted R.N. license in at least one state.
5. Hold the degree of bachelor of science in nursing from a nationally accredited school.
6. Have completed three credits of undergraduate statistics acceptable for transfer with a grade of C or better.
7. Have completed a health assessment course, including physical examination skills, with a grade of B or better and acceptable for transfer.
9. Submit a typewritten essay describing professional goals (limited to two typewritten, double-spaced pages).

A bachelor of science degree in nursing is mandatory. Applicants 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 admission letter.

Once admitted, the student is assigned to a faculty advisor who provides guidance in curriculum and other academic matters. Enrollment in nursing courses is based upon readiness, availability of space, and other essential resources.

**Nursing Core Courses for all Master’s Degree Nursing Students**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSG 622</td>
<td>Theory and Critical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>NSG 623</td>
<td>Concepts of Advanced Nursing</td>
<td>2</td>
</tr>
<tr>
<td>NSG 624</td>
<td>Advanced Pathophysiology</td>
<td>4</td>
</tr>
<tr>
<td>NSG 626</td>
<td>Health Promotion Across the Lifespan</td>
<td>2</td>
</tr>
<tr>
<td>NSG 627</td>
<td>Research, Evaluation, and Analysis</td>
<td>5</td>
</tr>
<tr>
<td>NSG 630</td>
<td>Family, Community, Rural Health Systems</td>
<td>2</td>
</tr>
<tr>
<td>NSG 680</td>
<td>Health Policy, Issues, and Ethics</td>
<td>3</td>
</tr>
<tr>
<td>NSG 697</td>
<td>Guided Research Experience</td>
<td>3</td>
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**Advanced Practice Core Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>NSG 625</td>
<td>Primary Care: Rural Families 1</td>
<td>3</td>
</tr>
<tr>
<td>NSG 631</td>
<td>Advanced Pharmacology</td>
<td>3</td>
</tr>
<tr>
<td>NSG 635</td>
<td>Primary Care: Rural Families 2</td>
<td>4</td>
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**FNP Advanced Practice Practicum Courses**

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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tr>
<td>NSG 661</td>
<td>Rural Family Health Practicum 1</td>
<td>5</td>
</tr>
<tr>
<td>NSG 662</td>
<td>Rural Family Health Practicum 2</td>
<td>5</td>
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**Education Track Core and Practicum Courses**

<table>
<thead>
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<th>Course Title</th>
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<tbody>
<tr>
<td>NSG 625</td>
<td>Primary Care: Rural Families 1</td>
<td>3</td>
</tr>
<tr>
<td>NSG 635</td>
<td>Primary Care: Rural Families 2</td>
<td>4</td>
</tr>
<tr>
<td>NSG 670</td>
<td>Curriculum Development</td>
<td>3</td>
</tr>
<tr>
<td>NSG 671</td>
<td>Clinical Practicum: Educators</td>
<td>2</td>
</tr>
<tr>
<td>NSG 672</td>
<td>Education Practicum</td>
<td>5</td>
</tr>
<tr>
<td>NSG 674</td>
<td>Teaching in Nursing</td>
<td>3</td>
</tr>
</tbody>
</table>

**Oncology Advanced Practice Courses**

These courses are under development. Contact the School of Nursing for further information.

**Full-Time and Part-Time Progression Plans for Family Track**

*First Year (full-time)*

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course Code/Title</th>
<th>Hrs.</th>
</tr>
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<tr>
<td>Fall Semester</td>
<td>NSG 622/Theory</td>
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<tr>
<td></td>
<td>NSG 623/Concepts</td>
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<tr>
<td></td>
<td>NSG 624/Adv. Patho.**</td>
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*Summer I*

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School of Nursing
### Second Year (full-time)

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<tbody>
<tr>
<td>NSG 635</td>
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<tr>
<td>NSG 661</td>
<td>Practicum 1</td>
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<td>NSG 697</td>
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### First Year (part-time)

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<tr>
<td>NSG 622</td>
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<tr>
<td>NSG 623</td>
<td>Concepts*</td>
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### Second Year (part-time)

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<th>Spring Semester Hrs.</th>
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<tr>
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<td>NSG 697</td>
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### Third Year (part-time)

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<td>NSG 661</td>
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### Full-Time and Part-Time Progression Plans for Education Track

#### First Year (full-time)

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<th>Spring Semester Hrs.</th>
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<tbody>
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#### Summer I

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#### Second Year (full-time)

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<th>Spring Semester Hrs.</th>
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<td>NSG 674</td>
<td>Teaching*</td>
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<td>Research</td>
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#### First Year (part-time)

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Summer I
NSG 630 Rural Fam.* ........................................ 2
Total .......................................................... 2

Second Year (part-time)

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<td>NSG 625 Primary Care 1*</td>
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<td>NSG 697 Research</td>
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<td>NSG 680 Policy*</td>
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Summer I
NSG 670 Curriculum* ............... 3
Total .............................................. 3

Third Year (part-time)

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<th>Hrs.</th>
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<tbody>
<tr>
<td>NSG 635 Primary Care 2*</td>
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<td>NSG 671 Clinical Practicum</td>
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*Interactive television
** Web-based

Post-Graduate Certificate Program

The post graduate nurse practitioner certificate program requires a minimum of 17 credit hours. The program prepares master’s level nurses to sit for the national certification examination as a family nurse practitioner or oncology practitioner.

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 RN license in at least one state. Students in the post master’s program must maintain a 3.0 GPA and receive satisfactory clinical ratings to progress. Each student’s program will be individualized based on educational and experiential background. Prerequisites to registration for the four required clinical courses in the program are evidence of competence in the following three areas: advanced pathophysiology, advanced pharmacology, and physical examination skills.

The four required courses for post-master’s certification as a family nurse practitioner are:

** Required Courses **

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>NSG 625 Primary Care for Rural Families 1</td>
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<td>(Competency exam for exemption)</td>
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<tr>
<td>NSG 635 Primary Care for Rural Families 2</td>
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<tr>
<td>NSG 661 Rural Family Health Practicum 1</td>
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<td>NSG 662 Rural Family Health Practicum 2</td>
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All students in this program will complete a minimum of 600 supervised clinical hours. Oncology advanced practice courses are under development.
Doctor of Science in Nursing Summer Program

The nursing component of the D.S.N. program is offered in Morgantown during six-week summer sessions. Students attend class two days a week, taking six credits of nursing courses for four summers. Up to 18 credits of cognate/electives can be taken in the fall and spring semesters at a school near the student’s home.

The purpose of the D.S.N. program is to prepare nurse scholars/educators for roles in teaching, service, and research in nursing. The program will prepare graduates who will advance the development of knowledge in significant life transitions, empowerment, and health system outcomes that will improve health for diverse populations. The goals of the program are to prepare graduates who:
1. Provide leadership to impact health care delivery and nursing education systems.
2. Design and implement nursing research that advances evidence-based practice.
3. Advance the quality of nursing through assuming the full academic role in nursing education.
4. Collaborate across professional, disciplinary, and institutional boundaries to promote, protect, and improve health.

Degree Requirements

Three curricular components comprise the 54 credits of post-master's coursework. These are core, cognate/electives, and dissertation.

Core
NSG 726 Research Methods 1 ................................................................. 3
NSG 727 Contemporary Nursing Science .............................................. 3
NSG 728 Theoretical Basis of Nursing .................................................... 3
NSG 729 Research Methods 2 ................................................................. 3
NSG 734 Use of Data ............................................................................. 3
NSG 735 Principles: Nursing Education .................................................. 3
NSG 737 Leadership ............................................................................. 3
Total ....................................................................................................... 21

Cognate/Electives
Advanced Statistics Cognate ................................................................ 3
Multi-Variate Statistics Cognate ............................................................. 3
Education Cognate ............................................................................... 3
Additional Cognates ............................................................................ 9
Total ....................................................................................................... 18

Dissertation
NSG 781 Research Mentorship 1 ........................................................... 1
NSG 782 Research Mentorship 2 ........................................................... 1
NSG 783 Dissertation Seminar 1 ............................................................ 2
NSG 784 Dissertation Seminar 2 ............................................................ 2
NSG 797 Dissertation ........................................................................... 9
Total ....................................................................................................... 15

Additional requirements include three examinations: preliminary examination after 18 credits of coursework, comprehensive examination after completion of all core and cognate/elective coursework, and dissertation oral examination.

Application Process and Requirements

The application should be completed by April 1. Two application forms are required. The WVU Application for Admission to Graduate Studies can be completed on the web at http://www.as.wvu.edu/graduate/grforms.html or it can be obtained by calling WVU Admissions and Records at 1-800-344-WVU1. The Application for Admission to Graduate Study in the School of Nursing is available from Student Services in Morgantown; telephone 1-866-988-6877.
The following information is required for a complete application record:
1. A current curriculum vita.
2. Transcripts of B.S.N. and M.S.N. degrees from nationally accredited nursing programs.
4. Evidence of current Registered Nurse license.
5. Evidence demonstrating expertise in the advanced practice of nursing.
6. Three letters of reference that address the applicant’s: a) expertise in the advanced practice of nursing, b) skill in research and scholarly writing, and c) likelihood for success in doctoral work. One letter should be from a former professor of the applicant.
7. Two two-page scholarly essays, one describing the applicant’s research interests and one describing the applicant’s career goals.
8. An example of scholarly work, which may be a research paper, master’s thesis, or a publication.
9. Evidence of basic computer literacy.

**Admission Criteria**
The following criteria will be used in determining admission to the program:
1. Cumulative grade-point average of 3.0 of four points in master’s degree work.
2. Satisfactory achievement on the Graduate Record Examination.
3. A grade of B or higher in graduate statistics and research courses.
4. Congruence between the applicant’s career goals and program objectives and between the applicant’s research interests and those of the faculty.

**Summer Curriculum: D.S.N. Program**

**First Year**

<table>
<thead>
<tr>
<th>Summer I</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>NSG 726 Research Methods 1</td>
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<td>NSG 728 Theoretical</td>
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**Second Year**

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<td>NSG 727 Evidence Based Practice</td>
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<td>NSG 729 Research Methods 2</td>
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**Third Year**

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<td>NSG 734 Use of Data</td>
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<td>NSG 735 Principles</td>
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### Fourth Year

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<tr>
<td>NSG 737</td>
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<td>NSG 781</td>
<td>Research Methods 1</td>
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<td>NSG 783</td>
<td>Dissertation Seminar 1</td>
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**Summer IV Duration**: 3

### Fall Semester Duration: 3-6

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<td>NSG 784</td>
<td>Dissertation Seminar 2</td>
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### Nursing (NSG)

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<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>593</td>
<td>A-Z. Special Topics. I, II, S. Variable 1-6 Hr. A study of contemporary topics selected from recent developments in the field.</td>
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<tr>
<td>622</td>
<td>Theory and Critical Analysis. 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.</td>
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<tr>
<td>623</td>
<td>Concepts of Advanced Nursing. 2 Hr. PR or CONC: NSG 622. Exploration and evaluation of theories and research in leadership, education, organization, and management concepts applicable in the advanced practice of nursing.</td>
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<tr>
<td>624</td>
<td>Advanced Pathophysiology. 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.</td>
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<tr>
<td>625</td>
<td>Primary Care: Rural Families 1. 3 Hr. PR: NSG 622 and NSG 624. Introduction to the knowledge and skills basic to the assessment of health status, diagnosis, treatment, and evaluation in the advanced practice of nursing.</td>
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<tr>
<td>626</td>
<td>Health Promotion for All Ages. 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.</td>
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<tr>
<td>627</td>
<td>Research, Evaluation, and Analysis. 5 Hr. PR: NSG 622. An overview of research, measurement, and evaluation models useful to nursing practice.</td>
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<tr>
<td>630</td>
<td>Family, Community, Rural Health Systems. 2 Hr. PR: NSG 622. Exploration and analysis of theories and research on family, community, and rural health systems applicable in the advanced practice of nursing.</td>
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<tr>
<td>631</td>
<td>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.</td>
<td></td>
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<tr>
<td>635</td>
<td>Primary Care: Rural Families 2. 4 Hr. PR: NSG 625. Application of the theoretical foundations of advanced practice nursing in rural family health care; management of care for prevention, intervention, and evaluation.</td>
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<tr>
<td>661</td>
<td>Rural Family Health Practicum 1. 5 Hr. PR or CONC: NSG 660. 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.</td>
<td></td>
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</table>
662. *Rural Family Health: Practicum* 2. 5 Hr. PR: NSG 661. 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.


672. *Education Practicum*. 6 Hr. PR: NSG 625, specialty practicum 1 in area of interest. Supervised practice in the application of theories and methods related to nursing education.

674. *Teaching in Nursing*. 3 Hr. PR: NSG 670. A general methods course involving the principles of instruction in didactic and clinical nursing education including analysis of course planning, teaching methods, and evaluation of student outcomes.

680. *Health Policy: Issues and Ethics*. 3 Hr. PR: NSG 622 or consent. A focus on the social, political, technological, ethical, and economical dynamics that shape health care delivery.


695. *Independent Study*. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

697. *Research*. 1-3 Hr. PR: Consent. Research activities leading to thesis, problem report, research paper, or equivalent scholarly project, or a dissertation guided by a student-graduate faculty contact based on the course objectives and culminating in a written product. (Grading may be S/U.)

726. *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.

727. *Contemporary Nursing Science*. 3 Hr. PR: 728. In-depth study of the theoretical, empirical, and methodological dimensions of foundational nursing science in the conceptual areas of empowerment, significant life transitions, and health system outcomes.

728. *Theoretical Basis of Nursing*. 3 Hr. PR: NSG 722. 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.

729. *Research Methods 2*. 3 Hr. PR: NSG 726 and PR or CONC: STAT 512. 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.

734. *Use of Data*. 3 Hr. PR: NSG 726 and NSG 729. 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.

735. *Principles: Nursing Education*. 3 Hr. PR: EDP 700. 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.

737. *Leadership*. 3 Hr. PR: NSG 734. Through exploration of contemporary leadership theory and application to self, an authentic personal leadership style will be developed to enable the student to enact a leadership role in health care and/or education.

781. *Research Mentorship 1*. 1 Hr. PR: NSG 729. 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).

782. *Research Mentorship 2*. 1 Hr. PR: NSG 781. 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.
783. **Dissertation Seminar 1.** 2 Hr. PR: NSG 729. This seminar provides an 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.

784. **Dissertation Seminar 2.** 2 Hr. PR: NSG 783. This seminar provides an opportunity for refinement of the proposal developed in NSG 783. Student critique of presented proposals, as well as feedback of faculty, is expected to result in the dissertation proposal.

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

792. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

793. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

795. **Independent Study.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. **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.

797. **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.)

798. **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.)

799. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.
Degrees Offered

- Master of Science in Pharmaceutical Sciences
- Doctor of Philosophy in Pharmaceutical Sciences
- Doctor of Pharmacy (entry-level) (See Health Sciences Catalog.)

Introduction

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 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, drug metabolism, and health outcomes and policy research and pharmaceutical marketing. 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 health outcomes and policy research may integrate pharmacoeconomics, pharmacoepidemiology, marketing, economics, health care policy administration, public health, etc., or may develop optimal methods in the delivery of pharmaceutical and health services.

This program does not result in a degree that will qualify the recipient to take the professional practice licensing exam. For those interested in becoming a licensed pharmacist, please consult the doctor of pharmacy program in the WVU Health Sciences Catalog.

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.
Faculty
* Indicates associate membership in the graduate faculty.

Professors
Marie A. Abate, Pharm.D. (U. Mich.). Drug information, Computer assisted instruction, Study design and evaluation.
Patrick S. Callery, Ph.D. (UCSF). Drug design, Drug metabolism.
Peter M. Gannett, Ph.D. (U. Wisc.). Metabolism and carcinogenesis of alkyl hydrazines.
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.
Sundareswaran (Suresh) Madhavan, Ph.D. (Purdue U.). Health care and pharmaceutical marketing, Health services research, Pharmaceutical cost-containment.
Charles Ponte, Pharm.D. (U. Utah). Women’s health, diabetes mellitus.
Yongyut Rojanasakul, Ph.D. (U. Wisc.). Pharmaceutics, Drug delivery and transport phenomena in biological systems; antisense oligonucleotides.
George R. Spratto, Ph.D. (U. Minn.). Dean. Pharmacology.

Associate Professors
Robert K. Griffith, Ph.D. (Ohio St. U.). Drug design, Medicinal chemistry.
Timothy Tracy, Ph.D. (Purdue U.). Clinical pharmacology, Drug metabolism.

Assistant Professors
Mayur M. Amonkar, Ph.D. (WVU). Health services and outcomes research.
Jan Kavookjian, Ph.D. (Auburn). Psychosocial and behavioral outcomes in health services.
Paul D. Siegel, Ph.D. (Tulane). Immunopharmacology and toxicology.
Ginger G. Scott, Ph.D. (U. Mn.). Pharmacy practice and health services research.

Pharmaceutical Sciences
Patrick S. Callery, Assistant Dean for Research and Graduate Programs
1136 Health Sciences North
http://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 researcher, 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. 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.

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 program may specialize in health outcomes and policy research, pharmaceutical marketing, 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 coursework 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 health outcomes and policy research, pharmaceutical marketing.

Coursework

The student’s first semester is usually occupied with coursework 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 coursework. With guidance from the research advisory committee and by the end of the second year in the program, the student should have completed the research tool requirement.

Candidacy

To be admitted for candidacy for 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)


693. A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students. (Grading may be S/U.)

696. A-Z. 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. (Grading may be S/U.)

697. 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.)

708. Pharmaceutics. 3 Hr. PR: PHAR 702. 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.
709. Immunology, Biotechnology, and Anti-infectives. 3 Hr. PR: First professional year standing or consent. Students will learn basic functions of the immune system, elements of the pharmaceutical applications of biotechnology, and be introduced to the chemotherapy of infections.

711. 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.

715. Pathophysiology/Therapeutics 1. 4 Hr. PR: Second professional year standing or consent. Principles and concepts of pathophysiology and pharmacotherapeutics. An organ system approach to disease states and their therapeutic management will be followed.

716. Chemistry of Drug Action 1. 3 Hr. PR: PHAR 711 or consent. Provides a basic understanding of relationships between the chemical structure of a drug and its biological effect. Physiochemical properties, enzymatic transformations and structure-activity relationships (SAR) of important pharmaceutical agents are discussed.

720. Patient Health Education. 2 Hr. PR: Second professional year standing or consent. Interpersonal communication skills will be enhanced in the areas of patient-centered and colleague-centered communications. Students will learn processes for providing pharmaceutical care (e.g., interviewing and counseling patients; formulating a plan; monitoring; and documenting information).

725. Pathophysiology/Therapeutics 2. 4 Hr. PR: PHAR 715 or consent. A continuation of PHAR 715.

726. Chemistry of Drug Action 2. 2 Hr. PR: PHAR 716 or consent. A continuation of PHAR 716.

728. 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.

730. Pathophysiology/Therapeutics 3. 5 Hr. PR: PHAR 725 or consent. Principles and concepts of pathophysiology and pharmacotherapeutics. An organ system approach to disease states and their therapeutic management will be followed.

731. 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).

733. 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.

737. 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.

738. 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.

739. Therapeutic Patient Monitoring. 3 Hr. PR: Third professional year standing or consent. Employs both didactic and experiential instruction to provide students with the knowledge and skills required to assess the health status of medicated patients with special emphasis on monitoring therapeutic endpoints.

740. Pathophysiology/Therapeutics 4. 3 Hr. PR: PHAR 730 or consent. Principles and concepts of pathophysiology and pharmacotherapeutics. An organ system approach to disease states and their therapeutic management will be followed.

741. Clinical Pharmacokinetics. 3 Hr. PR: PHAR 731 or consent. This course will review advanced concepts in pharmacokinetics and cover the basic pharmacokinetic properties of commonly used drugs and apply these principles to drug dosing, patient management, and rational therapeutic drug monitoring.
745. Hospital Pharmacy and Administration. 3 Hr. PR: Enrollment in the School of Pharmacy or consent. Basic concepts of the organization, management, and services of hospitals and pharmacist’s role in the modern hospital. Emphasis on principles of hospital pharmacy administration and practice.

775. Advanced Biopharmaceutics. 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.

776. Advanced Pharmaceutics. 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, and prolonged action medication.

777. Economics of the Pharmaceutical Industry. 3 Hr. History, background, and formation of major drug industries Oligopolistic practices, mergers, combines, costs of research, and production.

778. Advanced Pharmaceutical Analysis 1. 3 Hr. Spectroscopic and chromatographic methods of analysis with emphasis on their applications in pharmaceutical problems and in biological sciences.

790. Teaching Practicum. 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.)


792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. A-Z. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. A-Z. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. 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.

797. 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.

798. 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.

799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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
Dallas Branch, Ph.D., Coordinator, Sport Management
Michelle Sandrey, Ph.D., Coordinator, Athletic Training
Andrew Ostrow, Ph.D., Coordinator, Sport Behavior
Andrew H. Hawkins, Ph.D., Coordinator, Physical Education/Teacher Education, Graduate Coordinator
Daniel Ziatz, Ph.D., Coordinator, Athletic Coaching Education

http://www.wvu.edu/~phsede

Degrees Offered

Master of Science
Doctor of Education

The School of Physical Education is organized into five programs: athletic coaching education, 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 education, athletic training, athletic coaching education, 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, contact the Graduate Coordinator, School of Physical Education, 285 Coliseum, P.O. Box 6116, West Virginia University, Morgantown, WV 26506-6116. Telephone (304) 293-3295 x 5210.

Graduate Faculty

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

Professors

† Carl P. Bahneman, Ph.D. (U. Pitt.). Administration, Athletic coaching education, Research methods.
† Andrew H. Hawkins, Ph.D. (Ohio St. U.). Graduate coordinator, Program coordinator. Teacher education, Behavior analysis.
† Lynn Houser, Ph.D. (U. Pitt.). Associate dean. Teacher education, Research on teaching.

Associate Professors

† Dallas D. Branch Jr., Ph.D. (Ohio U.). Program coordinator, Sport management. Sport management, Sport marketing.
* Floyd Jones, Ph.D. (U. Pitt.). At-risk preadolescents programming, Sport management.
* Bruce Wilmoth, M.S. (Brigham Young U). Teacher education.
Assistant Professors
Linda Burdette, M.S. (WVU). Teacher education.
John C. McGrath, M.S. (Bemidji St. Co.). Teacher education, Biomechanics, Athletic coaching education.
Michelle Sandrey, Ph.D., (U. Kans.). Graduate coordinator, Athletic training.

Master’s Programs
Master’s programs are available in athletic coaching education, athletic training, sport management, and teacher education. The master’s program in sport psychology is only available as part of the doctoral program in that field.

Master of Science Admission Criteria
The following criteria are used to evaluate applications for admission to the master’s programs:

• Undergraduate degree grade-point average from an approved institution (2.75 minimum for regular status)
• TOEFL scores for international applicants (minimum required: 550 paper; 213 computer)
• Three letters of reference
• Resume

Some programs may require a personal interview if feasible. The sport management program also requires the following:

• Autobiographical description and professional goal statement (1-2 pages on professional background, goals, and reasons for pursuing the master’s degree in sport management)
• Graduate Record Examination scores or Miller Analogies Test scores

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. Application deadline is April 15.

Athletic Training
The master of science degree in athletic training is completed over a two-year period, although a one-year option is available. Since this is a post-certification master’s program, all students must be NATA-BOC certified or certified eligible. Those in the two-year program complete 47 hours of graduate coursework, which includes an individual research project or thesis. Graduate assistantships are available for only NATA-BOC certified and qualified individuals in the two-year program. The one-year program requires completion of 36 graduate credit hours.

Applications to the program are reviewed immediately and continue until the class is filled. Only complete files are considered for admission. Selection process for assistantships begin in early February and continues until all positions are filled. Only those applicants who have been admitted to the program are considered for assistantships. Finalists for graduate assistantships are contacted for an on-campus personal interview in late February or early March.

Sport Management
The sport management major requires 39 credit hours, including a six-hour internship. Applicants must send all screening materials to the program coordinator by January 15. 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 April 1.
Teacher Education

Students are eligible to apply for the physical education teacher education master’s program if they are certified or are certifiable to teach in the public schools. The masters program includes a balance of on-line courses (taken during the spring and fall semesters) and on-campus courses (taken during the summer). Normal time to completion is four regular semesters and three summers (approximately two years), but resident students may be able to complete the program in two regular semesters and two summers (one full year plus an additional summer). Practical application of research-based and developmentally appropriate teaching practices is emphasized by the program.

Students who do not have a teaching certificate may also pursue a master’s degree through a master’s certification program. Such students begin as non-degree graduate students and take a combination of master’s and undergraduate courses until passing the physical education content test, at which time they are admitted as regular graduate students. They then pursue the remainder of undergraduate courses required for certification and complete the bulk of master’s degree coursework. No more than 12 graduate hours may be taken toward the master’s degree as a non-degree graduate student. Student teaching is required as part of this masters program track. Time to completion is normally two and one-half to three years for full-time resident students.

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 coursework 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 coursework leading toward the degree and satisfy all department and University requirements.

Doctoral Programs

Graduate studies in physical education leading to a doctor of education are available in two major areas: sport psychology and teacher education. The students admitted into the doctoral program in sport psychology also complete a master’s degree in community counseling. Students can be admitted into the doctoral program in sport psychology with either a baccalaureate degree or a master’s degree. The doctoral program in teacher education is available to students who have academic preparation in physical education or a field related to physical education and who have a master’s degree.

Application Deadline

Application procedures for the Ed.D. in sport psychology must be completed by January 15. The teacher education doctoral program employs a rolling admission procedure and applications are accepted and reviewed at any time. Applications for the teacher education program should be submitted early in the calendar year for students interested in graduate assistant support beginning in the fall semester.

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 materials related to the admission criteria, the student’s credentials are reviewed by an appropriate screening committee. Students who seek a graduate assistantship should complete a graduate assistant application by March 1. Information and applications for graduate teaching and research assistantships can be obtained from School of Physical Education, Records Office, P.O. Box 6116, Morgantown, WV 26506-6116. You may also request information by e-mail at: cstraig@mail.wvu.edu.

Admission Criteria

The following criteria are used to evaluate applications for admission to the doctoral programs:

- Undergraduate degree grade-point average from an approved institution
- Master’s degree grade point average from an approved institution (if applicable)
- Graduate Record Examination scores
• TOEFL scores for international applicants (minimum required: 550 paper; 213 computer)
• Three letters of reference
• Professional goal statement (1-2 pages on professional background, goals, and reasons for pursuing the doctoral degree)
• Curriculum vitae
• Personal interview

Additional information regarding admission criteria and procedures are available at http://www.wvu.edu/~physed/sportpsych/docadmission.htm (sport psychology) and at http://www.wvu.edu/~physed/teacher.htm (teacher education).

Doctoral Degree Requirements
The sport psychology and teacher education faculties each have procedures and requirements which are specific to their programs. These processes are described in detail on the web sites listed previously. In general, they include the following:

• Selection of an advisor. The program coordinator, in consultation with the student, assigns an advisor to assist in planning the student’s program.
• Selection of a Plan of Studies Committee. The student, in consultation with the advisor, selects a Plan of Studies Committee. This committee assists the students in developing a plan of studies which will include relevant coursework, evaluation of competencies, and an estimated time frame for its completion.
• Plan of Studies approval. The Plan of Studies Committee will meet with the student within six months of beginning the program to ratify the plan. The approved Plan of Studies functions as the document against which completion of program requirements is assessed.
• Completion of required coursework. The student completes the coursework required by the plan of studies. The number of credit hours required and the time required to complete the coursework varies by program, but at least two years (four semesters) of coursework is normally required for students entering with a master’s degree.
• Comprehensive Examination. At the completion of coursework the student will take a comprehensive examination specified by the program. The purpose of the examination is to assess competency in research and content areas relevant to the particular program. The length of the examination varies by program.
• Prospectus Defense. Following the successful completion of the comprehensive examination, the student will write and defend a prospectus for the dissertation. The prospectus will be evaluated by the student’s Dissertation Committee. The Dissertation Committee is often identical to the student’s Plan of Studies Committee, though additions or changes may be made to the Plan of Studies Committee at this time in order to constitute the Dissertation Committee.
• Admission to Candidacy. Once the comprehensive examination and prospectus defense are successfully completed, the student is admitted to candidacy. Admission to candidacy is permission to proceed with dissertation research as described in the prospectus.
• Defense of the dissertation. The student will write and orally defend an original research project as described in the prospectus. Successful defense will be determined by the quality of the written document as well as by the quality of the oral defense in a forum open to the academic community. All members of the student’s Dissertation Committee must be present for the dissertation defense. Successful defense of the dissertation results in the awarding of the degree. The dissertation must be successfully defended within five years of admission to candidacy.

Athletic Coaching Education (ACE)
620. Coaching Education Administration. 3 Hr. This course examines the fundamental areas necessary to be knowledgeable about administering athletic programs.

650. Sport Movement Analysis. 3 Hr. The physics of sports 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.
660. **Sports Safety.** 3 Hr. To provide students with the knowledge and skills 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.

685. **Coaching Internship.** 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.

688. **Coaching Techniques.** 1-6 Hr. Students will complete a contract detailing terms of coaching technique topic relevant to their individual coaching experience.

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

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

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.

**Athletic Training (ATTR)**

618. **Anatomy Laboratory.** 3 Hr. Cadaver laboratory experience involving an anatomical analysis of the trunk and extremities.

620. **Athletic Training Practicum 1.** 1 Hr. PR: Admittance into graduate athletic training program. Understanding of the different members of sports medicine community; incorporating viewpoints into the process of making decisions about the care of the injured athlete.

621. **Athletic Training Practicum 2.** 1 Hr. PR: ATTR 620. Clinical experience in athletic training that allows students to broaden their exposure to administrative duties.

622. **Athletic Training Practicum 3.** 1 Hr. PR: ATTR 621. Clinical experience in athletic training that allows students to broaden their experience and to develop advanced clinical and writing skills.

623. **Athletic Training Practicum 4.** 1 Hr. PR: ATTR 622. Clinical experience in athletic training that allows students to broaden their critical thinking and problem solving abilities.

624. **Issues in Athletic Training.** 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.

625. **Advanced Rehabilitation Techniques.** 3 Hr. Students will gain an understanding of the current rehabilitation protocols and will become proficient in various techniques involving manual therapy and isokinetics devices.

640. **Advanced Orthopedic Assessment.** 3 Hr. Students will learn additional assessment techniques, enabling them to further refine their injury evaluation skills.

650. **Medical and Surgical Aspects of Athletic Training.** 3 Hr. Variety of current medical and surgical procedures commonly performed on athletic populations.

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

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

695. **Independent Study.** I, II, S. Variable 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.
697. 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.)

698. 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.)

Physical Education/Teaching (PET)

600. Workshop in Physical Education. 1-15 Hr. Professional development experience for the physical education teacher.

605. Professional Issues in Physical Education. 3 Hr. Designed to examine current professional issues in physical education and the impact of these issues on the professional's life.

615. Research Methodology in Physical Education. 3 Hr. Application of historical, descriptive, and experimental research strategies and designs to physical education.

636. Instructional Methods for Physical Education. 3 Hr. Designed to provide physical educators with the methodological skill necessary to comply with Public 94-142 (Education for All Handicapped Children Act). The research justification for the methodological approaches examined will be emphasized.

638. Operant Principles for Physical Education. 3 Hr. 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.

646. Advanced Measurement in Physical Education. 3 Hr. Designed to extend and apply the basic concepts of measurements and statistical evaluation to physical education.

655. Curriculum in Physical Education. 3 Hr. 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, middle, and adolescent childhood.

666. Psychomotor Behavioral Analysis. 3 Hr. 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.

668. Motor Development. 3 Hr. 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.

671. Middle Childhood/Adolescent Motor Development. 3 Hr. 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.

681. Motor Development in Special Populations. 3 Hr. 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.)

683. Principles of Effective Teaching. 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.

685. Physical Education Supervision Techniques. 3 Hr. Effective supervision practices for the perspective physical education directing teacher.

686. 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.)

690. Teaching Practicum. 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.)
691. **A-Z. Advanced Topics.** 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

692. **Directed Study.** 1-6 Hr. Directed study, reading, and/or research.

693. **Special Topics.** 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. **Seminar.** 1-6 Hr. Seminars arranged for advanced graduate students.

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

696. **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.

697. **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.)

698. **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.)

699. **Graduate Colloquium.** 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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.

730. **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.

740. **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.

745. **Physical Education/Teaching Curriculum Development and 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.

750. **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.

760. **Management Processes in Physical Education.** 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 planning learning environment.

765. **Professional Physical Education Resource Seminar.** 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.

780. **Research on Teaching.** 3 Hr. The history methods, findings, and educational implications of research on behavioral and cognitive processes that underlie teaching.

790. **Teaching Practicum.** 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.)

791. **A-Z. Advanced Topics.** 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.
792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. 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.

797. 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.)

798. 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.)

799. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.

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.) 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.

931. 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.

Sport Studies (SS)

615. Research Methodology in Physical Education. 3 Hr. PR: Graduate standing or consent. Application of historical, descriptive, and experimental research strategies and designs to physical education. (Also listed as PET 615.)

616. Sport Marketing Research Methods. 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.

620. Individual Interaction in Sport and Physical Activity. 3 Hr. PR: SS 615. Designed to acquaint the student with the reciprocal relationships between sport and physical activity and the societies and culture from which sport emerges.

627. Legal Issues in Sport Administration. 3 Hr. The NCAA, its rules, and its regulations: In-depth study of professional sport leagues, their constitution, by-laws, regulations, collective bargaining agreements, standard player contracts; legal issues involving sport agents.

635. Sport Management Processes. 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.

640. Psychology of Sport and Physical Activity. 3 Hr. PR: SS 615. Psychological effects and implications of participation in sport and physical activity. Emphasis is on the personality and behavior and motivational dynamics of sport involvement.

646. Sport Marketing. 3 Hr. PR: Graduate standing. Advanced analysis of marketing sport enterprises; the marketing planning process, and marketing information systems.
650. *Paciolan Computer Systems*. 3 Hr. Computer Laboratory; emphasis on general ledger (budgeting), support group (fund raising), and ticketing software of the PSI sport computer system.

660. *NCAA Compliance and Current Issues*. 3 Hr. PR: Graduate standing. An in-depth analysis of compliance issues impacting collegiate administrators and the NCAA.

670. *Sport Finance*. 3 Hr. PR: Graduate standing or consent. 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.

680. *History and Philosophy of Sport*. 3 Hr. This course is designed to acquaint students with philosophical issues related to sport and sport management and with individuals and events that helped shape the history of sport.

685. *Internship-Sport Management*. 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.

686. *Internship-Sport Behavior*. 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.

690. *Teaching Practicum*. 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.)


692. *Directed Study*. 1-6 Hr. Directed study, reading, and/or research.

693. *Special Topics*. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

694. *Seminar*. 1-6 Hr. Seminars arranged for advanced graduate students.

695. *Independent Study*. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

696. *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.

697. *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.)

698. *Thesis or Dissertation*. 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.)

699. *Graduate Colloquium*. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework or research are entitled, through enrollment in his/her departments 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.

720. *Psychological Sport Performance Enhancement*. 3 Hr. An in-depth examination of commonly used interventions designed to maximize the performance of individual athletes and teams.

721. *Counseling College Student-Athletes*. 3 Hr. An exploration of psycho-social aspects of college student-athletes’ life experiences and common counseling concerns to include individual and systems intervention used to assist this at-risk group.

722. *Exercise and Health Psychology*. 3 Hr. Major theories and techniques of health behavior change and health behavior assessment especially with respect to exercise.
723. 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.


726. Advanced Measurement and Research in Physical Education. 3 Hr. PR: SS 615. Extension and application of basic concepts of measurement and statistical evaluation to physical education.

765. Dissertation and Thesis Seminar. 3 Hr. PR: Graduate standing. Critical analysis of the graduate student's dissertation or research proposal. (Required for all doctoral students.)

790. Teaching Practicum. 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.)


792. Directed Study. 1-6 Hr. Directed study, reading, and/or research.

793. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

794. Seminar. 1-6 Hr. Seminars arranged for advanced graduate students.

795. Independent Study. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

796. 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.

797. 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.

798. Thesis or Dissertation. 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.)

799. Graduate Colloquium. I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking coursework 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 coursework 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.
Harley O. Staggers National Transportation Center
John Zaniewski, Ph.D., Director, Department of Civil and Environmental Engineering
http://www.cemr.wvu.edu/~wwwtrans

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.

International Center for Disability Information (ICDI)
http://www.icdi.wvu.edu

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 vocation 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
http://www.nrcce.wvu.edu

The National Research Center for Coal and Energy at West Virginia University develops, coordinates, and conducts multidisciplinary research and service programs on energy and environmental issues. The center works with faculty and students from departments throughout the university and with collaborators from other universities, government laboratories, and private industry. NRCCE sponsors include the U.S. Environmental Protection Agency, the U.S. Department of Energy, the U.S. Geological Survey, and others. The center is located on the Evansdale campus in a building that includes offices, wet/dry laboratories, an analytical laboratory, a high bay laboratory for pilot scale research projects, and a multimedia meeting facility.

The center coordinates programs worth over $10 million annually, about half of which supports service programs conducted at the NRCCE and half of which supports research in colleges across the University. At the center, students will find a limited number of service-related graduate assistantships in areas such as LAN and database administration or technical assistance information in support of small communities' wastewater and drinking water needs. For NRCCE-related research programs, funds are disbursed directly to the research faculty in the colleges across the University who then select their own graduate students. To learn more about the research and service programs of the NRCCE, students are encouraged to visit http://www.nrcce.wvu.edu on the world wide web.

Some of the many NRCCE programs are: the Appalachian Oil and Natural Gas Research Consortium, the Petroleum Technology Transfer Council Regional Lead Organization for the Appalachian region, Industries of the Future of West Virginia, the U.S. DOE/WV Experimental Program to Stimulate Competitive Research, the National Alternative Fuels Training Consortium, the National Environmental Services Center including the National Small Flows Clearinghouse, the National Onsite Demonstration Program, the National Drinking Water Clearinghouse, and the National Environmental Training Center for Small Communities, the West Virginia Water Research Institute including the National Mine Land Reclamation Center and the Emissions Control By-products Consortium.

Oak Ridge Associated Universities (ORAU)
http://www.nrcce.wvu.edu/ or http://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 85 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 http://www.orau.gov/orise/educ.htm, or by calling either of the contacts listed 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 contact Monnie E. Champion, ORAU Corporate Secretary, at (865) 576-3306; or visit the ORAU homepage http://www.orau.org.

Regional Research Institute
http://www.rri.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 28 faculty associates drawn from ten departments in five colleges, a three-person regional science faculty, an extended network of scholars elsewhere in the United States and abroad, and an outstanding group of graduate 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 doctoral courses in related departments, and its alumni are among the nation’s leading scholars.

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.

For further information 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 visit our web site at http://www.rri.wvu.edu.
Real-world learning and outreach experiences abound for undergraduate and graduate students who intern with the WVU Extension Service (WVU-ES). Part of an educational network of 105 land-grant universities, WVU-ES 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 social, economic, environmental, and technical problems of communities. Some Extension educators work on WVU’s traditional campuses located in Morgantown, but many of the faculty work in county settings, generally located in or near each county’s government 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 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 computer networks, distance education, publication design and production, curriculum design and development, and classroom teaching.

Extension’s many programs are driven by just five major initiatives: leadership development, rural and community-based economic development, youth development, workforce development, and health education. Extension’s program delivery, however, has roots in many career fields, including 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 rewarding careers—among Extension’s diverse educational programs. Examples include:

• WVU Extension’s 4-H program builds leaders who have the confidence that comes from learning by doing. Through clubs, special interest programs, camping, school enrichment, child care, and individual study, 4-H reaches more than 44,000 youths and 7,600 adults statewide.

• Diabetes is a major problem in West Virginia. Extension’s Dining with Diabetes is helping families learn how to select, prepare, and enjoy food that supports healthful eating habits. Each year, more than a thousand diabetes cooking school students attend classes in their own communities and learn how to plan and prepare meals that are appealing, tasty, and healthful.

• Thousands of children in rural and low-income communities nourish their bodies and minds through the summertime Energy Express program. A partnership of WVU Extension and state and local organizations, the program helps children build critical reading skills while providing nutritious meals and valuable mentoring.

• The First Impressions program offers West Virginia communities frank, detailed assessments of what works and what doesn’t, as seen through the eyes of strangers. The towns of Grantsville, Grafton, and Logan are using this Extension program to make immediate improvements and guide long-term development.

• Each year, more than 13,000 firefighters and emergency responders throughout West Virginia improve their skills through training offered by WVU’s Fire Service Extension. These programs help fire department personnel meet national certification standards and enhance their ability to protect people and property in their communities.

• More than 100 companies throughout West Virginia look to the Appalachian Hardwood Center at WVU for training and technical assistance. These companies get help in locating markets for finished products and wood residues, developing grading data for sawmills, and identifying and resolving manufacturing problems.
• Helping West Virginia workers stay well and injury-free is the goal of WVU’s Safety and Health Extension. Industrial safety specialists teach employers and their workers how to protect themselves and the public from potential hazards encountered on the job.

• The WVU Extension Service has a long tradition of land stewardship. Each year, more than 9,000 farmers and gardeners seek information on ways to make their land more productive by having their soil laboratory-tested at WVU. Extension agents interpret the results and provide site-specific recommendations for fertility management.

• WVU’s International Extension programs open a window to the world. Through international exchange programs, educational camps, and development projects and research studies abroad, West Virginians are learning how to cross culture and language barriers to form productive, rewarding partnerships in the global village.

At the core of a new administrative framework for Extension are a special-mission campus and three major program centers that combine field operations and campus-based program divisions. The special-mission campus is WVU Jackson’s Mill Center for Lifelong Learning and State 4-H Camp. Located near Weston, WVU Jackson’s Mill annually draws more than 110,000 guests, who enjoy the 525-acre retreat facility’s conference, camping, and heritage facilities.

The Extension program centers are (1) Community, Economic, and Workforce Development, (2) Agricultural and Natural Resources Development, and (3) 4-H and Youth, Family, and Adult Development. Those themes reflect major areas identified by Extension faculty and clientele in statewide needs inventories. The program center model offers a "more natural" way for Extension faculty to be aligned as they work together to develop and deliver educational programs.

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.

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 determine the duration of appointments during regular semester and summer sessions.

For more information, contact the WVU Extension Service at (304) 293-5691; or write to 808 Knapp Hall, P.O. Box 6031, Morgantown, WV 26506-6031.
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