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 2008–2010 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, 2008.

http://www.wvu.edu
West Virginia University Calendar
2008*

Spring Semester 2008

January 10.................................................................................................................. Student Orientation
January 11.................................................................................................................. General Registration
January 14.................................................................................................................. Late Registration Fee in Effect
January 14.................................................................................................................. First Day of Classes
January 18.................................................................................................................. Last Day to Register, Add Courses, Make Changes,
Change Pass/Fail and Audit
January 21.................................................................................................................. Martin Luther King’s Birthday Recess
February 4................................................................................................................. ETD Seminar
February 7.................................................................................................................. Chinese New Year (Day of Special Concern)
February 29............................................................................................................. Mid-Semester
March 4...................................................................................................................... Mid-Semester Reports Due
March 21.................................................................................................................... Last Day to Drop Class
March 21.................................................................................................................... Naw-Ruz (Day of Special Concern)
March 21.................................................................................................................... Friday before Easter (Recess)
March 22 through March 30...................................................................................... Spring Recess
April 20...................................................................................................................... Passover (Day of Special Concern)
April 21...................................................................................................................... Feast of Ridvan (Day of Special Concern)
May 1.......................................................................................................................... Last Day to Withdraw from University
May 2, 2008............................................................................................................. Last Day of Classes
May 5 through 10..................................................................................................... Finals Week
May 9............................................................................................................................. ETD Submission Deadline
May 14....................................................................................................................... Grade Reports for Graduates Due in Dean’s Office
May 14....................................................................................................................... Dean’s Reports on Graduates Due in ARC
May 16 through 17................................................................................................... Commencement Weekend
May 17.......................................................................................................................... Alumni Day
May 18....................................................................................................................... Commencement

Summer Session A - B 2008

May 19..................................................................................................................... Summer 12-Week Session Registration
May 26....................................................................................................................... Memorial Day Recess
June 27..................................................................................................................... Final Exam for First Six Week Session
July 4......................................................................................................................... Independence Day Recess
August 7.................................................................................................................. Final Exam for 12-Week Session
August 8.................................................................................................................. Degree Conferring Date (No Ceremonies)
August 8.................................................................................................................. ETD Submission Deadline

Fall Semester 2008

August 13 through 15............................................................................................... New Student Orientation
August 15.................................................................................................................. General Registration
August 18.................................................................................................................. On Campus First Day of Classes
August 18.................................................................................................................. Late Registration Fee in Effect
August 22.................................................................................................................. Last Day to Register, Add New Courses, Make Section Changes,
Change Pass/Fail and Audit
September 1............................................................................................................. Labor Day Recess
September 2............................................................................................................ First Day of Ramadan (Day of Special Concern)
September 30......................................................................................................... Rosh Hashanah (Day of Special Concern)
October 2.................................................................................................................. Eid-al-Fitr End of Ramadan (Day of Special Concern)
October 2.................................................................................................................. Mid-Semester
October 7.................................................................................................................. Mid-Semester Reports Due
October 9.................................................................................................................. Yom Kippur (Day of Special Concern)
October 24............................................................................................................. Last Day to Drop a Class
November 4............................................................................................................ General Election Day
November 12.......................................................................................................... Birth of Baha’u’llah (Day of Special Concern)
November 22 through 30....................................................................................... Thanksgiving Recess
December 4............................................................................................................. Last Day to Withdraw from University
December 5............................................................................................................. Last Day of Classes
December 7............................................................................................................. December Convocation
December 8 through 13.......................................................................................... Final Examination Week
December 12.......................................................................................................... ETD Submission Deadline
December 14........................................................................................................... Eid-al-Adha (Day of Special Concern)
December 14........................................................................................................... Winter Break Begins
December 14........................................................................................................... On Campus First Day of Classes
December 29........................................................................................................... Degree Conferring Date

*See http://calendar.wvu.edu/ for more calendars.
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West Virginia Higher Education Governance*
Joe Manchin III, Governor

West Virginia Higher Education Policy Commission
David Richard Tyson, Esq., Huntington, Chairman
David K. Hendrickson, Esq., Vice Chairman
J. Thomas Jones, Morgantown, Secretary
John Estep, Morgantown
Cindy Largent-Hill, Berkeley Springs
Ex-Officio, Charleston, Chair, WV Council for Community and Technical College Education
Kay H. Goodwin, Ex-Officio, Secretary of Education the Arts
Dr. Steven L. Paine, Ex-Officio, State Superintendent of Schools
Nelson B. Robinson Jr., Ex-Officio, Chair, WV Council for Community and Technical College Education

West Virginia University Board of Governors
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Jason A. Parsons, Student Representative

*Current as of February, 2008.

West Virginia University is governed by the West Virginia University Board of Governors and the West Virginia Higher Education Policy Commission. Mike Garrison is the 22nd President of West Virginia University.

West Virginia University is a member of the Higher Learning Commission. The University’s educational programs are accredited by the Higher Learning Commission (NCA) of Colleges and Schools 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
http://www.wvu.edu/~acadaff

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

Graduate Programs
Office of Graduate Education
West Virginia University
P.O. Box 6203
Morgantown, WV 26506-6203
Phone: (304) 293-7173  Fax: (304) 293-7554
http://www.wvu.edu/~graduate

Housing and University Apartments
West Virginia University
P.O. Box 6430
Morgantown, WV 26506-6430
Phone: (304) 293-4491  Fax: (304) 293-4825
housing.wvu.edu

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) 293-4544
http://www.finaid.wvu.edu

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

Senior Administrators

President, Michael S. Garrison
Provost and Vice President for Academic Affairs and Research, Gerald E. Lang
Chief of Staff, Craig Walker
Executive Officer for Communications, Bill Case
Executive Officer for Policy Development, Jennifer Fisher
Vice President, Administration and Finance, Narvel Weese
Vice President, University Advancement and Marketing, Christine M. Martin
Interim Vice President, Health Sciences, Fred Butcher
Vice President, Student Affairs, Kenneth D. Gray
Interim Vice President for Research and Economic Development, Curt Peterson
Vice President, Legal Affairs, Alex Macia
Campus Provost, WVU Potomac State College, Kerry Odell
Campus President, Community and Technical College at WVU Institute of Technology, Beverly Jo Harris
Campus Provost, WVU Institute of Technology, Charles Bayless
Regional Vice President and President of WVU at Parkersburg, Marie Foster Gnage
Executive Officer for Social Justice, Jennifer A. McIntosh
Senior Associate Provost, Russell K. Dean
Associate Provost for Academic Programs, Cheryl Torsney
Associate Provost for Academic Personnel, C. B. Wilson
Associate Provost for Extension and Public Service, David Miller
Associate Provost for Information Technology, Sidney Morrison
Associate Vice President for Finance, Dan Durbin
Sr. Associate Vice President for Health Sciences, Fred R. Butcher, Ph.D. (Interim)
Associate Vice President of Finance, Health Sciences, Daniel A. Durbin (Interim)
Associate Vice President for Rural Health, Hilda Heady
Associate Vice President for Research and Graduate Studies—HS, Thomas Saba, Ph.D.
Associate Vice President for Health Sciences—Charleston Division, L. Clark Hansbarger, M.D.
Associate Vice President for Health Sciences-Eastern Division, Mitch Jacques, M.D., Ph.D.
Associate Vice President and Dean of Students, David Stewart
Assistant Vice President of Student Affairs, Michael Ellington
Assistant Vice President for Graduate Education, Jonathan Cumming
President and CEO, West Virginia University Alumni Association, Steve Douglas
President, West Virginia University Hospitals, Inc, Bruce McClymonds
Chair, West Virginia University Faculty Senate, Steve Kite/Virginia Kleist
Chair, West Virginia University Staff Council, Terry Nebel
President, West Virginia University Student Body, Jason Parsons
Special Assistant to the President, Valerie Lopez
Special Assistant to the Provost, Jessica Thomas
Executive Assistant to the President, Sara A. Master

Deans

College of Business and Economics, Stephen Sears
College of Creative Arts, Bernard Schultz
College of Engineering and Mineral Resources, Eugene V. Cilento
College of Human Resources and Education, Dee Hopkins
College of Law, John W. Fisher III
College of Physical Activity and Sport Sciences, Dana D. Brooks
Davis College of Agriculture, Forestry, and Consumer Sciences, Cameron R. Hackney
Dean of Students, David Stewart
Eberly College of Arts and Sciences, Mary Ellen Mazey
Extended Learning, Sue Day-Perroots
Honors College, Keith Garbutt
Perley Isaac Reed School of Journalism, Maryanne Reed
School of Dentistry, Louise Veselicky (Interim)
School of Medicine, James Brick
School of Nursing, Georgia Narsavage
School of Pharmacy, Patricia A. Chase
University Libraries, Frances O’Brien
Directors
AAO/EEO Program, ADA Compliance, Jennifer McIntosh
Academic Information Services, Sidney Morrison
Accounting and Financial Systems, Anjali Halabe
Admissions and Records, Cheng Khoo
Aerospace Studies, Edwin Parks
Alumni Association, Stephen L. Douglas
Athletics, Edward M. Pastilong
Blanchette Rockefeller Institute of Neuroscience, Mark A. Cochran
Planning and Treasury Operations, Liz Reynolds
Bureau of Business and Economic Research, Tom S. Witt
Business Services Office, Geraldine M. Ireland
Career Services Center, David L. Durham
Carruth Center for Counseling, Catherine A. Yura
Center for Black Culture and Research, Todd McFadden (Interim)
Center for Chinese Business, William B. Riley Jr.
Center for Women’s Studies, Vacant
Center for Writing Excellence, Laura Brady
Center on Aging, Alan M. Ducatman (Interim)
Creative Services, Angela M. Caudill
Cultural Resource Management Program, Chad Proudfoot
Dining Services, David Friend
Environmental Health and Safety Office, Roger L. Pugh
Financial Services, Lisa Lively
Financial Aid, Kaye Widney
Institute for Public Affairs, Kevin Leyden
Institute of Occupational Environmental Health, Christopher Martin
Institutional Research, Roberta Dean
Internal Auditing, William R. Quigley
International Programs, Dan Weiner
Mary Babb Randolph Cancer Center, Scott C. Remick
Military Science, Lt. Col. Daniel S. Albert
Mountainlair, Michael A. Ellington
National Research Center for Coal and Energy, Richard Bajura
News and Information Services, Amy Neil
Parents Club, Sabrina Cave
Physical Plant, Randy Hudak
Physical Plant HSC, Gary B. Miller
Printing Services, Jerry Ireland
Procurement Services, Philip Charneskie
Public Safety/Police Department, Robert E. Roberts
Regional Research Institute, Randall W. Jackson
Research Corporation, Curt Peterson (Interim)
Sponsored Programs, Alan B. Martin
Student Health Services, Jan Palmer
Student Recreation Center, David H. Taylor
Technology Transfer, Bruce Sparks
Telecommunications, Timothy P. Williams
Television Productions, John E. Duwall
Undergraduate Academic Services Center, Anita Mayer
University Affiliated Center for Developmental Disabilities, Ashok Dey
Visitors Center, Danica Ann Gorby
WVU Press, Patrick W. Conner
Distinguished Professors

Katherine Aaslestad, Woodburn Professor of History (ECAS)
Gerald G. Ashdown, James H. “Buck” and June M. Harless Professor of Law
Robert M. Bastress, John W. Fisher II Professor of Law
Chris Bise, Charles T. Holland Professor of Mining Engineering
Robert E. Blobaum, Eberly Family Distinguished Professor of History
Paula F. Bone, Nathan Haddad Professor of Business Administration
Melanie Booth-Butterfield, Peggy Rardin McConnell Chair of Speech Communications
Laura Brady, Eberly Distinguished Professor of Outstanding Teaching (in ECAS)
James E. Brick, Dr. Edmund B. Flink Chair of Internal Medicine
Jim Brown, K-Mart Corporation Chair of Marketing
Jonathan Burton, Woodburn Professor of English (ECAS)
Vincent P. Cardi, Bowles, Rice, McDavid, Graff & Love Professor of Law
Peter Carmichael, Eberly Family Professor of Civil War Studies
Tim Carr, Marshall S. Miller Energy Professor of Geology
Linda M. Carson, Ware Distinguished Professor of Physical Education
William H. Carter, Warren Point Chair of Internal Medicine
Patricia Chase, Gates E. Wigner Dean of Pharmacy
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
Robert Dailey, Davis-Michael Professor of Animal and Veterinarian Sciences
Julio Davalos, Claude W. Benedum Professor for Outstanding Teaching
M. Yusoff Dawood, Margaret Sanger Chair of Family Planning and Reproductive Physiology
Robert DiClerico, Eberly Family Professor for Outstanding Teaching
Charles R. DiSalvo, Woodrow A. Potesta Professor of Law
Barry A. Edelstein, Eberly Family Distinguished Professor of Clinical Psychology
Boyd Edwards, The Ruth and Russell Bolton WVU Professor of Outstanding Teaching
John Ernest, Eberly Family Distinguished Professor of American Literature
Ali Feliachi, Electric Power Systems Professor of Engineering
Donald C. Fidler, Dana L. and Peggy M. Farnsworth Chair of Educational Psychiatry
John W. Fisher, II, The William J. Maier, Jr. Dean
Mathis P. Frick, O. F. Gabriele Chair of Radiology
James J. Friedberg, Hale J. and Roscoe P. Posten Professor of Law
Takanori Fukushima, Hazel Ruby McQuain Neurosurgery Chair
Frank Gagliano, Claude W. Benedum Professor of Theatre
Keith Garbutt, Eberly Family Professor for Outstanding Teaching
Robert L. Goodman, E. J. Van Liere Professor
Rakesh K. Gupta, George and Carolyn Berry Professor of Chemical Engineering
Ludwig Gutmann, Hazel Ruby McQuain Chair of Neurological Research
Joseph Hagan, Barnette Professor of Political Science (in ECAS)
Donald E. Hall, Jackson Family Distinguished Chair of English
Jack Hammersmith, Eberly Family Professor for Outstanding Public Service
Trevor M. Harris, Eberly Family Professor of Geography
Alison Helm-Snyder, J. Bernard Schultz Endowed Professor of Art
JoAnn Hornsby, Interim Hazel Ruby McQuain Arthritis/Rheumatic Disease Chair
Timothy Jackson, Charles E. “Jim” Compton Chair of Nutrition
Abnash Jain, Abnash C. Jain Distinguished Professorship in Cardiology
Thomas Kammer, Eberly College Centennial Professor of Geology
Mark Koepeke, Robert C. Byrd Professorship
Kennon A. Lattal, Eberly College Centennial Professor of Psychology
Richard D. Layne, Grace Kinney Mead Chair of Geriatrics
Ronald L. Lewis, Stuart and Joyce Robbins Chair of History
Huey Hannah Lin, J. Vance & Florence Highland Johnson Teaching Professor of Chinese Studies
John Linberg, Jane McDermott Shott Chair of Ophthalmology
Toni Locy, Shott Chair of Journalism
Diana Knott Martineelli, Widmeyer Communications Professor of Public Relations
Robert S. Maust, Louis F. Tanner Distinguished Professor of Public Accounting
Michael Mays, Eberly Distinguished Professor of Outstanding Teaching (in ECAS)
Joyce E. McConnell, Thomas R. Goodwin Professor of Law
Marjorie A. McDiarmid, Steptoe & Johnson Professor of Law and Technology
Gerald McGonigle, Mabel DeVries Tanner Endowed Professor of Theatre and Dance
James McGraw, Eberly Family Professor of Biology
James A. McLaughlin, Robert L. Shuman Professor of Law
Daniel McNeil, Eberly Family Professor for Outstanding Public Service
George O’Doherty, Woodburn Professor of Chemistry (ECAS)
John Parker, N. Leroy Lapp Professor of Pulmonary and Critical Care Medicine
Julie Patrick, Woodburn Professor of Psychology (ECAS)
Syd S. Peng, Charles E. Lawall Chair of Energy Resources
William P. Petros, Mylan Chair of Pharmacology
Christopher Plein, Eberly Family Professor for Outstanding Public Service
John Prescott, McGarvey Dean’s Endowment
Elizabeth T. Quilliam, Harrison/Omnicom Professor of Advertising
Scot Remick, Laurence & Jean DeLynn Chair of Oncology
John Renton, Eberly Family Professor for Outstanding Teaching
Richard A. Riley, Louis F. Tanner Distinguished Professor of Public Accounting
Terry L. Rose, Ernest L. Hogan Chair of Life Insurance
Kenneth Showalter, C. Eugene Bennett Chair of Chemistry
Russell S. Sobel, James Clark Coffman Distinguished Chair of Entrepreneurial Studies
Janice Spleth, Armand E. and Mary Singer Professorship of the Humanities (ECAS)
Donley Studlar, Eberly Family Professor of Political Sciences
Jeff Wells, Woodburn Professor of Biology (ECAS)
Stephen Wetmore, Romeo Lim & Maria Lim Chair of Otolaryngology
Brian D. Woerner, Stephanie and Raymond J. Lane Endowed Professor
John Zaniewski, Asphalt Technology Professor of Civil and Environmental Engineering
*Forest J. Bowman, Jackson & Kelly Professor of Law, Emeritus
*Bernard R. Cooper, Claude W. Benedum Professor of Physics, Emeritus
*William H. Mientyk, Claude W. Benedum Professor of Economics, Emeritus
*Hayne W. Reese, Centennial Professor of Psychology, Emeritus
*Carl Rotter, Eberly Family Professor for Outstanding Teaching, Emeritus

* = Emeritus Status 1/29/08
General Information

Established in 1867, West Virginia University (WVU) is the state’s only research, doctoral degree granting, land-grant university. WVU provides high-quality programs of instruction, offering 179 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. 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.

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 Morrill Acts of 1862 and 1890, which 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 a center of graduate and professional education, research, and extension programs in West Virginia.

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 22:1. Enrollment in one of the University’s 15 colleges and schools offers students the warmth and friendliness of a small academic community. The diversity of our student body is evident in the Fall 2007 enrollment of more than 27,000 students, with all 55 counties of West Virginia, 49 states, and nearly 100 other countries represented. WVU has produced 25 Rhodes Scholars, 18 Truman Scholars, 30 Goldwater Scholars, two British Marshall Scholars, and two Morris Udall Scholars.

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 35,000 students. The WVU system has an annual budget in excess of $749 million.

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. 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.

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 several Extended Learning Regional Centers throughout the state.

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-nineteenth-century life at Jackson’s Mill.

The Graduate Catalog

The policies and rules for graduate education and student’s rights, privileges, obligations, and responsibilities are contained in this graduate catalog. 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. Each student beginning graduate study should obtain the latest information by examining the online (coursecatalog.wvu.edu) version of the current graduate catalog. Additional agreements are made between graduate students and their departments and/or colleges through the plan of study. The University reserves the right to unilaterally change, delete, supplement, or otherwise amend, without prior notice, the graduate catalog, and any such amendments shall apply to all enrolled students, regardless of when they enrolled.
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.

WVU’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 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. Through these interactions, WVU nurtures 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.

Instruction

Degrees are awarded at the baccalaureate, master’s, doctoral, and professional levels. The University offers approximately 140 graduate degree programs as well as 13 graduate certificates programs through the departments/divisions of 15 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. Master’s degrees in Journalism, Advertising, and Integrated Marketing Communications.
- The School of Dentistry, including the Departments of Dental Hygiene, Endodontics, Orthodontics, and Restorative Dentistry.
- 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, Physical Therapy, Physiology a Phamacy, Public Health, Radiology, Surgery, and Urology, and the HSC branch campus at Charleston.
• The School of Nursing, including the Department of Health Promotion and Risk Reduction and the Department of Health Restoration.
• The School of Pharmacy, including the Departments of Basic Pharmaceutical Sciences, Clinical Pharmacy, and Pharmaceutical Systems and Policy.
• The College of Physical Activity and Sport Sciences, including the Department of Coaching and Teaching Studies and the Department of Sport Studies.
• Potomac State College of West Virginia University.
• West Virginia University Institute of Technology.

The University conducts graduate studies in Morgantown as well as 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. Advanced studies, in the form of research and scholarship, is the cornerstone of the Ph.D. degree and is a component of many master’s degrees. Graduate students, by virtue of their involvement in such scholarly activities, are trained to advance knowledge in their respective fields, expand the understanding of society and society’s challenges, and create new artistic endeavors to enlighten humanity. The assessment of the quality of both research and scholarship is given heavy weight in tenure, promotion, and other personnel decisions affecting faculty members.

Research and scholarship occurs throughout all schools and colleges at West Virginia University. Currently, faculty, centers, and institutes across the university support over $150 million in externally-funded research. Within the university, graduate student research is supported by these grants as well as by research support funds provided by individual schools and colleges. The WVU Research Corporation facilitates and coordinates granting activities and provides research funding options for new research undertakings and centers across the university.

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 Bureau on Business and Aging, the Institute for Public Affairs, the Center for Women’s Studies, the Economic Research, the Harley O. Staggers National Transportation Center, the Appalachian Hardwood Center, the Concurrent Engineering Research Center, the Institute of Occupational Health and Safety, 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.
Government and Organization of WVU

Effective July 1, 2001, the West Virginia Board of Governors was vested by law with the authority for the control and management of the University. The board includes 12 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. 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, which 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 classifications. Laborer’s Local 814 is the only recognized union at the University by agreement through the Memorandum of Accord.

University Support Services

University Libraries

The West Virginia University Libraries include the new Downtown Campus Library, opened in 2002, the renovated Charles C. Wise Jr. Library, the Evansdale Library, the Health Sciences Library, located in the Robert C. Byrd Health Sciences Center, and the Law Library, located in the Law School.

The WVU Libraries provide access to electronic resources 24 hours a day at http://www.libraries.wvu.edu. These resources include the online catalog, journal articles references and abstracts, encyclopedias, and dictionaries. Library databases are accessible at library workstations, in all WVU academic computing sites, and from all computer connections in residence halls, offices, and off-campus sites that can access the WVU computing network.

The WVU Libraries’ collections parallel the University’s academic offerings. Books, periodicals, electronic resources, microforms, government publications, databases, maps, manuscripts, media, and access to information via the Internet provide a major academic resource for students and faculty. Also, library staff members provide a wide range of in-person and online services including reference assistance, circulation, interlibrary loan, and library instruction.

The WVU’s Libraries onsite collections include over 1.5 million books and 31,848 current journal subscriptions. In keeping with WVU’s mission of technological excellence, the WVU Libraries offer students high-speed public use computers, Ethernet connections, wireless access points, electronic access to more than 177 networked databases, and more than 10,000 online full-text electronic journals. Through the Libraries’ membership in the Pennsylvania Academic Library Consortium, WVU students and faculty have access to 36 million books in 50 member libraries. The West Virginia and Regional History Collection houses manuscripts, folk music, newspapers, photographs, and public records, and is the foremost historical library and archive in the state. The Libraries’ Appalachian Collection is one of the nation’s best resources for Appalachian regional culture. The WVU Libraries are a depository library for U.S. government publications, and the Evansdale Library is a patent depository for U.S. patents.
The WVU Libraries are innovators in identifying, acquiring, and making accessible a broad range of electronic library resources. The Libraries constantly update technology and add resources to provide the most current and convenient information resources and services to its users. The Libraries were pioneers in the management of electronic theses and dissertations and in electronic course reserves.

Library hours vary with the academic term and are available online.

**Office of Information Technology**

The vision for WVU-OIT is to empower the University community through information technology, to enrich the academic experience for students, and to strengthen the ability of faculty and staff to teach, conduct research, and to provide public service throughout West Virginia and beyond.

Academic Information Services (oit.wvu.edu/labs/) administers public computing facilities used by students, faculty, and staff. AIS provides high technology classrooms that can be reserved for short-term use to support educational activities. In addition to managing the staff, facilities, and the technology available in the computer labs and classrooms, AIS also provides support for the technology used in the campus-wide paid printing system. AIS provides test, quiz, and survey scanning services for faculty members on campus and also developed the technology and services related to the Student Evaluation of Instruction (labs.wvu.edu/sei).

The OIT Help Desk provides telephone-based, e-mail, and self-service for a broad range of technical support across campus. A listing of OIT services is available at oit.wvu.edu/helpdesk/.

The Classroom Technologies Group (CTec) provides a classroom technologies multimedia system to distribute audio and video to any networked electronic classroom throughout the WVU campus (oit.wvu.edu/ctec/).

OIT offers two kinds of WiFi network access (encrypted and unencrypted) at various locations on campus. Access to the networks is free of charge (oit.wvu.edu/wireless/).

Technical Support Services provides free technical training workshops to faculty, staff, and students (oit.wvu.edu/tss/).

**Instructional Technology Resource Center**

The Instructional Technology Resource Center (itrc.wvu.edu) is an instructional development resource facility for faculty to assist in the development of technology-based instructional materials, such as multimedia and Web course development. The ITRC supports WebCT, the Web-based course management tool in use at WVU.

**Office of Social Justice**

West Virginia University’s role as the doctoral degree-granting, research, land-grant university 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, veterans, and persons of different religions, sexual orientations, ages, and international, ethnic, and economic backgrounds benefit from the many opportunities the institution provides.

In keeping with this responsibility, 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 strengthening the University itself and enhancing its ability to accomplish the missions entrusted to it by the people and the State of West Virginia.
Disability Services
The Office of Disability Services is located at G30 Mountainlair, phone (304) 293-6700, http://www.wvu.edu/~socjust/disability. 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 for students with visible impairments 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 also contact WVU Admissions and Records, (304) 293-2121, or 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.

Housing and University Apartments
The University owns or operates 14 residence halls with a capacity of approximately 5,200. 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 Office of Housing and University Apartments 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 or online at housing.wvu.edu.

Branch Campuses

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 undergraduate liberal arts and sciences and pre-professional studies. See http://www.potomacstatecollege.edu for more information.

West Virginia University Institute of Technology
The West Virginia University Institute of Technology is WVU’s southernmost campus. Located in Montgomery, WVU Tech serves the region and the state by preparing students at the associates’, baccalaureate, and master’s levels for careers in the basic and applied sciences. WVUIT 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. See http://www.wvutech.edu for more information.

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 undergraduate educational programs that meet the broad educational goals of area residents. See http://www.wvup.edu for more information.
Morgantown Area

Greater Morgantown has 28,000 permanent residents; Monongalia County, 85,000. 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 40 inches of precipitation a year. 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 Appalachian research center. Four federal agencies have research facilities in the area: Department of Health and Human Services (National Institute for Occupational Safety and Health), Forest Service (Forestry Sciences Laboratory), National Energy Technology Laboratory of the Department of Energy, and the Natural Resource Conservation Service (West Virginia headquarters).
Graduate Education at West Virginia University

Graduate education at West Virginia University began in the late 1800s, with the awarding of the first master's degree in 1899 and the first doctoral degrees in 1932. Over the years, graduate education has grown to become a significant enterprise at WVU, with the awarding of 1,459 master's degrees in 80 fields and 148 doctorates in 42 fields in 2007. These advanced degrees are awarded for specialized training in the full spectrum of academic programs across West Virginia University and reflect the mastery of knowledge, attainment of technical capabilities, and creation of new work needed for students to advance in their careers or practice in their chosen fields of study.

While enrolled in graduate study at WVU, graduate students have the opportunity to work in close collaboration with expert faculty and have access to state-of-the-art facilities needed to excel in the students’ desired field of study. At the same time, graduate students have opportunities for professional and personal growth provided by the greater community of scholars represented by the university. Thus, graduate study at WVU provides a foundation and catalyst for advanced training leading to careers in a abroad range of disciplines.

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 13 graduate certificates, 80 master’s degrees, and 42 doctoral degrees. These graduate programs are administered by 13 schools and colleges of the University and by interdisciplinary programs. West Virginia University has been designated “Research Activity High” in the Carnegie Classification of Institutions of Higher Education.

Office of Graduate Education and Life

The assistant vice president for 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 assistant vice president reports to the provost and oversees program evaluation and policy and procedure issues related to graduate education. Additional information on graduate education governance may be obtained by going to http://www.wvu.edu/~graduate or calling (304) 293-7173.

Graduate Council

The University Graduate Council consists of 16 elected faculty representatives from the schools and colleges offering graduate programs and five ex-officio non-voting members representing the provost, the vice president for Graduate Education, the vice president for health sciences, the Senate Executive Committee. 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 oversight of graduate programs both on and off campus.

Schools and Colleges

Schools, colleges, and their departments 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 program coordinators in each unit are responsible for graduate assistantship appointments, tracking student progress, academic code issues, and maintaining graduate student academic and personnel files.
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. Answers to additional questions may be sought from: Admissions and Records, 1170 Health Sciences Center North, P.O. Box 9815, Morgantown, WV 26506-9815; (304) 293-3521.

Graduate Degree Programs Offered by WVU

<table>
<thead>
<tr>
<th>Program</th>
<th>Master’s</th>
<th>Doctoral/Professional</th>
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<tr>
<td><strong>College of Business and Economics</strong></td>
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<tr>
<td>Business Administration</td>
<td>M.B.A.</td>
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<tr>
<td>Economics</td>
<td>M.A.</td>
<td>Ph.D.</td>
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<tr>
<td>Industrial Relations</td>
<td>M.S.</td>
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<tr>
<td>Professional Accountancy</td>
<td>M.P.A.</td>
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<tr>
<td><strong>College of Creative Arts</strong></td>
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<tr>
<td>Art</td>
<td>M.A., M.F.A.</td>
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<tr>
<td>Music</td>
<td>M.M., M.A., Ph.D.</td>
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<tr>
<td>Theatre</td>
<td>M.F.A.</td>
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<tr>
<td>Visual Art</td>
<td>M.F.A.</td>
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<tr>
<td><strong>College of Engineering and Mineral Resources</strong></td>
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<tr>
<td>Aerospace Engineering</td>
<td>M.S.A.E.</td>
<td>Ph.D.</td>
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<tr>
<td>Chemical Engineering</td>
<td>M.S.Ch.E.</td>
<td>Ph.D.</td>
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<tr>
<td>Civil Engineering</td>
<td>M.S.C.E.</td>
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<tr>
<td>Computer Engineering</td>
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<td>Ph.D.</td>
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<tr>
<td>Computer Science</td>
<td>M.S.C.S.</td>
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<tr>
<td>Electrical Engineering</td>
<td>M.S.E.E.</td>
<td>Ph.D.</td>
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<tr>
<td>Engineering</td>
<td>M.S.E.</td>
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<tr>
<td>Industrial Engineering</td>
<td>M.S.I.E.</td>
<td>Ph.D.</td>
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<tr>
<td>Industrial Hygiene</td>
<td>M.S.</td>
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<tr>
<td>Mechanical Engineering</td>
<td>M.S.M.E.</td>
<td>Ph.D.</td>
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<tr>
<td>Mining Engineering</td>
<td>M.S.M.E.</td>
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<tr>
<td>Petroleum &amp; Natural Gas Engineering</td>
<td>M.S.P.N.G.E.</td>
<td>Ph.D.</td>
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<td>Safety Management</td>
<td>M.S.</td>
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<tr>
<td>Software Engineering</td>
<td>M.S.S.E.</td>
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<tr>
<td><strong>College of Human Resources and Education</strong></td>
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<tr>
<td>Audiology</td>
<td>Au.D.</td>
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<tr>
<td>Child Development &amp; Family Studies</td>
<td>M.A.</td>
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<tr>
<td>Counseling</td>
<td>M.A.</td>
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<tr>
<td>Counseling Psychology</td>
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<td>Ph.D.</td>
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<tr>
<td>Curriculum and Instruction</td>
<td>Ed.D.</td>
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<tr>
<td>Early Childhood Education</td>
<td>M.A.</td>
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<tr>
<td>Education</td>
<td>Ed.D.</td>
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<tr>
<td>Educational Leadership</td>
<td>M.A.</td>
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<tr>
<td>Educational Psychology</td>
<td>M.A.</td>
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<tr>
<td>Elementary Education</td>
<td>M.A.</td>
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<tr>
<td>Reading</td>
<td>M.A.</td>
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<tr>
<td>Rehabilitation Counseling</td>
<td>M.S.</td>
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<tr>
<td>Secondary Education</td>
<td>M.A.</td>
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<tr>
<td>Special Education</td>
<td>M.A., Ph.D.</td>
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<tr>
<td>Speech Pathology and Audiology</td>
<td>M.S.</td>
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</table>
College of Law
Law ................................................................. J.D.

College of Physical Activity and Sport Sciences
Athletic Coaching Education ................................ M.S.
Athletic Training ................................................. M.S.
Physical Education Teacher Education ............... M.S. .................................................. Ph.D.
Sport and Exercise Physiology ......................... Ph.D.
Sport Management .......................................... M.S.

Davis College of Agriculture, Forestry, and Consumer Sciences
Agricultural and Extension Education ................ M.S.
Agricultural and Resource Economics ............... M.S.
Agriculture, Forestry, and Consumer Sciences .... M.Agr.
Animal and Nutritional Sciences ...................... M.S.
Forest Resource Science ........................................ Ph.D.
Forestry ........................................................... M.S.F.
Genetics and Developmental Biology .................. M.S. ........................................ Ph.D.
Human Nutrition and Foods .............................. M.S.
Natural Resources Economics ............................ Ph.D.
Plant and Soil Sciences ....................................... M.S.
Recreation, Parks, and Tourism Resources .......... M.S.
Reproductive Physiology .................................... M.S. ........................................ Ph.D.
Wildlife and Fisheries Management .................. M.S.

Eberly College of Arts and Sciences
Biology .............................................................. M.S. ........................................ Ph.D.
Chemistry ........................................................ M.S. ........................................ Ph.D.
Communication Studies .................................... M.A. ........................................ Ph.D.
Creative Writing .............................................. M.F.A.
English ............................................................ M.A. ........................................ Ph.D.
Foreign Languages .......................................... M.A.
Geography ....................................................... M.A. ........................................ Ph.D.
Geology ........................................................... M.S. ........................................ Ph.D.
History ............................................................ M.A. ........................................ Ph.D.
Liberal Studies ................................................ M.A.L.S.
Mathematics .................................................... M.S. ........................................ Ph.D.
Physics ........................................................... M.A/M.S. .................................. Ph.D.
Political Science .............................................. M.A. ........................................ Ph.D.
Professional Writing and Editing ....................... M.A.
Psychology ...................................................... M.A./M.S. .................................. Ph.D.
Statistics ........................................................ M.S.

School of Applied Social Sciences
Legal Studies ..................................................... M.L.S.
Public Administration ....................................... M.P.A.
Social Work ..................................................... M.S.W.
Sociology ......................................................... M.Soc.

Perley Isaac Reed School of Journalism
Integrated Marketing Communications ............... M.S.
Journalism ....................................................... M.S.J.
School of Dentistry
Dental Hygiene.................................................................M.S.
Dentistry .................................................................................D.D.S.
Endodontics ........................................................................M.S.
Orthodontics ........................................................................M.S.
Prosthodontics .....................................................................M.S.

School of Medicine
Biochemistry and Molecular Biology ....................................M.S., Ph.D., M.D./Ph.D.
Cancer and Cell Biology ......................................................Ph.D., M.D./Ph.D.
Exercise Physiology ............................................................M.S., Ph.D., M.D./Ph.D.
Immunology and Microbial Pathogenesis ..............................M.S., Ph.D., M.D./Ph.D.
Medicine ..............................................................................M.D.
Neuroscience .......................................................................Ph.D., M.D./Ph.D.
Occupational Therapy ..........................................................M.O.T.
Pathologist's Assistant .........................................................P.A.
Pharmaceutical and Pharmacological Sciences ......................Ph.D., M.D./Ph.D.
Physical Therapy ..................................................................D.P.T.
Physiology (Medical) ............................................................M.S., Ph.D., M.D./Ph.D.
Public Health .......................................................................M.P.H., M.D./M.P.H.

School of Nursing
Nursing ............................................................................M.S.N., D.N.P., Ph.D.

School of Pharmacy
Pharmacy ............................................................................Pharm.D.

In addition to these fields of study, WVU offers 13 graduate certificate programs in various interdisciplinary areas in support of graduate education. These certificate programs can be viewed at http://www.wvu.edu/~graduate/certificate_programs.html.

Application for Graduate Study

Initial Inquiry
Prospective graduate students are urged to initially contact individual programs regarding opportunities to pursue graduate study in the program of interest. In addition to obtaining information online or through the mail, students should contact graduate program directors or individual faculty members to ascertain the potential for graduate study in particular academic and research areas.

Students should apply for admission as early as possible to the department, division, school, or college offering the program of interest. Information relevant to the application process can be found on the Web at http://www.admissions.wvu.edu/graduate with additional information regarding the program of interest on the individual program's Web site.

Minimum Admission Standards
The University Graduate Council establishes the minimum standards for admission to graduate study. Beyond this point, however, faculty members in a given graduate program control who is to be admitted to graduate study under their supervision. Ultimately, it is they who certify students who have demonstrated sufficient mastery of the discipline to qualify for a graduate degree. While a student may be admitted to the University to enroll in advanced coursework, only the specific program faculty may grant permission for the pursuit of a graduate degree. Likewise, a student will not be recommended for a degree until the graduate faculty indicates in writing that the student has gained the desired knowledge.
Forms and Application Fees

Application for admission to graduate study must be made online or on standard forms provided online at admissions.wvu.edu/graduate. If using a paper application, the completed form may be returned to the Office of Admissions and Records, P.O. Box 6009, West Virginia University, Morgantown, WV 26506, and must be accompanied by payment of a nonrefundable special service fee.

Transcripts

Applicants must arrange for official transcripts to be sent directly to the Office of Admissions and Records by the registrar or records office of their previous institutions. 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. It is rare that students are admitted to graduate study who do not hold a baccalaureate degree from an accredited institution of higher education.

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 online catalog (coursecatalog.wvu.edu). 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.

Information on the GRE may be obtained at http://www.ets.org/gre and for the GMAT at http://www.gmac.com/gmac/thegmat. 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) 293-0699.

Admission Acceptance

If an applicant meets the minimum admission requirements of WVU, the Office of Admissions and Records forwards a copy of the application to the faculty of the program of interest. Any graduate degree program is permitted to set admission requirements beyond the minimum admission standards of the University. No one may 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.

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 may 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.

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 number of hours 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.

**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 accredited institution of higher education to a degree program 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 regionally at the graduate level may be transferred. Students should have transfer credit approved prior to enrolling in coursework. Non-degree graduate students are not permitted to transfer credit to WVU from another institution.

A maximum of 12 semester hours from other institutions may be accepted for credit at WVU for graduate programs requiring 30 to 41 semester hours. Up to 18 semester hours can be accepted for graduate degree programs requiring 42 or more semester hours. Individual graduate programs may accept fewer credit hours.

**Transfer to Another Program**

A student may initiate a transfer to another program within WVU 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 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.

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) 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 cannot be guaranteed consideration for the desired semester. Applicants are encouraged to contact the academic program of interest for information about requirements other than those listed above.

**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, 550 on the paper-based TOEFL, or 80 on the internet-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, UK, Canada, NZ, or Australia need not submit TOEFL/IELTS results. However, applicants having only a master’s degree from an accredited U.S. college or university must still provide acceptable TOEFL or IELTS scores.

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**Application**
Financial Documents and Student Visa

International students requiring a form I-20 or DS-2019 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 DS-2019 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 its new TOEFL equivalent 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 Bureau of Citizenship and Immigration Services DS-2019.

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.

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.

Reapplicant

When students graduate or complete the program for which they applied, they must reapply and be readmitted before taking further coursework 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 for two or more years must reapply for admission by completing the graduate application process.

Academic Common Market

West Virginia provides its residents the opportunity through the Academic Common Market (ACM) and through contract programs to pursue selected 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, po-
Admission to Graduate Study

Classifications

Regular Graduate Students. 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.

Provisional Graduate Students. 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 an undergraduate scholastic record that shows promise, but less than the 2.75 grade point average required for regular admission. The letter of acceptance from the graduate program should outline the steps necessary for the graduate student to be re-classified as a regular graduate student.

Non-Degree Students. 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 2.5 grade point average. The student must obtain a 2.5 grade point average on the first 12 credit hours of coursework, taken at WVU and maintain this average as long as enrolled. (See 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. Part-time graduate students must obtain a 2.75 cumulative grade point average in the next nine hours of graduate study. A student who cannot earn the required average will be suspended.

A provisional student has been admitted to the University with one or more deficiencies. Consequently, by completion of 18 credit hours, 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 2.5 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 2.5 by the end of the next enrollment (or nine credit hours for part-time students) at West Virginia University. Students who do not earn 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.

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. Individual degree programs may set higher grade point average requirements.

A unit must review the student’s record and make a final decision on the student’s admission. No later than the completion of 18 credit hours, 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 those 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 and process an Academic Status Change Form by the student’s their advisor and 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.

Classification and 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.

Enrollment and Registration

Official Program Designations

Degree Program. A degree program is an area of study approved as such by the University and the Higher Education Policy Commission (HEPC) and listed on the official HEPC inventory of degree programs, e.g., English, social work, and physical education. The degree is represented by the official degree designation, e.g., master of arts (M.A.), master of science (M.S.), and doctor of philosophy (Ph.D.). The degree program completed would be listed on the student’s diploma.
**Major.** A major is a field of study within an approved degree program, having its own curriculum. A degree program may have more than one major. The major may be included on the students transcript.

**Area of Emphasis.** An area of emphasis is a specific subject area of study that has defined course offerings within an approved degree program and major. Normally, a minimum of six and no more than 12 credit hours would be expected for an area of emphasis within a graduate degree. Areas of emphasis completed would appear on the student’s transcript, but would not be included on the diploma.

**Certificate Program.** A certificate program is a coherent, specialized curriculum designed for students in search of a specific body of knowledge for personal/career development or professional continuing education. The certificate program is not attached to a degree program, although credit hours earned in a certificate program may be applied to a degree if they are deemed appropriate by the degree program. The awarding of a certificate upon completion of the program is not contingent upon completion of a degree program. The certificate would appear on the student’s transcript and the University may issue an official certificate of completion.

**Credit Limitations**
Credit toward a graduate degree may be obtained only for courses listed in the graduate catalog and numbered 400–799. No more than 40 percent of course credits counted toward any graduate degree may be at the 400-level. 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. Courses taken as audits or courses in which the grade earned is D, P, F, or U may not count toward a graduate degree.

**Credit Overloads**
Graduate students are strongly recommended to limit their credit loads if they are also involved in extensive research or service activities or who hold outside employment. In general, persons working full-time for the University or another employer are advised to enroll for no more than six hours of coursework in any one term; those attending half-time are advised to enroll for no more than 12 hours. Recommended credit loads may be lower 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 during the summer term. 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 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.

The number of years involved in attaining or retaining competency cannot be readily specified. The doctoral student’s competency is generally assessed and verified through the qualifying examination in a reasonable period of time after acceptance into a program. Because the qualifying examination attests to the academic competence of the student and is the formal mechanism for admitting the student to candidacy, it cannot precede the conferring of the degree by too long a period of time. In general, doctoral candidates are allowed no more than five years in which to complete the remaining requirements after being admitted to candidacy.

**Required Student Information**
The University must have current information (name, address, telephone number, email, major, and advisor) about students enrolling for classes in order to communicate with students and maintain permanent records. 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

Academic and scholarly advising varies by graduate program across the University. Each graduate academic unit has one or more graduate advisors, and every graduate student is assigned an advisor at the time of admission or shortly thereafter. This advisor may be the student’s thesis or dissertation advisor. The advisor and student typically meet before the first semester of enrollment to formulate a plan of study and to form a graduate advisory committee as appropriate.

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, the student must enroll for at least one hour of graduate credit so that the University can 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, 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 may be dropped from candidacy. Registration for one credit of 799 Graduate Colloquium will satisfy this University requirement.

Extended Learning/Off-Campus Study

West Virginia University Extended Learning hosts off-campus and online courses at the undergraduate, graduate, professional development, and non-credit levels, and provides information on academic program outreach.

Twice annually, Extended Learning sponsors information sessions in Charleston, Clarksburg, Morgantown, and Parkersburg. Faculty and staff visit the regions to discuss academic programs, financial aid, WVU student identification cards, library research, STAR online registration and payment, etc. Extended Learning professionals are located in these cities to serve southern West Virginia, central West Virginia, the eastern Panhandle, and Ohio Valley regions. Our Web site and distance education coordinators provide detailed information to students wanting the convenience and access of online learning. WVU Extended Learning coordinates WVU’s Interactive Video Network (IVIN), which delivers interactive video to classrooms around the state and the globe.

Students planning to enroll in graduate off-campus or online programs must be admitted as graduate students using the same procedures as on-campus students (see admissions.wvu.edu/graduate). Specific requirements for degree candidacy are available from the college providing the academic credits. Advising and scholarship standards are governed by the individual academic unit.

Professional development credit is available for professionals seeking graduate credits, but not pursuing a degree. Professional development is also available for senior citizens with bachelor’s degrees who are interested in personal and intellectual enrichment. Professional development credit is designated by a 900–950 course level and cannot be applied to a graduate degree.

For more information about online and off-campus courses: elearn.wvu.edu/index.html, 1-800-253-2762, or WVU Extended Learning, P.O. Box 6800, West Everly Street, 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 sixth week of summer term.

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.

Enrollment Regulations of Non-Degree Students
Non-degree 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. Non-degree students may enroll in any course in the University for which they have the prerequisites and permission from the academic unit. However, some departments that cannot accommodate non-degree students may restrict enrollments to majors only or require permits.

A non-degree graduate student may accumulate unlimited graduate credit hours. If the student is later admitted to a degree program, the faculty of that program will decide whether 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 to assist the student. Students with no specific interest should not be admitted to grad study.

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.

Degree Requirements — Master’s Degrees
Graduate Committee
General requirements for all graduate committees. The majority of the members of any graduate committee must be members of the graduate faculty, including the chair of the committee. No more than one person may be a nonmember of the graduate faculty. No family member may 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, it will not be necessary to alter it if the graduate faculty status of member(s) of the committee is downgraded.
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 choosing a thesis option must be chaired by a regular graduate faculty member and the majority of the committee must have regular graduate faculty status. Master’s committees of programs not requiring a thesis generally consist of no fewer than three members, one of whom must be a regular graduate faculty member. No more than one person may be a non-member, and the non-member cannot chair or advise.

Plan of Study
Shortly after entrance into a degree program and usually before nine to 12 hours of graduate coursework have been completed, the student, the advisor, and the committee (if appointed) draw up a plan of study (or prospectus). Depending on the degree sought and the field of study, the plan may also contain an outline of the research problem to be undertaken. In some graduate programs, the student and committee meet at a later date to delineate the research project more formally. The plan of study is subject to approval and becomes a formal agreement between student and program faculty regarding the conditions to be met to complete the degree. Any subsequent changes in the plan of study or prospectus can be made only through mutual agreement because of the binding nature of these documents. Should disagreement arise at any time, the responsibility for arbitration rests with the dean of the school or college.

Master’s Degree Coursework Requirements
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.

Master’s Degree Time Limit
Graduate work planned with the student’s advisory committee (e.g., plan of study) 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 and Life:
• 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; and
• A letter from the college/school graduate coordinator and/or dean supporting the revalidation.

Thesis Research
Many master’s degrees require the completion of a research project under the direction of the faculty of the University on some topic in the field of the major subject. The thesis must present the results of the master’s degrees candidate’s investigation.

Thesis Defense
In cases where a thesis is a component of the master’s student’s plan of study, the student must present the thesis to the committee for evaluation. After the committee has tentatively approved the student’s written thesis, the final presentation and defense of the thesis can be scheduled. This presentation is not given until the term in which all other requirements for the degree are to be met. The student’s committee chairperson must indicate in advance the time, place, and committee members and receive clearance from the office of the school or college dean before the thesis is presented. Such notifications of thesis presentations must be received at least three weeks before the defense date.

The student cannot be considered as having satisfactorily passed their master’s program if there is more than one unfavorable vote among members of the thesis committee. Results of each defense 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 thesis defense. One committee member (but not the chair) may attend by audio or videoconference, but should be available electronically during the entire time of the defense. If an examination cannot be scheduled at a time conve-
nient 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.

**Thesis Submission**

The requirements for a master’s degree include acceptance of the thesis defense and submission of the electronic thesis (as noted below). If there is a substitute faculty member scheduled for the defense, the substitute signs the shuttle sheet; however, the original committee member is to sign printed copies of the thesis if generated. The electronic thesis 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).

**Degree Requirements — Doctoral Degrees**

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.

**Graduate Committee**

*General requirements for all graduate committees.* The majority of the members of any graduate committee must be members of the graduate faculty, including the chair of the committee. No more than one person may be a nonmember of the graduate faculty. No family member may 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, it will not be necessary to alter it if the graduate faculty status of member(s) of the committee is downgraded.

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.

**Plan of Study**

Shortly after entrance into a degree program and usually before nine to 12 hours of graduate coursework have been completed, the student, the advisor, and the committee (if appointed) draw up a plan of study (or prospectus). Depending on the degree sought and the field of study, the plan may also contain an outline of the research problem to be undertaken. In some graduate programs, the student and committee meet at a later date to delineate the research project more formally. The plan of study is subject to approval and becomes a formal agreement between student and program faculty regarding the conditions to be met to complete the degree. Any subsequent changes in the plan of study or prospectus can be made only through mutual agreement because of the binding nature of these documents. Should disagreement arise at any time, the responsibility for arbitration rests with the dean of the school or college.

**Doctoral Degree Coursework Requirements**

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 from the admission to candidacy.

Graduate education, especially at the doctoral level, involves many learning experiences that 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, informally debating other students, and similar activities. To ensure that graduate students experience these kinds of informal learning, doctoral programs at WVU 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 described in the preceding sections governing admission, registration, scholarship, etc., 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 may be a requirement in some graduate degree programs. The faculty in the program specify the language or languages and the level of competence to demonstrated. Language examinations are arranged by the Department of Foreign Languages. Students should contact the graduate program coordinator or chair in that department for more information.

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 falls 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 completion of one course at the 300-level with a grade of B or better at WVU.

## Promotion to Candidacy

Admission to graduate study and enrollment in graduate courses do not in themselves 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.

A student will be given a comprehensive examination to demonstrate knowledge of the important issues in the field of 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. The exam is generally taken as soon as a student has completed the major portion of the course requirement. Successful passage of this examination is the University-wide minimal determination of acceptance to candidacy: 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. Academic tradition does not allow a qualifying examination to be administered more than three times; many units limit administration to two times.

## Doctoral Degree Time Limit

Because the qualifying examination attests to the academic competence of the student who will become an independent researcher or practitioner, the examination cannot precede the conferring of the degree by an extended period. 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 that may 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. A request for an extension of time in order to complete degree requirements should include the following:

- A statement documenting the circumstances that justify the request;
- A statement of the impact the proposed extension would have on the validity of the student's coursework and program; and
- Evidence of endorsement of the request from the student's advisory committee and the office of the dean.

**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 Assistant Vice President for Graduate Education.

**Final Examination/Dissertation Defense**

The final examination/dissertation defense is not given until the 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 defense of the dissertation may 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/defenses must be received at least three weeks before the examination date. All doctoral final examinations and dissertation defenses are to the public and the university community.

The student cannot be considered as having satisfactorily passed the final examination/dissertation defense if there is more than one unfavorable vote among members of the examining committee. Results of each examination/defense 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/dissertation defense. One committee member (but not the chair) may attend by audio or videoconference, 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/defense. 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 and submission of the electronic dissertation. If there is a substitute faculty member scheduled for the final examination, the substitute signs the shuttle sheet; however, the original committee member is to sign printed copies of 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.
Preparation of Master's Theses and Doctoral Dissertations

Format
The Office of Graduate Education and Life and the University Libraries have combined their efforts to create The West Virginia University Guide to the Preparation of Master's Theses and Doctoral Dissertations (http://www.libraries.wvu.edu/theses/index.htm). The guide describes the regulations under which master's theses and doctoral dissertations are to be submitted to WVU. It gives the general requirements applicable to all fields of study and provides guidance on the arrangement and format of the student's manuscript. Since practices vary greatly in different disciplines, students should learn the styles of their respective field and are advised to follow the recommendations of their advisor and committee members on all matters not covered in the guide. A master’s thesis and a doctoral dissertation checklist is provided in the guide to aid students in properly depositing material in the university libraries.

Electronic Theses and Dissertations
Since West Virginia University is a charter member of the Networked Digital Library of Theses and Dissertations, it has been agreed that all dissertations written in partial fulfillment of the requirements for any doctorate degree conferred by the University as well as all theses written in partial fulfillment of the requirements of an master’s degree must be filed electronically with the WVU Library system according to its procedures for such filing. Candidates are to follow the WVU Guide to the Preparation of Master’s Theses and Doctoral Dissertations as well as general electronic thesis and dissertation (ETD) policy guidelines regarding format and organization of the thesis or dissertation. Complete program policy and collection access information is available online at http://www.libraries.wvu.edu/theses/index.htm. Exceptions to filing electronically must be approved by the Office of Graduate Education and Life. Copyright to electronic theses and dissertations is subject to the appropriate provisions of the WVU Copyright Policy (http://www.wvu.edu/~osp/policies.htm).

WVU electronic theses and dissertations are made available online and through the University Libraries. Various Web access levels are available to accommodate students’ 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 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.

ETD Submission
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 summer term, by the last day of the final examination period at the end of the first semester, or one week before commencement day at the end of the second semester).


2. Deliver a completed ETD submission packet with original signatures and required fee(s) in person or by mail to the Charles C. Wise Jr. Library (downtown campus), Acquisitions Department, P.O. Box 6069. Download, print, and complete the ETD submission packet, available online at the above-mentioned checklist. Print copies are available from the University Libraries or your college graduate coordinator. The completed packet includes:
   • Completed and signed ETD submission signature form.
   • Submission fees: dissertations $80.00; theses $70.00. 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 $15.00 fee (ProQuest submission is optional, fees apply as indicated above).
• Fees may be subject to change.

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

ETD 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 online as well. If the ETD is acceptable and the ETD submission packet 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.

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 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 the graduation fee 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.

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 concordance between departmental and University records and that there are no remaining deficiencies.
6. The student completes an Application for Graduation and Diploma and pays appropriate fee. This should be done no later than two weeks after registration.
7. The student presents a printed draft of the thesis to each committee member (if applicable).
8. 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).
9. 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.

10. If the requirements for the master’s degree include a thesis, the printed copies of 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 printed copies of the thesis.

11. One electronic copy of the thesis in approved computer-generated form must be submitted online to the WVU ETD archive and a completed ETD submission packet with original signatures and required fee(s) must be delivered to the Charles C. Wise Jr. Library no later than one week before the close of the period in which the degree is expected to be completed.

Summary of 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 the 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 thesis in approved computer-generated form must be submitted online 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.

Scholarship

Grades
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 compensate for them. Although a grade of C is considered average performance for an undergraduate student, it is unacceptable for graduate study.
**Grading System**

- A  Excellent (given only to students of superior ability and attainments)
- B  Good (given only to students who are well above average, but not in the highest group)
- C  Fair (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 (400–799) 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 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 Life 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 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. The GPA 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**

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 finishing the incomplete sometime 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. 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. If you do not remove the I grade within the next semester in which you are enrolled, the grade of I is treated as an F (failure). The Academic Standards Committee of the appropriate college or school may allow you to postpone removal of the I grade if you can justify a delay.

In the case of withdrawal from the University, a student with a grade of I should discuss that grade with the appropriate instructor.

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.

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 or online at http://www.arc.wvu.edu/rights.html.

Final Grade Appeals
Students have the right to appeal final course grades that they believe reflect a capricious, arbitrary, or prejudiced academic evaluation, or reflect discrimination based on race, gender, age, handicap, veteran status, religion or creed, sexual orientation, color, ethnicity or political affiliation. 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. The policy guiding grade appeal can be found in the WVU Student Handbook at http://www.arc.wvu.edu/rights.html. Note: The University is evaluating the process of grade appeal and students should contact Office of Student Life/Student Judicial Affairs for current procedures at http://www.studentlife.wvu.edu/judicial.html.

Probation, Suspension, Readmission, Expulsion Policy
Uniform Probation
Graduate students with a cumulative grade point average below 2.75 may be subject to probation by the dean of their college or school. Individual academic units may designate an even higher GPA for students to remain in good standing. Students may request review of the sanction of academic probation by the academic official who imposed it. Academic probation, which is not recorded on a student’s permanent record, constitutes a warning to the student that standards are not being met.

Uniform Academic Suspension Regulations
Normally, students are suspended at the end of a semester or summer school session. Deans may waive suspension in favor of probation if, in their judgment, the circumstances of individual cases so warrant. The suspension rule will be set aside only under extraordinary conditions.
Academic suspension identifies the status of a student who has failed to meet the departmental minimum standards and who has been notified formally by the department and/or the dean of the college or school of academic suspension. Suspension from the University means that a student will not be permitted to register for any classes, including those in summer sessions, offered by the University for academic credit until the student has been officially reinstated. The normal period of suspension is a minimum of one academic semester, but will not exceed one calendar year from the date of a student’s first suspension. A student who has been suspended for academic deficiencies and who takes courses at other institutions during the period of suspension cannot automatically transfer such credit toward a degree at WVU upon readmission. Students are not eligible for readmission if they earn lower than a 2.75 at other institutions while on suspension from WVU. After one semester of satisfactory performance, the appropriate transfer credit will be entered into the student’s record and certification that the conditions of suspension have been met, a student who has pre-registered and is subsequently suspended shall have his or her registration automatically cancelled.

Reinstatement After Suspension
During the semester immediately following the effective date of suspension, suspended students may petition in writing for reinstatement. The college or school petitioned shall es-
tablish the terms of reinstatement for successful student petitions. After one calendar year from the effective date of suspension, any student who has been suspended once shall, upon written application, be reinstated to the University and to the college or school in which the student was previously enrolled, unless the student petitions for admission to another college or school. The college that reinstates the student removes the student’s suspension restriction in Admissions and Records and accepts the student.

A suspended student who is reinstated under the provisions above will be placed on academic probation. Each college or school shall have the right to establish requirements or performance expectations.

After the second or any subsequent suspension, a student may be reinstated to the University provided that a college or school agrees to reinstate the student. After a student has been reinstated, he or she must apply for readmission through the Office of Admissions and Records.

**Appeal of Suspension — Failure to Meet Academic Standards**

Imposition of academic suspension based on grade point average, failure to meet the conditions previously specified for removal of academic probation, or failure to meet the conditions of admission may be appealed under the following conditions. Note: The University is evaluating the process of suspension and students should contact the Office of Student Life/Student Judicial Affairs for current procedures at www.studentlife.wvu.edu/judicial.html.

- The student may appeal individual final course grades and, if successful, may be reinstated;
- The student may make an appeal to the appropriate dean based on erroneous calculation of the grade point average or on erroneous calculation of the time period within which a grade point average must be achieved. The decision of the dean, as the president’s designee, is final.

Students have the right to appeal academic suspensions based on requirements or standards other than grades or grade point average that they believe reflect capricious, arbitrary, or prejudiced academic evaluation, or reflect discrimination based on race or color, gender, sexual orientation, veteran status, religion, age, disability, ethnicity, or political affiliation (procedure, above). At the dean’s discretion, suspensions may remain in effect until appeal procedures are completed. The student shall discuss the complaint with the dean within 30 calendar days of the action taken.

**Uniform Academic Dismissal Regulations**

A student who is academically dismissed from the University will not be permitted to register for any classes, including those in summer sessions. Academic dismissal can result from repeated failure to make academic progress and/or to meet probationary terms set forth in writing by the student’s college or school.

After five calendar years from the effective date of academic dismissal, any student who has been dismissed shall, upon written application, be considered for reinstatement to the University, with the terms of reinstatement to be established by the college or school entered. Failure to meet these terms will result in permanent academic expulsion.

**Appeal of Dismissal—Failure to Meet Academic Standards**

A decision to dismiss a student for failure to meet academic standards (as distinguished from academic dishonesty) may be made only after the student has been counseled by the appropriate departmental committee or representative, with counseling to take place as soon as possible after discovery of the problem. After the student is given a reasonable opportunity to correct deficiencies, formal review of the student’s status by the appropriate departmental or program committee will be held to determine whether the student shall be retained or dismissed. The student may provide the committee written documentation of his or her efforts to correct deficiencies. Note: The University is evaluating the process of dismissal and students should contact the Office of Student Life/Student Judicial Affairs for current procedures at www.studentlife.wvu.edu/judicial.html.

**Absences**

*Importance of Class Attendance.* At WVU, class attendance contributes significantly to academic success. Students who attend classes regularly tend to earn higher course grades. 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 students follow all established University procedures and withdraw before the published deadline, they will receive a W on their 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 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/Drop From Individual Classes

Until the Friday of the tenth week of class (or Friday of the fourth week in a six-week summer class, or Friday of the second week of a three-week summer class), 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 co-requisite for another course the student is taking or a prerequisite for a course required the following semester. If so, the student may be required to drop the co-requisite course or asked to take a substitute course the following semester.

Withdrawal From All Classes for the Term

Deadlines. Students may withdraw from WVU for the term in which they are enrolled at any-time and before the last day of classes of the term on which regular classes are scheduled to meet. Students will receive grades of W in all classes for that term.

Procedures.

1. Students who decide to leave WVU during the term enrolled should withdraw from all classes through Admissions and Records in accordance with established University policy. Students are responsible for all financial obligations and for following established procedures. This includes the completion of forms in person at the Office of Admissions and Records. The withdrawal process is explained at this time. Students not fulfilling their financial obligations may have difficulty withdrawing from the University.

2. Students who are unable to withdraw in person because of illness, accident, or other valid reasons must send written notification of their request to withdraw to the Office of Admissions and Records. The student Mountaineer Card should be enclosed with this written notification.
3. With the help of their academic advisors, students are responsible for determining how withdrawal from the University may affect their future status with the University, including suspension for failure to make progress toward a degree or violation of established academic probation, and eligibility for scholarships, fellowships, or financial aid.

4. Students withdrawing from the term before certain dates and who are receiving federal financial aid may have to repay all or a portion of the federal funds received. Withdrawing from classes can affect academic progress and future financial aid opportunities. Students should check with the Financial Aid Office for more information.

Re-Enrollment After Withdrawal

After a student withdraws from WVU in two consecutive semesters (excluding summer sessions), a student may not register for further work without approval of the dean of the college or school in which the student wants to register, subject to conditions set by that dean.

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 students owe money or have some other financial obligation to any unit of the University, they forfeit their right to claim a transcript or diploma until these financial obligations have been met.

When applying for a transcript, students must furnish their last date of attendance, student number, and the full name under which they were enrolled. Requests for transcripts must be made in writing to the Office of Admissions and Records. WVU cannot accept telephone requests.

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.

For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see Board of Governors Policy 31 at bog.wvu.edu/policies and the Student Conduct Code at www.arc.wvu.edu/rightsa.html. Note: The University is evaluating the process of academic dishonesty prosecution and appeal and students should contact the Office of Student Life/Student Judicial Affairs for current procedures at www.studentlife.wvu.edu/judicial.html.

Responsibilities

The integrity of the classes offered and research and scholarship undertaken by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. 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 cases of academic dishonesty to the appropriate supervisor, department chairperson, or dean of the college or school concerned, and to the Office of Judicial Affairs, Office of Student Life.

**Academic Dishonesty Defined**

WVU expects that every member of its academic community shares the historic and traditional commitment to honesty and integrity. 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 acknowledgment, a report, notebook, speech, outline, theme, thesis, dissertation, or other written, electronic, 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, include, but are 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 an examination or any part thereof without authorization.

3. Forgery, misrepresentation, or fraud includes, but is not limited to:
   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, as well as forgery, misrepresentation, and fraud. Some cases of forgery, misrepresentation, or fraud that occur outside the context of courses or academic requirements may be referred directly to the Office of Student Life/Judicial Affairs by any member of the University community. In such cases, the Office of Student Life/Judicial Affairs will arrange a hearing following the procedures outlined in the BOG Policy 31.
Graduate Education Expenses

Cost of an Academic Year’s Work

The WVU Financial Aid Office provides students with an estimate of the total cost of attendance for an academic year. This estimate includes tuition/fees, books/supplies, off campus room/board, transportation, and personal expenses in amounts designed to provide a modest, but adequate, lifestyle for students. The cost of attendance for the 2007-2008 academic year for resident students is $17,686; for non-resident students the current cost is $27,554. Figures are updated annually and you are encouraged to contact the Financial Aid Office for the most recent information at www.arc.wvu.edu/admissions/costs.html.

Many students attending WVU do so on graduate student graduate teaching assistantships (GTAs), graduate research assistantships (GRAs), or other graduate assistantships offered by many academic and non-academic units across campus. In addition to the waiver of tuition, these assistantships also provide stipends that range in value according to the college, program, or work to be undertaken (see Graduate Assistantships, Fellowships, and Waivers, below).

Tuition and Fees

The WVU Office of Admissions assigns enrolling students a residency classification for admission, fee, and tuition purposes. Students who are legal residents of West Virginia pay “resident” tuition at WVU; students who are residents of other states and nations pay “non-resident” tuition.

Tuition and fee structures additionally vary by academic program at WVU. Current tuition and fee costs can be found at www.arc.wvu.edu/admissions/tuition_fees.html.

SREB Academic Common Market

Through the Southern Regional Education Board (SREB) Academic Common Market, WVU allows students from SREB member states to enroll in certain WVU programs at in-state tuition rates. Typically these degree programs are not available to students in their home state. In addition to West Virginia, SREB member states are Alabama, Arkansas, Delaware, Florida (graduate only), Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina (graduate only), Oklahoma, South Carolina, Tennessee, Texas (graduate only), and Virginia. Please refer to the SREB Web site for the most current information about programs offered to residents of your state.

Extended Learning

The cost of courses offered through Extended Learning varies according to program. The most recent tuition for online programs at WVU can be found at elearn.wvu.edu/registration/registration/registration/registration/tuitionFees.html#grad.

Fee Regulations

All West Virginia University fees are subject to change without notice. A nonrefundable service fee of $50 must accompany the application for admission to graduate studies. All fees are payable to the Office of Student Accounts at registration. Arrangements with the Office of Student Accounts for payment from officially accepted scholarships, loan funds, grants, or contracts shall be considered sufficient for acceptance of registration. All students should register on days scheduled for registration at the beginning of each semester or summer session. 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.

WVU places restrictions on 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. No degree is conferred 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.
Types of Fees

Special Fees A, Library Fee, and Technology Fee
Special Fees A provides students with access to the WVU Mountainlair Student Center, the Daily Athenaeum newspaper, University Radio Station, Student Recreation Center, and Health Services (Clinic only). The Library Fee provides students with access to and support from the University Libraries. The Technology Fee supports University computer centers and campus technology development. All students, regardless of whether or not they have been granted a tuition waiver must pay these mandatory fees.

Special Fees B
Special Fees B gives students access to athletics (student admission to WVU football, basketball, and other sporting events), health services (counseling), student affairs, and the Personal Rapid Transit (PRT) system. Students with tuition waivers are automatically exempt from paying Special Fees B. However, this means that if you do not pay Special Fees B, you will not have access to any of the above services, including student admission to WVU sporting events and access to the PRT. Your account will show a payment for Special Fees B as paid by the waiver, but this does not give you access to these services. If you wish to have access to Special Fees B services, you must go to Student Accounts (in the basement of Stewart Hall) or the Office of Graduate Education (201 Stewart Hall) and request to pay your Special Fees B.

Laboratory Fees
Many departments assess laboratory or other equipment fees to provide availability to consult specific departments concerning nonrefundable equipment deposits and laboratory fees.

Music Fees
All music majors must pay a fee that entitles them to assigned practice space daily. Band and orchestra instruments may be rented by the semester. Contact the College of Creative Arts for details regarding these fees.

Extended Learning Fees
Fees for credit hours for Extended Learning courses vary by program. Students should inquire of individual programs and view fee schedules at elearn.wvu.edu/registration/tuition-Fees.html#grad.

Other Fees*
Application for admission (dentistry and medicine) ............................................................ $50
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
(Begins the first day of classes)
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
*2007-2008 fee schedule. Individual programs may have additional fees.

Remission of Fees
Students appointed as graduate assistants are eligible for remission of tuition and certain fees (see Graduate Assistantships, Fellowships, and Waivers, p. 48).
Refund of Tuition and 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 due to breach of contract, academic probation, or academic dishonesty reasons 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. Lab fees. Refundable during the first week of classes only based on student status. Refer to refund schedule.
3. Nonrefundable miscellaneous fees (includes application, transcript, graduation, late registration/payment, and reinstatement fees). These fees are nonrefundable.
4. 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.

*Higher Education Policy Commission Series 22: Percent = number of days in term times percent of term allocated for refund. If the percent calculation identifies a partial day, the entire day is included in the higher refund period.

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 Percentage</td>
<td>Refund Period Percentage</td>
</tr>
<tr>
<td>1st week 90%</td>
<td>Day 1 through 4 90%</td>
</tr>
<tr>
<td>2nd week 90%</td>
<td>Day 5 70%</td>
</tr>
<tr>
<td>3rd week 70%</td>
<td>Day 6 through 8 70%</td>
</tr>
<tr>
<td>4th week 70%</td>
<td>Day 9 and 10 50%</td>
</tr>
<tr>
<td>5th week 50%</td>
<td>6th week 50%</td>
</tr>
<tr>
<td>6th week 50%</td>
<td>Day 13 through 30 0%</td>
</tr>
<tr>
<td>7th-16th week 0%</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Summer Term (3-week session)</th>
<th>Summer Term (2-week session)</th>
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</thead>
<tbody>
<tr>
<td>Refund Period Percentage</td>
<td>Refund Period Percentage</td>
</tr>
<tr>
<td>Day 1 and 2 90%</td>
<td>Day 1 and 2 90%</td>
</tr>
<tr>
<td>Day 3 and 4 70%</td>
<td>Day 3 70%</td>
</tr>
<tr>
<td>Day 5 and 6 50%</td>
<td>Day 4 50%</td>
</tr>
<tr>
<td>Day 7 through 15 0%</td>
<td>Day 5 through 10 0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Summer Term (1-week session)</th>
<th>Refund Period Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1 90%</td>
<td>Day 1 90%</td>
</tr>
<tr>
<td>Day 2 70%</td>
<td>Day 3 70%</td>
</tr>
<tr>
<td>Day 3 through 5 0%</td>
<td>Day 4 50%</td>
</tr>
</tbody>
</table>

Exceptions to Refund Policy

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 after 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 (nine credit hours for graduate students), 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 non-refundable thereafter.
3. Nonrefundable miscellaneous fees (includes application, transcript, graduation, late registration/payment, and reinstatement fees). These fees are nonrefundable.
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.

Identification Card

An identification (ID) card is issued to each registered student when fees are paid in full. Certain part-time students may be eligible for an identification card when the appropriate fees are paid. The ID admits the owner to the libraries, certain University athletic events, various activities of student administration, Health Service, and the Mountainlair and is used as the pass card for PRT access if Special Fees B has been remitted. Confiscation will result from misuse. The University reserves the right to refuse re-issuance of an identification card.
Financial Aid

Students interested in applying for financial aid must complete a Free Application for Federal Student Aid (FAFSA). This form is the application for all major federal student aid programs, including student loans. Graduate students should submit the FAFSA at least six weeks prior to the date of tuition payment. Students may submit the FAFSA online at www.fafsa.ed.gov.

For the summer session(s) a separate WVU Summer Financial Aid application is also required. These summer forms are available in the Financial Aid Offices located in the Mountainlair, Health Science Center, law school, and online at www.finaid.wvu.edu.

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 at One Waterfront Place. A summer and part-time job service is operated by the WVU Career Services Center in the Mountainlair.

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 dependent upon when the individual served on active duty. The DVA administers 11 educational assistance programs whose basic eligibility criteria may vary. Only the 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.

Financial Aid Refund and Repayment Policy

Federal regulations require that West Virginia University recalculate eligibility for financial assistance for students who completely withdraw, drop out, or are dismissed before completing the enrollment period. Students who receive all unsatisfactory grades (F) at the end of the grading period will be considered as unofficially withdrawn at the semester mid-point unless documentation is available that demonstrates continued class participation. Application of this policy may result in the necessity for a student to return financial aid funds to various Title IV federal aid programs including William D. Ford Federal Direct Student Loans.

A student earns Title IV federal aid based upon the length of time the student remains enrolled during the enrollment period. Students who withdraw on or before completing 60 percent of the semester may be required to return a portion of federal financial assistance. The determination of 60 percent of the term is computed by dividing the total number of calendar days in the term into the number of calendar days completed as of the date of student withdrawal. Scheduled breaks of five consecutive days or more are excluded. The percentage of Title IV assistance that the student has earned is equal to this percentage of the term completed. If the withdrawal occurs after 60 percent of the term is completed, the percentage earned is considered to be 100 percent.

If more Title IV aid was disbursed than was earned by the student, WVU is required to return the lesser of (1) the unearned aid percentage applied to institutional charges or (2) the unearned aid percentage applied to the total Title IV aid received. The student must return unearned aid for which s/he is responsible after subtracting the amount the school will return. Funds are returned in the following priority:

1. Unsubsidized Federal Direct Loan,
2. Subsidized Federal Direct Loan,
3. Federal Perkins Loan,
4. Other Title IV assistance,
5. Other federal, state, private, or institutional aid, and
6. The student.

If less Title IV aid was disbursed than was earned by the student, the student is entitled to a post-withdrawal disbursement within 30 days of withdrawal.

The return of financial aid may result in unpaid charges to West Virginia University for tuition/fees. West Virginia University will bill the student for any balance due. Students who owe a repayment to any federal financial aid program are no longer eligible for financial aid at any post-secondary institution. Eligibility may be regained after repayment is satisfied.
Standards of Satisfactory Academic Progress for Financial Aid

To receive funds administered by the Financial Aid Office at West Virginia University, students must be making measurable academic progress toward completion of an eligible degree. Federal regulations require evaluation of both quantitative and qualitative academic progress. The policy is used to evaluate student progress at the conclusion of each spring semester. Graduate students must maintain a minimum overall GPA of 2.25 and successfully complete 70 percent of attempted credit hours. Graduate students in a master’s degree program have a maximum of 54 attempted credit hours to obtain the degree objective. Students pursuing a second master’s degree have a maximum of 54 attempted credit hours to obtain the second degree objective. Doctoral students have a maximum of 108 attempted credit hours (including master’s degree work). Financial aid eligibility is limited at each level to no more than two master’s degrees and one doctorate. Students who wish to pursue additional degrees beyond these limits may do so but without federal financial assistance.

Financial aid recipients/applicants who are not meeting standards of academic progress may appeal to the Financial Aid Appeals Committee. Appeals may be granted due to hardship based on extenuating circumstances such as death of an immediate family member, personal injury or illness of the student, or other documented circumstances as explained by the student and approved by the Financial Aid Appeals Committee.

See www.finaid.wvu.edu for complete information of the standards of satisfactory academic progress for financial aid.

Graduate Assistantships, Fellowships, and Waivers

Graduate Assistantships

West Virginia University annually awards about 1,700 graduate assistantships supported from state appropriations, federal funds, private grants, and contracts as well as approximately 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 be engaged full time in 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 must be accepted into a graduate degree program and are required to be full-time (nine hours or more) graduate students. The individual is primarily a student and secondarily an employee. Tuition and some fees 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 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).

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 deadline for GRA appointments is no 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, signed by the college/school dean, and sent to the assistant vice president for Graduate Education.

Graduate assistantships and fellowships at WVU are accompanied by a waiver of tuition. These waivers cover the cost of coursework required by the students’ Plan of Study. Students covered by assistantships or fellowships during the academic year may also qualify for summer tuition waivers through their departments. Some programs may limit the number of credit hours that can be taken under a waiver in a given semester. In addition, programs and departments are allocated “meritorious waiver hours”, which can be used at the discretion of the departments for recruiting and/or retaining students in their degree programs. Students should inquire of their departments whether such waivers are available.
Graduate Teaching Assistant
A person who holds a graduate teaching assistantship (GTA) is obligated to teach two three-hour courses per semester, the equivalent in laboratory classes, or, for other forms of departmental assistance, except research assistance, the equivalent of a minimum of 12 hours per week. The terms of employment would be stated in the letter of appointment. These assistantships are generally available only through the academic units. No graduate student can be appointed to a GTA position after the second week of the semester.

Graduate Research Assistant
A graduate research assistant (GRA) is a graduate student whose duties consist of assisting in the research of a faculty member with an obligation of not fewer than 15 or more than 20 hours per week in any semester. No graduate student can be appointed to a GRA position after the fifth week of the semester.

Graduate Administrative Assistant
A student employed as a graduate administrative assistant (GA) works part time in one of the administrative offices of WVU. Assistantships obligate the student to no fewer than 12 or more than 20 hours of work per week in any semester. The terms of employment should be stated in the letter of appointment at the time of assigning the assistantship.

Graduate Residence Assistants
Resident assistant (RA) positions are available for single undergraduate and graduate students. There are 14 University-supervised residence halls, which house approximately 4,400 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 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, contact the Associate Dean of Residential Education, P.O. Box 5430, West Virginia University, Morgantown, WV 26506–6430.

Graduate Advising Assistant
Graduate assistantships are available through the Undergraduate Academic Services Center (UASC) for students who have been admitted to a graduate program. Those awarded a UASC assistantship will provide academic advising services to undergraduate students. A tuition waiver is provided and a stipend is paid and the graduate student. Contact the UASC for information and applications.

Graduate Fellowships
Teaching Fellows
A teaching fellow is an advanced graduate student, usually in a doctoral program, who would qualify for a junior faculty position if he or she were not a graduate student at WVU. A teaching fellow may be given major responsibilities for the design and/or operation of a course.

Swiger Fellowships
Arlen G. and Louise Stone Swiger are special benefactors who have established 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 only. The stipend amount for 2005-2006 was $20,000 for 12 months, and the award requires some teaching or other academic service obligation. 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 graduate program of choice or the Office of Graduate Education and Life. Application materials can be found at www.wvu.edu/~graduate/swiger.html.
W. E. B. Du Bois Fellowships
Dr. William Edward Burghardt Du Bois, born in 1868, was educated at Fisk University and received his Ph.D. from Harvard University in 1896. Dr. Du Bois 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, Du Bois provides a standard of excellence for scholarship in any discipline and an especially inspiring model for black scholars. Because of the achievements of Dr. Du Bois, West Virginia University has named this fellowship program in his honor. The fellowships are open to African American graduate and professional students, excluding those in the Health Sciences, who are native or naturalized U.S. citizens. The stipend amount for 2007-2008 is $15,000 for nine months, and requires some service obligation. 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 and Life. Application materials can be found at www.wvu.edu/~graduate/duBois.html.

WVU Foundation Fellowships
To commemorate its 50th anniversary in 2005, the West Virginia University Foundation established the WVU Foundation Distinguished Doctoral Fellowships. Each year, the University awards four $5,000 fellowships to exceptional doctoral students in the humanities, social sciences, life sciences, and physical sciences and technology. The award may be used to defray expenses of travel, supplies, and other costs that may be incurred in the final stages of completing a dissertation. Nominees for the WVU Foundation Distinguished Doctoral Fellowships must be absolutely excellent students with academic records to match. Moreover, nominees must contribute to the teaching mission of the institution by serving as teaching assistants. Research assistants are not eligible. Inquiries should be directed to the graduate or professional program of choice or to the Office of Graduate Education and Life.

Other 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. Several national agencies publish information about fellowships and financial aid opportunities for graduate students. Individuals interested in reviewing this information should consult the reference personnel at the Charles C. Wise Jr. Library as well as the Office of Fellowships and Graduate School Advising at honors.wvu.edu.

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 University mandated minimum stipend in effect for 2007-2008 is $8,864 for nine months. Many academic units provide substantial salary caps augmenting this minimum stipend.
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. International students must meet financial support criteria for 12 months (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.
4. Graduate assistants who have worked for a non-academic unit in both the fall and spring semesters may have their summer session tuition waived provided that they work in that unit on an hourly basis for up to 37.5 hours per week. However, these students may not 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.
5. Graduate assistants are salaried, not hourly, employees and are not eligible for over time.
Relevant University Policies and Regulations

West Virginia University Policy on the Family Educational Rights and Privacy Act

The Family Educational Rights and Privacy Act (FERPA) of 1974 is a federal law that states that: (a) a written institutional policy must be established and (b) a statement of adopted procedures covering the privacy rights of students be made available. The law provides that the institution maintain the confidentiality of student educational 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, persons or organizations providing students’ financial aid, accrediting agencies carrying out their accreditation function, persons in compliance with judicial order, organizations conducting studies for, or on behalf of, education agencies or institutions for the purpose of developing, validating, or administering predictive testing student aid programs, and improving instruction, and 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.

FERPA 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 considers all students as “dependent” for purposes or 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 offices of the deans and directors can inform students as to the locations of all education records maintained on students by West Virginia University.

Research Policy Guidelines

Research Involving Animals or Human Subjects

Any graduate student who conducts research with experiments using 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 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, (304) 293-3998.

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 are governed by Policy and Procedures for Responding to Allegations of Misconduct in Research and Scholarship at West Virginia University. This policy can be found at osp.research.wvu.edu/policies_and_regulations/institutional_policies/misconduct.

All members of the University community are obligated 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. Regular reviews of the status of research integrity at WVU are conducted by the Research Integrity Policy Committee.
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 created solely or jointly by them. This policy encourages and aids research at the University, provides financial compensation and professional recognition to inventors, and protects and serves the public interest.

The University recognizes that discoveries and inventions may, and frequently do, include equities. 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 rights involving the inventor, the University, and a sponsoring agency. Such rights must be evaluated and an agreement reached on their appropriate disposition. Policies and procedures involving 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 are overseen by the Office of Technology Transfer and can be obtained at www.wvu.edu/~research/techtransfer/policy.

Residency Policy

Residency policy is establish by the WV Higher Education Policy Commission Series 25 and is posted at www.arc.wvu.edu/admissions/residency_policy.html. Section 1 of the residency policy bulletin contains general information regarding its scope and dates of adoption. Remaining sections are excerpted below.

Higher Education Policy Commission Series 25

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 12 months of continued presence within the state prior to the date of registration, provided that such 12 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 12 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. 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 Governors 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, a Schedule of Courses is printed and released, announcing the courses that will be offered by the colleges and schools of WVU. This listing can be found at www.arc.wvu.edu/courses.

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 by upper-division students may take them 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 advanced 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.

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; these 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
GLAB graded lab
WEB Web-based course
Conc must register prior to or at the same time
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 that 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. 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 residency 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 their department's 699/799 Graduate Colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by their 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.
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.

Overview of Programs

The doctor of philosophy and master of arts 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, monetary, public, regional and urban economics, and resource 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 (M.B.A.) program is especially attractive for the student with a non-business undergraduate major since no previous business courses are required for admission. Coursework includes an even exposure to all of the functional areas of business and provides a broad general management orientation. The M.B.A. program is offered during the day for full-time students in Morgantown. The M.B.A. program is also offered for working professionals in the evenings at various locations throughout West Virginia and is referred to as the executive M.B.A.

The master of science in industrial relations (M.S.I.R.) 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.

With the exception of economics the master of professional accountancy (M.P.S.) program is available to students with undergraduate degrees in accounting. Students without accounting undergraduate degrees can fulfill specific accounting prerequisites and be admitted to the program. 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 division of accounting also offers certificates in fraud investigation and forensic accounting.

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.
Special Requirements
Admission to 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 60 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. Under certain circumstances the GRE may substitute for the GMAT for the M.P.A. program.

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

Accounting Professors

Associate Professors
*Bonnie W. Morris, Ph.D. (U. Pitt.). C.P.A. Accounting information systems, Informational technology, Expert systems and artificial intelligence, Internal auditing.

Assistant Professors
*Christian Schaupp, Ph.D. (VPI). IT auditing, Accounting information systems.

Economics Professors
†Ronald J. Balvers, Ph.D. (U. Pitt.). Financial economics, Macroeconomic theory.
†William S. Reece, Ph.D. (Wash. U., St. Louis). Public economics.
†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
†George Hammond, Ph.D. (Indiana U.). Regional economics, economic forecasting.
Assistant Professors
†Arabinda Basistha, Ph.D. (U. of Wash.). Monetary.
†Christopher Coyne, Ph.D. (George Mason U.). Development.
†Hyungna Oh, Ph.D. (Cornell U.). Energy, Econometrics.
†Santiago Pinto, Ph.D. (U. of Ill.). Public economics, Urban economics, Regional economics.

Finance Professors
†Victor Chow, Ph.D. (U. Ala.). Corporate finance, Portfolio management.
†William B. Riley, Ph.D. (U. Ark.). Investments, Capital markets.

Associate Professors
†Ashok Abbott, Ph.D. (VPI&SU). Financial institutions, Corporate finance, Mergers and acquisitions.
*Terry L. Rose, Ph.D. (U. of Ill.). Insurance, Risk management.

Assistant Professor
†Alex Kurov, Ph.D. (SUNY-Binghampton). Financial market microstructure, Futures markets.

Management and Industrial Relations Professors
†Jack A. Fuller, Ph.D. (U. Ark.). Heuristic decision making, Production planning and control, Systems analysis and design.

Associate Professors
†Gerald L. Blakely, Ph.D. (U.N.C.). Human resource management, Organizational behavior.
*Nancy McIntyre, Ph.D. (U. of Rhode Island). Organizational behavior, Leadership.

Assistant Professors
*Joyce Heames, Ph.D. (U. of Miss.). Human resource management, Organizational behavior.

Marketing Professors
†James Brown, Ph.D. (Ind. U.) Retailing, Marketing channels, Supply chain management.

Lecturer
Accountancy, Professional
Timothy A. Pearson, Director, Division of Accounting
E-mail timothy.pearson@mail.wvu.edu
300 Business and Economics Building
http://www.be.wvu.edu/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 or coursework 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 relatively few colleges and 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. Most states, including West Virginia, require candidates to have 150 semester hours of college credit. Within the 150 semester hours, most states specify particular accounting and business courses that must be completed to sit for the CPA Examination. The WV Board of Accountancy requires 27 semester hours of accounting (excluding principles of accounting), six semester hours of business law, and 27 semester hours of related business courses. Requirements to sit for the examination are subject to change. Accordingly, students should carefully review their undergraduate and M.P.A. coursework to ensure all academic requirements are met for the state in which they intend to sit for the CPA examination. Web addresses and links for the State Boards of Accountancy are given below.

For requirements to sit for the CPA examination in West Virginia, visit West Virginia Board of Accountancy http://www.wvboacc.org/ or call 304-558-3557.

The National Association of State Boards of Accountancy at http://www.nasba.org/nasbaweb/NASBAWeb.nsf/WPHP?OpenForm has links to the Web pages for all State Boards of Accountancy under the section “Members”. 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.

Some content specification of the CPA examination and related information may be found at the CPA Exam Web site information http://www.be.wvu.edu/mpa/cpa_req.htm.
And http://www.aicpa.org contains up to date content specification of CPA examination and related information.

Special note: while states periodically change their specific requirements students planning to take the CPA examination in Maryland should note that a business ethics course is required by the Maryland State Board of Accountancy and they should be prepared to provide documentation of completing Accounting 322 to satisfy the board’s writing course requirement.

**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 ten-months of full-time study or 22 months half-time. The program requires that the student have an undergraduate degree and meet very specific accounting course prerequisites. 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 in the evening and the other half in the afternoon to provide the opportunity for part-time employment for full-time students and part-time study for full-time employees. The afternoons and evening time slots are rotated so that all courses are provided in the evenings every other year for the benefit of half-time students.

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 will consider 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. Other facets such as work experience and other graduate degree work may also be a part of the committee’s decision-making.

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. Provisional students must complete the prerequisite courses before enrolling in M.P.A. courses. Applicants with accounting undergraduate degrees must also satisfy all the prerequisite courses for the M.P.A. program.

Students receiving provisional admission to the M.P.A. degree will meet with the M.P.A. coordinator to develop a written plan for the completion of the prerequisite courses. Failure to satisfactorily complete the plan will result in the cancellation of the applicant’s provisional MPA graduate student status.
Provisional students may not enroll in any graduate accounting courses until prerequisite courses have been successfully completed. After completing prerequisite coursework the student must request a change from provisional to regular M.P.A. status which is subject to approval by the M.P.A. Admission Committee. 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) will 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.

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 556</td>
<td>Fraud Detection and Deterrence</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 571</td>
<td>Accounting/Business Consulting</td>
<td>3</td>
</tr>
<tr>
<td>ECON 501</td>
<td>Economics for Decision Makers</td>
<td>3</td>
</tr>
<tr>
<td>ACCT 473</td>
<td>Personal Financial Advising</td>
<td>3</td>
</tr>
<tr>
<td>or</td>
<td>ACCT 561 Governmental and Not-for-profit Accounting</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>(whichever topic was not studied at undergraduate level)</td>
<td></td>
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<tr>
<td></td>
<td>Total</td>
<td>30</td>
</tr>
</tbody>
</table>

Note: Students who have not completed Accounting Systems (ACCT 322, 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. These courses may be taken concurrently with the graduate courses.

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/mpa/index.htm.

Graduate Certificate in Forensic Accounting and Fraud Investigation (FAFI)

Forensic Accountants in Demand
The widespread growth in white-collar crime and the increased need for homeland security have greatly raised the demand for forensic accountants and fraud investigators. Federal, state, and local governmental agencies, such as the Securities and Exchange Commission, the Internal Revenue Service, and the Offices of Inspector General all need accountants with forensic investigation skills. In the private sector, recent legislation (Sarbanes-Oxley Act of
2002) and auditing standards (Statement on Auditing Standard No. 99) require companies and their auditors to be more aggressive in detecting and preventing fraud.

Our Division of Accounting has responded to this demand by developing a unique academic program designed to prepare entry-level accountants and others for forensic accounting and fraud investigative careers. Although many schools have added a single graduate or undergraduate course to their curricula, only a handful offer the kind of multi-course graduate certificate program that we do. And ours is the only one in this region. We offer a 12-credit graduate Certificate in Forensic Accounting and Fraud Investigation during summer sessions. Students may take two paths to earn this certificate:

- Option 1: Complete a four course stand-alone non-degree certificate program curriculum, or
- Option 2: Complete a master of professional accountancy (M.P.A.) degree plus two additional certificate courses.

We set the national standards

Our forensic accounting faculty have solidified WVU’s reputation as a leader in forensic curricula. Drs. Richard Riley and Bonnie Morris, our forensic accounting faculty, led the effort to develop national curriculum guidelines for fraud and forensic accounting programs for the National Institute of Justice.

For admittance to the Graduate Certificate program, you may qualify under one of the following criteria:

a) Have a bachelor’s degree with an overall GPA of 2.9, and a score of 500 on the Graduate Management Admission Test (GMAT) or a score of 1,000 on the Graduate Record Examination (GRE); Our entrance criteria provide some flexibility so that a higher GPA may offset a lower GMAT or GRE score and vice versa.

b) Hold a Certified Public Accountant certificate, law degree, or be admitted to an accredited law school.

If appropriate, you should have your GMAT or GRE score sent to the Division of Accounting, 300 College of Business and Economics, West Virginia University, Morgantown WV 26506-6025.

Option One Details

Students will complete four courses during summer sessions. All four courses are taught using actual and simulated case materials. Students are required to perform actual investigative tasks and report their findings. Accordingly, with this type of hands-on course, students are required to attend class and complete assignments in Morgantown on campus.

The four courses are:

- **ACCT 581 Fraud Investigation.** Types of fraud, documents, sources of evidence, and analysis of internal and external fraud schemes with an emphasis on the skills needed to identify and investigate fraud.
- **ACCT 582 Fraud Data Analysis.** Computer-aided data analysis techniques for detecting and investigating fraud cases, issues related to the collection and use of digital evidence, and collection of data from electronic devices.
- **ACCT 583 Fraud: Criminology/Legal Issues.** Sociological and psychological theories of criminal behavior, laws, rules of evidence, the rights of persons under investigation, interrogation and interviewing, report writing, and ethics, as these topics relate to forensic accounting.
- **ACCT 584 Advanced Fraud Investigation.** Major fraud case investigation with an emphasis on forensic and litigation support aspects, including presentation of cases in a moot court setting. This course also contains the capstone experience as explained below.

Capstone Experience

Advanced fraud investigation includes an integrative capstone experience using three case presentations/projects over the course of the session or term. In order to complete the assignments in this course, students must integrate and draw upon the knowledge and skills developed in the other courses in the forensic accounting and fraud investigation curriculum.

The purpose is to provide students with experience in performing complex investigative tasks and analyses. These projects will involve analyzing real-world “case” information as well
as corporate and business records to determine if fraud has occurred. Students mimic investigative processes found in practice by conducting analytical reviews, soliciting information from clients, and reporting suspicious activity for a fictitious client company. Finally, the capstone experience culminates when students testify to their findings in a moot court scenario.

Forensic accounting and fraud investigation professionals such as certified public accountants and FBI personnel mentor students in their preparation for the moot court presentations. Legal professionals such as trial judges, prosecuting attorneys, and defense attorneys serve as moot court judges.

The moot court experience provides an excellent evaluation mechanism of the knowledge and skills developed by students. Based on their mentoring of students in preparing for the moot court and their observation of the presentations before the court, the professionals are asked to assess the overall effectiveness of the program and to provide recommendations for strengthening the curriculum.

Additionally, ACCT 581 and ACCT 582 must be completed before taking ACCT 584 Advanced Fraud Investigation.

Part-time Students under Option 1. The program may be completed on a part-time basis. Students participating on a part-time basis will require two summers. In session 1 of the first summer, the student may take either ACCT 581 or ACCT 582. In session 2 of the first summer, the student must take ACCT 583. The second summer, students participating on a part-time basis, will take ACCT 581 or ACCT 582, whichever was not completed in the previous summer and ACCT 584 in session 2 of the second summer.

Option Two Details

Revisions have been made to the M.P.A. curriculum such that all M.P.A. students will be exposed to essentially all of the material covered in ACCT 581 and ACCT 582. Various fraud-related topics are covered in several M.P.A. courses, but the primary overlap with ACCT 581 and ACCT 582 is in ACCT 556 Fraud Detection and Deterrence and ACCT 521 Information Technology Auditing. ACCT 556 is a new required course that has been added to the MPA curriculum in response to changing demands of the accounting profession. ACCT 521 is an existing required course that covers data analysis techniques.

As part of their degree requirements, M.P.A. students will complete:
ACCT 521 Information Technology Auditing (current required course). 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.
ACCT 556 Fraud Detection and Deterrence (new required course). The auditor’s responsibility with respect to fraud detection and investigation and management’s responsibility for fraud deterrence and implementation of effective prevention measures. Identification, analysis, and examination of fraud using actual and simulated data.

To earn the Certificate in Forensic Accounting and Fraud Investigation, M.P.A. students must also complete the following summer courses:
ACCT 583 Fraud: Criminology/Legal Issues. Sociological and psychological theories of criminal behavior, laws, rules of evidence, the rights of persons under investigation, interrogation and interviewing, report writing, and ethics, as these topics relate to forensic accounting.
ACCT 584 Advanced Fraud Investigation. Major fraud case investigation with an emphasis on forensic and litigation support aspects, including presentation of cases in a moot court setting. This course also contains the capstone experience as explained below.

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.

415. Advanced Accounting. 3 Hr. PR: ACCT 312. Accounting for business combinations, consolidations, foreign currency translation, governmental and not-for-profit entities, and equity method investment accounting.
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, and deductions, capital gains and losses, and tax credits.


471. *International Accounting*. 3 Hr. PR: ACCT 312 or consent. Financial reporting from an international perspective, focusing on the flow of information in multiple currencies, differences in financial reporting requirements, development of international accounting standards, and related issues facing multinational enterprises and global financial markets.


493 A-Z. *Special Topics*. 1-6 Hr. PR: Consent. Special topics relevant to accounting. (Maximum of nine 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.


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.

556. **Fraud Detection and Deterrence.** 3 Hr. PR: Restricted to M.P.A. students. The auditor’s responsibility with respect to fraud detection and investigation and management’s responsibility for fraud deterrence and implementation of effective prevention measures. Identification, analysis and examination of fraud using actual and simulated data.

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.

581. **Fraud Investigation.** 3 Hr. PR: Restricted to FAFI students. Types of fraud, documents, sources of evidence, and analysis of internal and external fraud schemes with an emphasis on the skills needed to identify and investigate fraud.

582. **Fraud Data Analysis.** 3 Hr. PR: Restricted to FAFI students. Computer-aided data analysis techniques for detecting and investigating fraud cases, issues related to the collection and use of digital evidence, and collection of data from electronic devices.

583. **Fraud: Criminology/Legal Issues.** 3 Hr. PR: Consent. Theories of criminal behavior, laws, rules of evidence, rights of persons under interrogation and interviewing, report writing and ethics, as these topics relate to forensic accounting with a focus on the behavioral aspects of fraud.

584. **Advanced Fraud Investigation.** 3 Hr. PR: ACCT 581 and ACCT 582. Major fraud case investigation with an emphasis on forensic and litigation support aspects, including presentation of cases in moot court setting.

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.

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.)
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.)

Business Administration
Gerald L. Blakely, Ph.D., Director of M.B.A. Programs
340 Business and Economics Building
http://www.be.wvu.edu/mba/
http://www.be.wvu.edu/emba/

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 requires 13 ½ months to complete. It is also offered in the evening via distance learning in Beckley, Bluefield, Charleston, Elkins, Keyser, Lewisburg, Martinsburg, Morgantown, Parkersburg, and Wheeling. The evening program, referred to as the Executive M.B.A. Program, is designed for working professionals and requires 2 ½ years to complete. 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 future managers 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 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 Executive M.B.A. Program at the start of either the Fall or Spring semester and complete the program 2 ½ years later.

Admission

Full-time Program
To gain admission to the full-time M.B.A. program, an applicant must have a bachelor’s degree from an accredited institution. 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 coursework. The Graduate Management Admissions Test (GMAT) is required and the Admissions Committee takes no action on an application for admission to the full-time program until the applicant submits a GMAT score. Each applicant must submit a resume with the application. For applicants with master’s or doctoral degrees, the Admissions Committee may waive the GMAT requirement. Additionally, applicants are encouraged to submit a statement of purpose and no more than three letters of reference.

Executive Program
To gain admission to the Executive M.B.A. Program, an applicant must have a bachelor’s degree from an accredited institution. Admissions decisions are based on an assessment of expected success in the program shown by the application materials and on space available. The Graduate Management Admissions Test (GMAT) is required and the
Admissions Committee takes no action on an application for admission to the program until the applicant submits a GMAT score. Each applicant must submit a resume showing prior work experience. A minimum of two years work experience post bachelor's degree is required for admission into this program. 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. Additionally, applicants are encouraged to submit a statement of purpose and no more than three letters of reference.

**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 Executive Program, preference will be given to applications received one month prior to the starting date requested. Admission to the program is competitive and subject to space being available.

**Financial Aid**

Scholarships are available on a competitive basis. Additional information and application forms can be obtained from the director of graduate programs.

**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.

**M.B.A. Program**

The full-time M.B.A. degree program requires 48 hours of graduate credit, presented in the following format.

**Business Environment (Summer Session)**

511. *Economic and Business Environment*. 3 Hr.
512. *Law, Ethics and Diversity*. 3 Hr.

**Development of Organization Skills (Fall Session)**

524. *Financial and Managerial Accounting*. 4 Hr.

**Implementation, Control, and Change (Spring Session)**

534. *Information Systems*. 3 Hr.
535. *Organizational Behavior*. 2 Hr.
Planning and Strategy (Summer Session)
541. Management Strategy. 2 Hr.
542. Seminar on Financial Planning. 2 Hr.
543. Seminar on Leadership. 2 Hr.
551. Global Strategic Management. 2 Hr.
552. Global Accounting and Finance. 2 Hr.
553. Service Learning. 2 Hr.

The Executive M.B.A. Program requires 48 hours of graduate credit, presented in the following format.

Semester 1—Planning/Environment
611. Information Technology. 2 Hr.
612. Managerial and Team Skills. 3 Hr.
613. Business Strategic Environment. 3 Hr.
623. Planning and Organization. 4 Hr.

Semester 2—Organizing Skills
621. Business Research. 3 Hr.
622. Financial Statements Analysis. 3 Hr.

Semester 3—Implementation and Change
631. Managerial Economics. 3 Hr.
632. Corporate Finance and Regulation. 4 Hr.
633. Leadership. 3 Hr.

Semester 4—Control and Evaluation
641. Management Sciences and Operations. 4 Hr.
642. Managerial Cost Accounting. 2 Hr.
643. Working Capital Management. 2 Hr.
644. Legal Environment and Ethics. 2 Hr.

Semester 5—Planning and Strategy
651. Financial Planning. 2 Hr.
652. Marketing Strategy. 2 Hr.
653. Global Planning and Strategy. 4 Hr.
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, and 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.


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.

561. *Readings in Global Business.* 3 Hr. Students examine current issues in international business pertaining to regions of their interest. The effect of the legal environment, regulatory issues, and cultural differences are examined.

563. *Essentials of Business.* 2-4 Hr. The course develops the leadership capacity of the individual by strengthening critical thinking skills, executive analysis ability, and decision-making processes.

591 A-Z. *Advanced Topics.* 1, II, S. Variable 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.

595. **Independent Study.** 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 healthcare 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.


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. Course provides 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). The continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

**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.

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.

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.

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.
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.)

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.)

Economics
William Trumbull, Director, Division of Economics and Finance
420 Business and Economics Building
http://www.be.wvu.edu/phd_economics/index.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 1,500 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 macro-economic 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 micro-economic 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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 701</td>
<td>Advanced Microeconomic Theory 1</td>
<td>4</td>
</tr>
<tr>
<td>ECON 702</td>
<td>Advanced Macroeconomic Theory 1</td>
<td>3</td>
</tr>
<tr>
<td>ECON 721</td>
<td>Mathematical Economics</td>
<td>3</td>
</tr>
<tr>
<td>STAT 331</td>
<td>Sampling Methods</td>
<td>3</td>
</tr>
<tr>
<td>ECON 425</td>
<td>Applied Econometrics</td>
<td>3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECON 725</td>
<td>Econometrics 1</td>
<td>3</td>
</tr>
</tbody>
</table>

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.

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

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

755. Development Economics. 3 Hr. PR: ECON 701. This course explores why some countries are rich and others are poor. Class examines the major phases of thinking in development economics and themes in the contemporary development literature.

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 imput-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. 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.)

930. Professional Development. 1-6 Hr. Professional development course 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.

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
471. Labor Economics. 3 Hr. PR: ECON 202. Labor market analysis. Topics include wage and employment determination, human capital theory, discrimination, unemployment, migration, effects of unions and government regulation, and life-cycle patterns of work.

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**

Jeffery D. Houghton, Coordinator, Industrial Relations
122 Business and Economics Building
http://www.be.wvu.edu/msir

**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 (M.S.I.R.). 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 M.S.I.R. graduates include such positions as human resource generalist, human resource managers, labor relations specialist, 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 College of Business and Economics Center for Career Development, 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 including: the IRSA Newsletter, the mentorship program, company site visits, guest speakers, community service efforts, 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
More than half of all M.S.I.R. students qualify for financial aid on the basis of need, merit or a combination of both. A limited number of scholarships and tuition waivers are awarded each year on a competitive basis. Additional information can be obtained from the graduate programs office.

Academic Common Market
The WVU M.S.I.R. program is a member of the Southern Regional Education Board’s Academic Common Market program. Residents of Delaware, Florida, Georgia, Kentucky, Maryland, North Carolina and 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 M.S.I.R. degree 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 M.S.I.R. 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 60 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 admission. Students with a business undergraduate major must apply for August admission. The application deadline is March 1. 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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<tbody>
<tr>
<td>ILR 501 Accounting/Economics/Finance</td>
<td>3</td>
</tr>
<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>
</tr>
<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>
<td>3</td>
</tr>
<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>
</tr>
<tr>
<td>ILR 521 Managing the Culturally Diverse Workforce</td>
<td>3</td>
</tr>
<tr>
<td>ILR 522 International Industrial Relations</td>
<td>3</td>
</tr>
<tr>
<td>ILR 530 Compensation Issues</td>
<td>3</td>
</tr>
<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>
<td>3</td>
</tr>
<tr>
<td>ILR 543 Negotiation Strategy</td>
<td>3</td>
</tr>
<tr>
<td>ILR 544 Benefits</td>
<td>3</td>
</tr>
<tr>
<td>ILR 545 Equal Employment Opportunity Problems</td>
<td>3</td>
</tr>
<tr>
<td>ILR 548 Strategic Management for Human Resources</td>
<td>3</td>
</tr>
<tr>
<td>ILR 549 Advanced Strategic Management</td>
<td>3</td>
</tr>
<tr>
<td>ILR 580 Industrial Relations Practicum</td>
<td>3</td>
</tr>
<tr>
<td>ILR 592 Directed Studies</td>
<td>3</td>
</tr>
<tr>
<td>ILR 595 Independent Study</td>
<td>3</td>
</tr>
<tr>
<td>ILR 689 MSIR Internship</td>
<td>3</td>
</tr>
</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
*522 International Industrial Relations
544 Benefits
562 Collective Bargaining and Labor Relations
Spring
506 Performance Management and Training
530 Compensation Issues
*534 Work Group Dynamics and Leadership
*540 Arbitration Theory and Practice
545 Equal Employment Opportunity
580 Industrial Relations Practicum

Summer Session I
548 Strategic Management for Human Resources
*549 Advanced Strategic Management
*592 Directed Studies
*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

GPA
The industrial relations program requires that the student maintain a grade point average of at least 3.0 on all work taken as a graduate student while enrolled in the College of Business and Economics. In addition, the student must maintain a 3.0 average in all work counting toward the graduate degree. A student whose cumulative grade point average falls below 2.75 will be placed on probation. If the student’s average is not brought up to 2.75 by the end of the following semester, the student will be suspended from the program. A grade below C in more than one course taken while enrolled as a graduate student will result in suspension from the program.

Industrial Relations Emphasis in the Economics Ph.D. Program
Graduate work in industrial relations typically is interdisciplinary in nature. The Ph.D. emphasis retains this orientation while providing students with a Ph.D. level of understanding of economic theory and economic analysis. Students in the industrial relations option take the nine core courses in the Ph.D. in economics program, take comprehensive examinations in microeconomic theory and macroeconomic theory, and follow the rules and requirements for obtaining the economics Ph.D.

Industrial and Labor Relations (ILR)
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.

507. **Conflict Management Processes.** 3 Hr. PR: ILR 462. Sources of conflict in the workplace and processes utilized to deal with that conflict. Theories of conflict management, industry practices, and specific techniques for productive channeling of conflict. Significant experiential component.

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.

549. Advanced Strategic Management. 3 Hr. This is a case-based course. Case analyses and discussion will focus on the concepts of strategy creation, organization alignment strategy implementation and strategy leverage.

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.

580. Human Resources Practicum. 3 Hr. This course offers professional development opportunities through a series of applied seminars taught by practicing professionals.

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. MS-IR 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 12 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. 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.)
Degrees Offered

Master of Arts

Master of Music, Doctor of Musical Arts, Doctor of Philosophy in Music

Master of Fine Arts in Art and Theatre

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 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, voice, percussion, flute, oboe, clarinet, bassoon, saxophone, horn, trumpet, trombone, tuba, violin, viola, cello, or double bass) or composition, and the Ph.D. curriculum in music education 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) 293-4841 x3218
• Director of graduate studies in music, Division of Music at (304) 293-4841 x3196
• Chair, Division of Theatre and Dance at (304) 293-4841 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 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, 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**

†Alison Helm, M.F.A. (Syracuse U.). Interim Chair, Sculpture.
†Bernard Schultz, Ph.D. (U. Pitt.). Dean and director, Art history, Italian renaissance, Modern art, Art theory.

**Associate Professors**

*Victoria Fergus, Ph.D. (Purdue U.). Art education.
*Janet Snyder, Ph.D. (Columbia U.). Art history, Medieval art, Native American art, Women in art.

**Assistant Professors**

*Robert Bridges, M.F.A. (WVU). Curator of collections and the Mesaros Galleries, Clinical Assistant Professor
*Kristina Olson, M.A. (SUNY-Stony Brook). Associate Chair. Art criticism and contemporary art.
Rhonda Reymond, Ph.D. (U. of Ga.). Art history, American art history, American art, Nineteenth century art, Baroque American art.

**Visiting Assistant Professors**


**Music**

**Professors**

†John Beall, Ph.D. (U. of Rochester, Eastman Sch. of Music). Composition, Theory.
†Janet Robbins, Ph.D. (Ohio St. U.). General music education.
†Virginia Thompson, D.M.A. (U. Iowa). Horn, Chamber music.
†Don G. Wilcox, M.A. (Cal. St. at Long Beach). Director of bands emeritus.
Associate Professors
1Cynthia Anderson, M.M. (Manhattan Sch.). Director of Graduate Studies. Oboe, Theory.
*David Bess, Ph.D. (WVU). Instrumental music education.
†John E. Crotty, Ph.D. (Eastman Sch. of Music). Theory, Analysis.
†Mary Ferer, Ph.D. (U. of Ill.). Coordinator, Music history, Music history.
†John Hendricks, M.M. (WVU). Director of Bands, Conducting, Undergraduate Advising Coordinator.
†Paul Scea, M.M. (U. of Iowa). Theory, Jazz, Director of Jazz Studies.
†Kathleen Shannon, D.M.A. (U. of Miami). Director of choral activities. Choral music education, Conducting,
†David Taddie, Ph.D. (Harvard). Theory, Director of electronic music, Coordinator, Theory composition.
†Molly Weaver, Ph.D. (U. Mich.). Coordinator, Music education, Instrumental music education.

Assistant Professors
†Andrew Kohn, Ph.D. (U. of Pitt.). Double bass, Theory.
*George Willis, M.M. (Temple U.). Director of Percussion.

Visiting Assistant Professors
Dearl J. Drury, M.M. (WVU). Director of Marching Band, Assistant Director of Bands.

Adjunct Assistant Faculty
Ellie Mannette, Steel drum manufacturing performance technology.

Theatre and Dance

Professors

Associate Professors
†Jay Malarcher, Ph.D. (LSU). Theatre history and Criticism.
Mary McClung, M.F.A. (WVU). Director of costuming, Costume design.
*William J. Winsor, M.F.A. (Ohio St. U.). Associate Dean and Scene design.
†Joshua Blackmer Williamson, M.F.A. (U. of Wisc.-Madison). Interim Chair, Lighting and sound design.

Assistant Professors
*Robert Klingelhofer (United Scenic Artists). Scene design.

Visiting Assistant Professors

Instructors
Barbara Yurick, B.S. (WVU). Dance.
Art
Alison Helm, Interim Chair
Kristina Olson, Associate Chair
Gerald Habarth, Graduate Advisor
419-A Creative Arts Center
http://artccarts.wvu.edu

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 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 with a $45 nonrefundable processing fee. Applicants to the masters of arts program in art history must also complete the G.R.E. for admission.

Portfolio

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 or a CD or work in digital images and a print-out of images is also helpful, should be submitted to: Alison Helm, 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, with concentration in ceramics, graphic design, intermedia, painting, printmaking, and sculpture. Applicants typically hold 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 as follows:
Degree Requirements: Three-Year Program

Studio Art Concentration Courses ................................................................. 36
Studio/Academic Electives ........................................................................ 6
Teaching Practicum .................................................................................. 3
Graduate Seminar .................................................................................... 3
Art History ............................................................................................... 6
Graduate Exhibition and Thesis ................................................................. 6

Total .......................................................................................................... 60

Studio/Academic Electives ........................................................................ 3
Cognate Subjects ..................................................................................... 9

Recommended Total ................................................................................. 72

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 graduate faculty, 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 nine 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.

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

Studio Art Concentration Courses ................................................................. 9
Studio/Academic Electives ........................................................................ 6
Art Education or Approved Studies ............................................................. 12
Art 402 Master’s in Art Education Project ................................................... 3

Total .......................................................................................................... 30

Teaching Practicum or Graduate Seminar .................................................. 3
Cognate Subjects ..................................................................................... 3

Recommended Total ................................................................................. 36

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, 200/300-level courses). Fifteen hours approved from history, anthropology, philosophy, aesthetics, and humanities. Reading knowledge of at least one language other than English, (second-year equivalent in German, French, or Italian). A B.A. in an area of substantial humanistic research, plus a foreign language may also be acceptable.

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, foreign languages and literature, journalism, public administration).

Master Of Arts In Studio Art

The studio art concentration promotes advanced study in ceramics, painting, printmaking, graphic design, intermedia, 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

Graduate assistantships and other forms of financial aid 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 3-dimensional form, including visual resources, critical theory, historic foundations and technical proficiency to establish a coherent comprehension of the media.

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 pictorial 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.


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.

593 A-Z. *Special Topics*. 1-6 Hr. Investigation of 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.

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

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.)

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.

Music
Cynthia Babin Anderson, Director of Graduate Studies, Division of Music
416-A Creative Arts Center
http://www.wvu.edu/~music

Degrees Offered
Master of Music
Doctor of Musical Arts
Doctor of Philosophy

The Division of Music is an accredited institutional member of the National Association of Schools of Music, the only nationally recognized accrediting agency for professional music instruction. All programs comply with the objectives and guidelines required by this organization.
Prospective graduate students in music are required to have completed the appropriate curriculum of undergraduate study in music at WVU or its equivalent at another institution of recognized standing. For acceptance into a degree program the applicant should make inquiry to the Director of Graduate Studies, Division of Music, P.O. Box 6111, Morgantown, WV 26506-6111.

Applicants for degree study in composition, history, and performance, must take diagnostic tests in music theory, music history, and a piano proficiency. In addition, performance majors in voice and conducting take diagnostic tests in pedagogy and literature. Applicants for degree study in music education must take proficiencies in piano and voice. Applicants in music education have the option to take diagnostic exams in music history and music theory. 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, 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 present necessary credentials for evaluation of previous training and experience to the Division of Music. These include transcripts from all institutions previously attended showing a grade point average of at least 3.0 in all undergraduate study, submitted through the WVU Office of Admissions and Records. Applicants for music history and music theory must also submit scores from the Graduate Record Examination General Aptitude Test. 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.

With the exception of applicants in composition, all 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 may be 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. When the application for composition is complete, it will be reviewed by the composition faculty. If this review is favorable, a representative of the composition faculty will contact the applicant to schedule an entrance audition and interview.

Applicants seeking admission as music theory or music 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 must submit the following:

1. An essay describing and discussing your training, experiences, present interests, and career aspirations in the field of music education.

2. A current résumé.

3. A video recording of teaching, preferably a K-12 music class or rehearsal. Please submit a detailed lesson plan for each class or rehearsal presented on your video of teaching. This is not required of those who are applying for the certification option.

When the application for music education is complete, it will be reviewed by the music education faculty. If this review is favorable, a representative of the music education faculty will contact the applicant to schedule an entrance interview and audition.

**Provisional Admission**

Applicants whose admissions profile does not meet the qualifications outlined above may be considered for acceptance as provisional 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 satisfied any previous undergraduate deficiencies or other conditions, 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 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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 783 Foundations of Music Education</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 784 Introduction to Research in Music Education</td>
<td>3</td>
</tr>
<tr>
<td>Advanced seminars in music education, methods, workshops, directed studies</td>
<td>6</td>
</tr>
<tr>
<td>(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)</td>
<td></td>
</tr>
<tr>
<td>One graduate-level music theory course, (students who do not take the diagnostic exam in music theory must take MUSC 561 as a prerequisite to any graduate-level theory course), and one graduate-level music history course, (students who do not take the diagnostic exam in music history must take MUSC 670 as a graduate-level history course)</td>
<td>5-6</td>
</tr>
<tr>
<td>(theory courses: MUSC 460-462, 463, 464, 465-466, 468, 761, 762, 763, 764)</td>
<td></td>
</tr>
<tr>
<td>(history courses: MUSC 470-476, 591K, 670, 791)</td>
<td></td>
</tr>
<tr>
<td>MUSC 500 or 700 Performance</td>
<td>4</td>
</tr>
<tr>
<td>Master's Field Study</td>
<td>4</td>
</tr>
<tr>
<td>Music Electives</td>
<td>4-5</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 783 Foundations of Music Education</td>
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</tr>
<tr>
<td>MUSC 784 Introduction to Research in Music Education</td>
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<td>Advanced seminars in music education, methods, workshops, directed studies</td>
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<td>(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)</td>
<td></td>
</tr>
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<td>One graduate-level music theory course, (Students who do not take the diagnostic exam in music theory must take MUSC 561 as a prerequisite to any graduate-level theory course), and one graduate-level music history course, (Students who do not take the diagnostic exam in music history must take MUSC 670 as a graduate-level history course)</td>
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<tr>
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<tr>
<td>(history courses: MUSC 470-476, 591K, 670, 791)</td>
<td></td>
</tr>
<tr>
<td>MUSC 500 or 700 Performance</td>
<td>8</td>
</tr>
<tr>
<td>Master’s Recital</td>
<td>4</td>
</tr>
<tr>
<td>Music Electives</td>
<td>2-3</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 783</td>
<td>Foundations of Music Education</td>
<td>3</td>
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<tr>
<td>MUSC 784</td>
<td>Introduction to Research in Music Education</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Advanced seminars in music education, methods, workshops, directed studies</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>(Maximum of 2 hrs. from workshops, maximum of 2 hrs. from directed studies)</td>
<td></td>
</tr>
</tbody>
</table>

One graduate-level music theory course (students who do not take the diagnostic exam in music theory must take MUSC 561 as a prerequisite to any graduate-level theory course) and one graduate-level music history course (students who do not take the diagnostic exam in music history must take MUSC 670 as a graduate-level history course) ........................................ 5-6

(thory courses: MUSC 460-462, 463, 464, 465-466, 468, 761, 762, 763, 764
history courses: MUSC 470-476, 591K, 670, 791)

MUSC 500-700 **Performance** ....................................................... 4
MUSC 492 **Music Student Teaching Seminar** ....................................... 2

### 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 (birth-adult 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 25 credits depending on the student’s previous coursework.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 783</td>
<td>Foundations of Music Education</td>
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</tr>
<tr>
<td></td>
<td>Advanced seminars in music education, methods, workshops, directed studies</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>(Maximum of two hrs. from workshops, maximum of two hrs. from directed studies)</td>
<td></td>
</tr>
</tbody>
</table>

One graduate-level music theory course (students who do not take the diagnostic exam in music theory must take MUSC 561 as a prerequisite to any graduate-level theory course) and one graduate-level music history course (students who do not take the diagnostic exam in music history must take MUSC 670 as a graduate-level history course) ........................................ 5-6

(history courses: MUSC 470-476, 591K, 670, 791)

MUSC 686 **Instrumental Music Methods and Materials** ............................ 3
MUSC 687 **Choral Music Methods and Materials** ..................................... 3
MUSC 688 **General Music Methods and Materials** ..................................... 3
MUSC 500 or 700 **Performance** .......................................................... 4

### Performance Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MUSC 700</td>
<td><strong>Performance</strong> (major performance area)</td>
<td>8</td>
</tr>
<tr>
<td>MUSC 771</td>
<td><strong>Music Research and Bibliography</strong></td>
<td>3</td>
</tr>
<tr>
<td>MUSC 689</td>
<td><strong>Master’s Recital</strong></td>
<td>4</td>
</tr>
<tr>
<td>MUSC 689</td>
<td><strong>Master’s Recital</strong></td>
<td>2</td>
</tr>
</tbody>
</table>

One graduate-level music theory course and one graduate-level music history course

(thory courses: MUSC 460-462, 463, 464, 465-466, 468, 761, 762, 763, 764
(history courses: MUSC 470-476, 591K, 670, 731, 791) .............................. 5-6

Music electives (no more than four hours in the major performance area) ................. 7-8
Ensembles (2 semesters) ................................................................. 2
## 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 Music Research and Bibliography</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 710, 711 Conducting Seminars</td>
<td>6</td>
</tr>
<tr>
<td>MUSC 631, 632, or 633 Survey of (major area) Vocal/Instrumental Music</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 780 or 781 Studies in Choral/Instrumental Techniques (secondary area)</td>
<td>2</td>
</tr>
<tr>
<td>One 700-level theory course</td>
<td></td>
</tr>
<tr>
<td>One graduate-level music theory or music history course</td>
<td>2-3</td>
</tr>
<tr>
<td>(theory courses: MUSC 461-464, 761, 762, 763, 764, 765)</td>
<td></td>
</tr>
<tr>
<td>(history courses: MUSC 470-476, 591K, 670, 791)</td>
<td></td>
</tr>
<tr>
<td>MUSC 689 (Recital)</td>
<td>6</td>
</tr>
<tr>
<td>Ensemble (2 semesters)</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 Music Research and 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 592 Guided Studies (Teaching Internship)</td>
<td>4</td>
</tr>
<tr>
<td>One graduate-level theory course or one graduate-level music history course</td>
<td>2-3</td>
</tr>
<tr>
<td>(theory courses: MUSC 460-462, 463, 464, 465-466, 468, 761, 762, 763, 764)</td>
<td></td>
</tr>
<tr>
<td>(history courses: MUSC 470-476, 591K, 670, 791)</td>
<td></td>
</tr>
<tr>
<td>Music Electives</td>
<td>4-5</td>
</tr>
<tr>
<td>Ensembles</td>
<td>2</td>
</tr>
</tbody>
</table>

## M.M. Jazz Pedagogy Program

Prerequisite: Level 9 in the major performance area; piano proficiency (level 3); 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 Music Research and 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 music theory course or one graduate-level music history course</td>
<td>3</td>
</tr>
<tr>
<td>(theory courses: MUSC 460-462, 463, 464, 465-466, 468, 761, 762, 763, 764)</td>
<td></td>
</tr>
<tr>
<td>(history courses: MUSC 470-476, 591K, 670, 791)</td>
<td></td>
</tr>
<tr>
<td>Music Electives</td>
<td>4-5</td>
</tr>
<tr>
<td>MUSC 797 Research</td>
<td>4</td>
</tr>
<tr>
<td>Ensemble</td>
<td>2</td>
</tr>
</tbody>
</table>

## M.M. Composition Program

PR: Piano proficiency (level 4); 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 660 Composition</td>
<td>6</td>
</tr>
<tr>
<td>MUSC 771 Music Research and Bibliography</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 764 Compositional Techniques of 20th c. music</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 761 Theory Topics</td>
<td>3</td>
</tr>
<tr>
<td>MUSC 762 Pedagogy of Theory</td>
<td>3</td>
</tr>
<tr>
<td>Music Electives</td>
<td></td>
</tr>
<tr>
<td>Music Electives (must include one of the following): MUSC 465 Electronic Music, MUSC 763 Analytical Techniques, or MUSC 765 Transcribing and Arranging</td>
<td>8</td>
</tr>
<tr>
<td>MUSC 698 Research (thesis)</td>
<td>4</td>
</tr>
<tr>
<td>Ensemble</td>
<td>2</td>
</tr>
</tbody>
</table>
M.M., Music History Program
Prerequisite: audition on principal instrument; submission of writing sample and GRE Scores; two semesters or equivalent proficiency in one language (French, German, or Italian, or a language pertaining to the thesis topic); four semesters of undergraduate music theory study; three semesters of undergraduate music history study.

Hrs.
MUSC 771 Music Research and Bibliography ................................................................. 3
Graduate Music History electives (MUSC 470-476, 670) .............................................. 6
MUSC 791 Advanced Topics/ MUSC 591 ................................................................. 6
Graduate Music Theory Elective (MUSC 460-466, 468,761-764) .................................. 3
MUSC 698 Thesis ......................................................................................................... 4
MUSC 700 ................................................................................................................. 8
Electives ....................................................................................................................... 4
Ensembles (two semesters) .......................................................................................... 2

M.M., Music Theory Program
Prerequisite: level 8 in the major performance area; piano proficiency (level 4); 2 semester or equivalent proficiency in one language (French, German, or Italian, or a language pertaining to the thesis topic).

Music 771 Music Research and Bibliography ............................................................. 3
One graduate-level music history course (MUSC 470-476, 591K, 670, 791) ............. 3
*MUSC 465 16th Century Counterpoint ..................................................................... 2
*MUSC 466 18th Century Counterpoint ..................................................................... 2
MUSC 763 Analytical Techniques ............................................................................. 3
MUSC 764 Compositional Techniques in Contemporary Music ............................. 3
MUSC 762 Pedagogy of Theory ................................................................................ 3
MUSC 761 Theory Topics .......................................................................................... 3
MUSC 698 Research (Thesis) .................................................................................. 4
^Electives ................................................................................................................... 8
Ensemble (two semesters) ......................................................................................... 2

*Required if not taken in the undergraduate degree.
^If counterpoint was taken in undergraduate degree (i.e., MUSC 465 and/or 466), six total hours are available as electives.

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 and researchers 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.

The following items must be submitted directly to the Director of Graduate Studies in music:

1. An essay describing and discussing your training, experiences, present interests, and career aspirations in the field of music education.
2. A current résumé.
3. A video recording of teaching, preferably a K-12 music class or rehearsal. Please submit a detailed lesson plan for each class or rehearsal presented on your video of teaching.

When the application for music education is complete, it will be reviewed by the music education faculty. If this review is favorable, a representative of the music education faculty will contact the applicant to schedule an entrance interview and possible audition.

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
- Supervision of Music
- Introduction to Research in Music Education
- Psychological Foundations of Music Education
- Special Topics
- Advanced Studies

**Other Required Courses:** (11–12 credits) Music History, Music Theory/Composition, Foreign Language, Statistics, Educational Psychology

**Cognate Courses (12 credits total, 9 credits in same discipline)**

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 (8–9 credits)**

Selected at the discretion of the student in conjunction with an academic advisor.

**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 Doctoral 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. Complete all coursework.
2. Complete a major project from a graduate music education seminar. This project should be appropriately refined and presented publicly under the supervision of a member of the graduate music education faculty. A concise written proposal articulating the scope and context of the project and the nature of its intended forum must be submitted to the graduate music education faculty for consensus approval.
3. Pass written qualifying examinations demonstrating:
   a. Broad knowledge in music history and music theory.
   b. Appropriate knowledge in the cognate field (usually integrated into the music education exam.)
   c. In-depth knowledge in the field of music education.
4. Pass a comprehensive oral qualifying examination.

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 Prospectus**

1. The requirement for doctoral seminars must be completed before the presentation of the dissertation prospectus.
2. The prospectus must include the following: table of contents, introduction, statement of purpose, research hypothesis, summary of related literature, specifics of methodology, research design, data collection process, analysis procedures, appendices, comprehensive bibliography.

**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, Ph.D. 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 objective of the degree is to prepare artist-pedagogues for careers in higher education and in the professional world.

The degree may be taken in performance and literature (with specialization in piano, voice, percussion, flute, oboe, clarinet, bassoon, horn, trumpet, trombone, tuba, low brass, violin, saxophone, viola, cello, double bass, conducting) 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.

The doctor of musical arts curriculum in conducting prepares students for careers in higher education and in the professional world. During the program of study, students will study repertoire and technique specific to ensembles in all three major performance areas: wind band, choir, orchestra. Demonstration of knowledge, skill, expressive fluency and general conducting competency will be developed through public performance preparation with all three areas; however, most performing will be completed in the student’s primary area of emphasis.

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 complete résumé and 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.

Percussion
1. Keyboard
   a. Major contemporary marimba work
   b. Solo violin work (one movement) from J.S. Bach Sonatas and Partitas
   c. Vibraphone solo of any style
   d. Perform six orchestral excerpts (xylophone and glockenspiel)
2. Snare Drum
   a. Solo or etude from the advanced classical repertoire
   b. Solo or etude from the advanced rudimental repertoire
   c. Three orchestral excerpts
3. Drumset
   a. Perform at least four varying styles
4. World percussion (optional)
   (Possibilities include steel drums, African drumming, taiko, etc...)
5. Multi-media
   a. Video recording of last solo percussion recital that includes multiple percussion and chamber music (if possible).
**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; preferably a major operatic aria.
3. At least two selections from each of the four language categories:
   - **Italian**
     1. 17th and 18th century
     2. Aria by Mozart
     3. 19th and 20th century opera
   - **German**
     1. An Aria by Bach
     2. Lieder: Mozart, Schubert, Schumann, Brahms, Wolf, Mahler, Strauss
   - **French**
     1. Art Songs: Debussy, Ravel, Faure, Poulenc
   - **English**
     1. Early Songs: Purcell or Arne
     2. Contemporary American and British songs: such as Britten, Menotti, or Floyd

**Strings**

Audition repertoire for the D.M.A. in music performance should be chosen to demonstrate the applicant’s current level of achievement.

Early in the application process potential students should contact the major teacher in the area and discuss audition repertoire possibilities.

Suggested repertoire could include a concerto, sonata, show piece, solo Bach, and for the double bass three major orchestral excerpts.

**Woodwinds, Brass**

Audition repertoire for the D.M.A. in music performance should be chosen that allows the applicants 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.

**Conducting**

An on-campus audition with the WVU Wind Symphony, University Choir, or Symphony Orchestra is preferred, although video recorded auditions are allowed when great distance precludes a visit to campus. The student is encouraged to audition in his/her strongest performance area: wind band, choir, or orchestra. Further audition requirements are as follows:

a. The applicant will perform a conducting audition with an appropriate WVU ensemble which will consist of 20–30 minutes of rehearsal of repertoire to be assigned at least two weeks in advance by the appropriate conducting faculty.

b. The applicant will perform an audition on his/her major instrument or voice before appropriate music faculty. Those who have been away from solo performance for a period of several years may offer evidence of past proficiency (e.g. recital programs, letters, reviews, video or audio recording, etc.)

c. Knowledge of literature and techniques appropriate to the applicant’s desired area of emphasis will be assessed by appropriate faculty.
d. Applicants desiring a choral emphasis will also be asked to demonstrate knowledge of appropriate vocal pedagogy within the choral rehearsal, as well as appropriate piano skills.

**Curriculum** The exact amount and nature of coursework undertaken will be determined by the student’s advisor with the approval of the Committee on Graduate Studies in light of previous preparation and field of specialization. A paradigm detailing recommended courses and other requirements is available upon request.

The D.M.A. curriculum in conducting includes: 12 credits of private lessons (minimum of 2 credits in each secondary area); 6-9 credits of conducting seminar (in-depth repertoire study); 6-8 credits of music theory, including at least one analysis course (results of the graduate theory entrance exam will dictate the exact number of credits required); 6–9 credits of music history (results of the graduate history entrance exam will dictate the exact number of credits required); 12–18 credits of recital; 2–8 credits of research. The combination of recital/research credits must equal 20.

**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. Pass written qualifying examinations satisfactorily to show:
   a. Broad knowledge in music theory and music history and literature.
   b. In-depth knowledge of the literature of the field of specialization or of the craft of composition.

2. Satisfactorily pass a comprehensive oral qualifying examination.

   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. 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.

**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 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, lecture recitals, major roles in opera, oratorio, musical theater, or major accompaniments. Credit for each public performance is determined in advance, during the first semester of study, with the establishment of the student’s Doctoral Committee. A performance prospectus indicating projected performance repertoire is prepared by the student in consultation with his/her committee and the major ensemble directors, as appropriate.

   Academic requirements include courses in music theory, music history, and music literature.

**Composition Requirements** Composition requirements (for composition majors) include private lessons and the creation of a composition portfolio. The student will be encouraged by the major professor to compose works in a timely manner in a wide variety of genres from which can be drawn a select number of pieces for the portfolio. The comprehensive examination determines the admission to candidacy and is normally taken after the successful completion of required coursework in music theory and music history. Work on the major project and research document normally will commence only after admission to candidacy. The candidate will submit to his/her Doctoral Committee for approval a prospectus for the portfolio to include the proposed major work, the proposed research document, and the other compositions with proposed credit weighting for each.
**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 *Music Research and Bibliography* (MUSC 771), 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 an approved 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)**

500. *Secondary Performance: Bassoon.* I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on bassoon, with emphasis on methods and materials for school music teachers.

500A. *Secondary Performance: Cello.* I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on cello, with emphasis on methods and materials for school music teachers.

500B. *Secondary Performance: Clarinet.* I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on clarinet, with emphasis on methods and materials for school music teachers.

500C. *Secondary Performance: Euphonium.* 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on euphonium, with emphasis on methods and materials for school music teachers.

500D. *Secondary Performance: Flute.* I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on flute, with emphasis on methods and materials for school music teachers.

500E. *Secondary Performance: Guitar.* I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on guitar, with emphasis on methods and materials for school music teachers.

500F. *Secondary Performance: Horn.* I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on horn, with emphasis on methods and materials for school music teachers.

500G. *Secondary Performance.* I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on a minor instrument (or voice), with emphasis on methods and materials for school music teachers.
500H. Secondary Performance: Oboe. I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on oboe, with emphasis on methods and materials for school music teachers.

500I. Secondary Performance: Percussion. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on percussion instruments, with emphasis on methods and materials for school music teachers.

500J. Secondary Performance: Piano. I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on piano, with emphasis on methods and materials for school music teachers.

500K. Secondary Performance: Pipe Organ. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on pipe organ, with emphasis on methods and materials for school music teachers.

500L. Secondary Performance: Saxophone. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on saxophone, with emphasis on methods and materials for school music teachers.

500M. Secondary Performance: String Bass. I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on string bass, with emphasis on methods and materials for school music teachers.

500N. Secondary Performance: Trombone. I, II, S. 1-2 Hr. (May be repeated for credit) Group or individual instruction in performance on trombone, with emphasis on methods and materials for school music teachers.

500O. Secondary Performance: Trumpet. I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on trumpet, with emphasis on methods and materials for school music teachers.

500P. Secondary Performance: Tuba. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on tuba, with emphasis on methods and materials for school music teachers.

500Q. Secondary Performance: Viola. I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on viola, with emphasis on methods and materials for school music teachers.

500R. Secondary Performance: Violin. I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on violin, with emphasis on methods and materials for school music teachers.

500S. Secondary Performance: Voice. I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on voice, with emphasis on methods and materials for school music teachers.

500T-Z. Secondary Performance. I, II, S. 1-2 Hr. (May be repeated for credit.) Group or individual instruction in performance on a minor instrument (or voice), with emphasis on methods and materials for school music teachers.

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.

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

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. of 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.

633. **Survey of Vocal Music.** I. 3 Hr. PR: 6 Hr. upper-division music history. Survey of masses, oratorios, cantatas and opera from late Renaissance to the twentieth century. Sole repertoire will not be included.

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.

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. 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. 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.)

700. 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 10 to receive credit in MUSC 700.

700A. Performance: Cello. 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 10 to receive credit in MUSC 700A.

700B. Performance: Clarinet. 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 10 to receive credit in MUSC 700B.

700C. Performance: Horn. 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 10 to receive credit in MUSC 700C.

700D. Performance: Percussion. 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 10 to receive credit in MUSC 700D.
700E. Performance: Piano. 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 10 to receive credit in MUSC 700E.

700F. Performance: Pipe Organ. 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 10 to receive credit in MUSC 700F.

700G. Performance: Saxophone. 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 10 to receive credit in MUSC 700G.

700H. Performance: Trumpet. 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 10 to receive credit in MUSC 700H.

700I. Performance: Voice. 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 10 to receive credit in MUSC 700I.

700J. Performance: Conducting. 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 10 to receive credit in MUSC 700J.

700K. Performance: Euphonium. 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 10 to receive credit in MUSC 700K.

700L. Performance: Flute. 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 10 to receive credit in MUSC 700L.

700M. Performance: Guitar. 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 10 to receive credit in MUSC 700M.

700N. Performance: Harpsichord. 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 10 to receive credit in MUSC 700N.

700O. Performance: Oboe. 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 10 to receive credit in MUSC 700O.

700P. Performance: String Bass. 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 10 to receive credit in MUSC 700P.
700Q. Performance: Trombone. 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 10 to receive credit in MUSC 700Q.

700R. Performance: Tuba. 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 10 to receive credit in MUSC 700R.

700S. Performance: Viola. 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 10 to receive credit in MUSC 700S.

700T. Performance: Violin. 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 10 to receive credit in MUSC 700T.

700U. Performance: Applied Jazz. 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 10 to receive credit in MUSC 700U.

700V. Performance. I, II. 1-4 Hr. (Open to qualified students in any field in performance. May be repeated.) Normally offered for two credits (one 30-minute lesson per week) or four credits (one 60-minute lesson per week). A student must demonstrate ability of grade-level 10 to receive credit in MUSC 700V.

700W. Performance. I, II. 1-4 Hr. (Open to qualified students in any field in performance. May be repeated.) Normally offered for two credits (one 30-minute lesson per week) or four credits (one 60-minute lesson per week). A student must demonstrate ability of grade-level 10 to receive credit in MUSC 700W.

700X. Performance. I, II. 1-4 Hr. (Open to qualified students in any field in performance. May be repeated.) Normally offered for two credits (one 30-minute lesson per week) or four credits (one 60-minute lesson per week). A student must demonstrate ability of grade-level 10 to receive credit in MUSC 700X.

700Y. Performance. I, II. 1-4 Hr. (Open to qualified students in any field in performance. May be repeated.) Normally offered for two credits (one 30-minute lesson per week) or four credits (one 60-minute lesson per week). A student must demonstrate ability of grade-level 10 to receive credit in MUSC 700Y.

700Z. Performance. I, II. 1-4 Hr. (Open to qualified students in any field in performance. May be repeated.) Normally offered for two credits (one 30-minute lesson per week) or four credits (one 60-minute lesson per week). A student must demonstrate ability of grade-level 10 to receive credit in MUSC 700Z.

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.

730A. **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.

730B. **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.

730C. **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.

730D. **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.

730E. **Master Class in Applied Repertoire: String.** I, I. 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.

730F. **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.

730G. **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.

731. **Keyboard Literature.** S. 3 Hr. PR: MUSC 434 and MUSC 435A. Intensive study of the literature for keyboard instruments and the history of the literature.

732. **Song Literature.** S. 1-3 Hr. PR: MUSC 434 and MUSC 435. Intensive study of the Art Song and the Lied and the history of their development.

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.


765. Transcription and Arranging. I, II. 3 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.

779. Psychology of Music. II. 3 Hr. Introductory study of musical acoustics and psychology of perception of music.

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.


792 A-Z. Directed Study. I, II. 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.* I, II, S. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.


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.)

930. *Professional Development.* 1-6 Hr. Professional development course 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.

### Theatre and Dance
Joshua Blackmer Williamson, Interim Chair
305-A Creative Arts Center
E-mail: theatre@mail.wvu.edu
http://theatre.wvu.edu/

#### Degree Offered
*Master of Fine Arts*

The Division of Theatre at WVU offers the master of fine arts as the terminal degree in acting and 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 2.75 may be admitted with probationary status.

#### Auditions
Applicants must audition/interview. Applicants intending to specialize in acting must submit a complete résumé 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 résumé 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 and Dance, West Virginia University, P.O. Box 6111, Morgantown, WV 26506-6111 or visit theatre.wvu.edu.

#### 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 20-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 64 designated credit hours and three elective graduate credits.
- A final project 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 project.
- A successful evaluation at the end of each semester 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 64 designated credit hours.
- A production or research thesis.
- Oral defense of the thesis project.
- A successful evaluation at the end of each semester of study.
- An overall grade point average of 3.0.

**M.F.A. in Acting Suggested Program**

<table>
<thead>
<tr>
<th>First Year</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>First Semester Hrs.</td>
<td></td>
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<tr>
<td>THET 540 Graduate Vocal Techniques I ... 2</td>
<td></td>
</tr>
<tr>
<td>THET 542 Graduate Stage Movement I ... 2</td>
<td></td>
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<tr>
<td>THET 544 Graduate Acting Studio I ... 2</td>
<td></td>
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<tr>
<td>THET 621 Graduate Theatre Make-up .... 1</td>
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<tr>
<td>THET 610 Rehearsal/Performance .... 1</td>
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<tr>
<td>THET 546 Graduate Scene Study .... 1</td>
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<th>Second Semester</th>
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<tbody>
<tr>
<td>Second Semester Hrs.</td>
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<tr>
<td>THET 541 Graduate Vocal Tech. II ... 2</td>
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<td>THET 543 Graduate Movement II ... 2</td>
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<td>THET 545 Graduate Acting Studio II ... 2</td>
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<tr>
<td>THET 591 Advanced Topics .... 1</td>
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<tr>
<td>THET 610 Research Methods... 3</td>
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<td><strong>Total</strong></td>
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<th>Second Year</th>
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<tr>
<td>THET 680 Text Analysis ....... 2</td>
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<td>THET 640 Adv. Grad. Vocal Technique I ... 2</td>
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<tr>
<td>THET 642 Adv. Graduate Movement I ... 2</td>
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<tr>
<td>THET 644 Advanced Graduate Studio I ... 2</td>
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<tr>
<td>THET 646 Adv. Graduate Scene Study .... 1</td>
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<tr>
<td>THET 600 Rehearsal/Performance .... 1</td>
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<tr>
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<tr>
<td>THET 694 Specialized Seminar II ... 3</td>
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<tr>
<td>THET 641 Adv. Vocal Technique II ... 2</td>
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<td>THET 643 Adv. Stage Movement II ... 2</td>
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<td>THET 645 Adv. Graduate Studio II ... 1</td>
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<td>THET 691 Advanced Topics .... 1</td>
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<tr>
<td>THET 793 SPTP: Prof. Internship .... 1</td>
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### Third Year

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<th>Second Semester Hrs.</th>
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<tbody>
<tr>
<td>THET 744 Adv. Graduate Studio III 2</td>
<td>THET 698 Thesis 3</td>
</tr>
<tr>
<td>THET 746 Adv. Grad. Scene Study II 1</td>
<td>THET 600 Rehearsal/Performance 3</td>
</tr>
<tr>
<td>THET 793 SPTP: Vocal Technique 2</td>
<td>THET 751 Showcase Development II 2</td>
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<tr>
<td>THET 691 Physical Acting 2</td>
<td>THET 793 SPTP: Vocal Technique 2</td>
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<tr>
<td>THET 698 Thesis 3</td>
<td>Elective 3</td>
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<td>THET 750 Showcase Development 1</td>
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<td>THET 600 Rehearsal/Performance 1</td>
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</table>

**Total Hrs.** 62

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

**Theatre Studies**

<table>
<thead>
<tr>
<th>Hrs.</th>
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<tbody>
<tr>
<td>THET 610 Research Methods 3</td>
</tr>
<tr>
<td>THET 627 Graduate Costume &amp; Décor I 3</td>
</tr>
<tr>
<td>THET 628 Graduate Costume &amp; Décor II 3</td>
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**Total** 15

**Theatre Performance Design**

<table>
<thead>
<tr>
<th>Hrs.</th>
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<tbody>
<tr>
<td>THET 424 Advanced Tech. Production 3</td>
</tr>
<tr>
<td>THET 428 Scene Painting 3</td>
</tr>
<tr>
<td>THET 520 Prin. of Stage Lighting 2</td>
</tr>
<tr>
<td>THET 631 Grad. Scenographic Tech. 3</td>
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<tr>
<td>THET 622 Grad. Scene Design 3</td>
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**Total Hrs.** 27

**Practicum**

<table>
<thead>
<tr>
<th>Hr.</th>
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<tbody>
<tr>
<td>600 Practicum 1</td>
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<td>600 Practicum 1</td>
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<td>600 Practicum 1</td>
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<td>600 Practicum 1</td>
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<td>600 Practicum 1</td>
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**Total** 5

**Theatre Electives**

<table>
<thead>
<tr>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Theatre Elective 3</td>
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<td>Theatre Elective 3</td>
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<td>Theatre Elective 3</td>
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<td>Theatre Elective 3</td>
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</tbody>
</table>

**Total** 15

**Total credits for program 62**

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

**Theatre Studies**

<table>
<thead>
<tr>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>THET 610 Research Methods 3</td>
</tr>
<tr>
<td>THET 627 Grad. Costume &amp; Décor I 3</td>
</tr>
<tr>
<td>THET 628 Grad. Costume &amp; Décor II 3</td>
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**Total** 15

**Theatre Design and Technology**

<table>
<thead>
<tr>
<th>Hrs.</th>
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<tbody>
<tr>
<td>THET 423 Costume Crafts 3</td>
</tr>
<tr>
<td>THET 425 Adv. Costume Construction 3</td>
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<tr>
<td>THET 520 Prin. of Stage Lighting 2</td>
</tr>
<tr>
<td>THET 621 Graduate Stage Make-up 2</td>
</tr>
<tr>
<td>THET 622 Graduate Scene Design 3</td>
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</table>

**Total** 26

**Total credits for program 62**
*Out of the 12 elective – one must be an art elective

Total credits for program 57

**M.F.A. in Lighting Design Suggested Program**

<table>
<thead>
<tr>
<th>Theatre Studies</th>
<th>Hrs.</th>
<th>Electives</th>
<th>Hrs.</th>
</tr>
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<tbody>
<tr>
<td>THET 610 Research Methods</td>
<td>3</td>
<td>THET 697 Research</td>
<td>3</td>
</tr>
<tr>
<td>THET 627 Grad. Costume &amp; Décor I</td>
<td>3</td>
<td>THET 698 Thesis</td>
<td>3</td>
</tr>
<tr>
<td>THET 628 Grad. Costume &amp; Décor II</td>
<td>3</td>
<td>THET 698 Thesis</td>
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<tr>
<td>Total</td>
<td>18</td>
<td>Total</td>
<td>12</td>
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| Theatre Performance/Design | | |
|-----------------|------|------|------|
| THET 427 Lighting Technology | 3 | THET 625 Grad. Lighting Design | 3 |
| THET 520 Prin. of Stage Lighting | 2 | THET 629 Graduate CAD Seminar | 3 |
| THET 613 Stage Management | 3 | THET 630 Grad. Rendering Tech | 3 |
| THET 622 Grad. Scene Design | 3 | THET 631 Grad. Scenographic Tech | 3 |
| THET 625 Grad. Lighting Design | 3 | THET 725 Portfolio Development | 1 |
| Total | 27 | |

Possible elective: Sound Seminar

Total credits for program 61

**Theatre (THET)**

520. *Principles of Stage Lighting*. 2 Hr. An exploration of lighting as a creative tool with emphasis on design development and equipment.

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. *Graduate Production Practicum.* 1 Hr. PR: Consent. (May be repeated for a maximum of 6 credit hours.) Participation in assigned performance or production 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.

613. *Stage Management.* 3 Hr. An Exploration of stage managers’ techniques, skills, and responsibilities through exercises, research into the profession, and experience stage managing an actual production.

621. *Graduate Theatre Make-up.* II. 2 Hr. PR: Consent. Lecture/Laboratory course exploring practical and 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.

630. Graduate Rendering Techniques. 3 Hr. This course allows the graduate student to explore and develop rendering techniques for scenic, costume and lighting designs. Students will work in watercolor, acrylic, marker, and other media.

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.

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

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

634. 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.

635. 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.

636. 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.

637. Advanced Graduate Acting Studio 2. 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.

638. 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.

639. 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 A-Z. *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'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, 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. An in-depth work in the packaging and presentation of the design portfolio, resume writing, and job opportunities. Emphasis is placed on methods of making a successful transition from an academic environment into the performance industry.

725. *Portfolio Development.* 1 Hr. Independent studio work supervised by faculty mentor to prepare the designer portfolio for professional presentations and interviews.

744. *Tour Development 1.* 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.* 1.4 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.*

750. *Graduate Showcase.* 1 Hr. PR: THET 645. Preliminary preparation for graduate actor's showcase. The showcase gives the graduating M.F.A. actor the opportunity to demonstrate his/her skills for an audience of professional agents, casting directors, producers, and directors.

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

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, or a dissertation. (Grading may be S/U.)

798. *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.* 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, 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.
College of Engineering and Mineral Resources
Eugene V. Cilento, Ph.D., Dean
Warren R. Myers, Ph.D., Associate Dean for Academic Affairs
Royce J. Watts, M.S., Associate Dean for Administration
E-mail: cemr-info@cemr.wvu.edu
http://www.cemr.wvu.edu

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 Industrial Hygiene
Master of Science in Mechanical Engineering, Doctor of Philosophy in Mechanical Engineering
Master of Science in Mining Engineering, Doctor of Philosophy in Mining Engineering
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 of West Virginia University.

The facilities supporting these graduate programs 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 (Ph.D.) in most disciplines. The Ph.D. program prepares graduates for leadership in industrial, governmental, or academic fields. The areas of engineering specialization 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 and information sciences 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 industrial hygiene and in safety management. These programs are accredited by the Applied Science Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).
The college offers graduate certificate programs in computer forensics, information assurance, and biometrics and software engineering.

For specific information about a program, students should review research and graduate studies information on the college Web site at www.cemr.wvu.edu.

**Special Requirements**

A student desiring to take courses for graduate credit in the college must comply with the appropriate University and college regulations for graduate study. To become enrolled in a CEMR graduate program, a student must apply for admission through WVU’s Office of Admissions and Records to the department housing the student’s choice of major. Acceptance will depend upon review of the student’s academic background and available facilities in the major program’s 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 is 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 12th 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 12th 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 candidacy examination, the student will be formally admitted to candidacy for the doctoral degree. A student will have only one opportunity for reexamination. Some programs may require a student to successfully pass a qualifying examination before taking the candidacy examination.

**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
†Eugene V. Cilento, Ph.D. (U. Cinn.). Dean. Physiological transport phenomena, Biomedical engineering, Image analysis, Mathematical modeling.
†Dady B. Dadyburjor, Ph.D. (U. Del.). Chair. Catalysis, Reaction engineering, Fuels and chemicals from coal.
†Rakesh K. Gupta, Ph.D. (U. Del.). Berry Professor. Polymer processing, Rheology, Non-Newtonian fluid mechanics, Composite materials.
†Hisashi O. Kono, Dr. Engr. (Kyushu U.). Emeritus. 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
†Alfred H. Stiller, Ph.D. (U. Cinn.). Chemistry (physical inorganic chemistry), Solution chemistry, Coal liquefaction, Carbon science.

Adjunct Professors
Deepak Doraiswanny, Ph.D. (U. Del.) Polymers, Composites.
Charles M. Jaffe, Ph.D. (U. Colo.). Theoretical chemistry, Molecular and atomic physics, Nonlinear dynamics, Astrodynamics, Forensics.
Robert H. Wildi, B.Ch.E. (Cleveland St. U.). Polymer extrusion.

Civil and Environmental Engineering
Professors
†Ronald W. Eck, Ph.D., P.E. (Clemson U.). Transportation engineering, Traffic operations and safety, Highways engineering.
†Donald D. Gray, Ph.D., P.E. (Purdue U.). Fluid flow, Computational fluid mechanics.
†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.


Associate Professors

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

†Darrell R. Dean Jr., P.S., Ph.D. (Purdue U.). Interim Chair. Land surveying, Mapping, GIS applications.

†Robert N. Ell, Ph.D., P.E. (U. Iowa): Hydrology, Hydraulics, Computer graphics.

Assistant Professors


†P. V. Vijay, Ph.D. (WVU). Research. Concrete structures, FRP composite structures for bridges, buildings, and pavements, Aging of structures and rehabilitation, Recycled polymers for infrastructure, Analytical modeling.


Xinchao Wei, Ph.D. (WVU). Research Assistant Professor. Water quality, Physicochemical treatment, Nano-materials, Restoration.

Adjunct Professors

†Lloyd (James) French, Ph.D., P.E. (WVU). Research. Transportation planning, Traffic engineering, Intelligent transportation systems.


†Samir Shoukry, Ph.D. (Aston U.). Pavement modeling, Non-destructive evaluation, Structural dynamics, Bridge instrumentation, Structural health monitoring, and Finite element modeling.

Lane Department of Computer Science and Electrical Engineering Professors


†John M. Atkins, Ph.D. (U. Pitt.). Graduate coordinator for CS. Design of database management systems, Analysis of algorithms, Mathematics of computation.


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


†Ali Feliachi, Ph.D. (Ga. Tech.). Power systems, Large-scale systems, Control.


†Powsiri Klinkhachorn, Ph.D. (WVU). Microprocessor applications, Computer architecture, Binary and nonbinary logic.

†Afzel Noore, Ph.D. (WVU). VLSI design and testing, Software engineering, Information assurance and Biometrics.


**Associate Professors**

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


†Elaine M. Eschen, Ph.D. (Vanderbilt U.). Graduate coordinator for CS Ph.D. CCDM program. Design and analysis of algorithms, Graph theory, Combinatorics.


†Mark A. Jerabek, Ph.D., P.E. (Purdue U.). Solid state devices and sensors, Electromagnetics.


‡K. Subramani, Ph.D. (U. Md.). Scheduling, Computational biology, Computational complexity, Polyhedral combinatorics.


‡Frances L. VanScoy, Ph.D. (U. Va.). Programming languages and compilers, Multisensory computing, High performance computing.

**Research Associate Professor**


**Assistant Professors**

Cao Xian-An, Ph.D., (U. of Fla.). NonoFabrication, Opto-electronic device.

David Graham, Ph.D., (Ga. Tech.). Analog signal processing.


**Research Assistant Professors**


Jeremy Dawson (WVU). Nanotechnology.

**Adjunct Professors**

Lan Guo, Ph.D. (WVU). Medical information systems.

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


Aina Puce, Ph.D. (U. of Melbourne). Neuroscience.


**Lecturers**


**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

Mining Extension Service

Professor
Joseph C. Dorton, B.S. (Concord Coll.). Mine foreman training, Electrical training, Mandatory miner training courses.

Associate Professor

Assistant Professor
Luther B. Ferguson. Emeritus.

Mining Extension Agents
Mark A. Adkins, B.S. (WVUIT). Mine foreman training, Surface and underground apprentice training and electrical training.
Lawrence E. Boord, Self Contained Self Rescuer training and apprentice miner 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.
John D. Spadafore, Self Contained Self Rescuer training, Apprentice miner, Mine rescue.
Coal mining operations, Safety and health management, Education administration.
Ireland Sutton, B.S. (WVUIT). 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.
†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.
†Majid Jaraiedi, Ph.D. (U. Mich.). Statistics, Quality control, Forecasting and Transportation research.
†Warren R. Myers, Ph.D., C.I.H. (WVU). 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

Assistant Professors
†Michael J. Klishis, Ph.D. (WVU). Safe behaviors, Training and loss control, Instructional development, Mine safety and health.
Visiting Professors and Adjuncts
Frank Buczek, Ph.D. (Penn. St.). Biomechanics.
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.
Hongwei Hsieo, Ph.D. (U. Mich.). Human factors and safety.
Christopher Pan, Ph.D. (U. of Cinn.). Safety research.
Tom McDowell, Ph.D. (WVU). Ergonomics, Vibration, Biomechanics.
Kevin Michaels, Ph.D. (Penn St.). Industrial hygiene, Hearing protection.
Hongwei Hsieo, Ph.D. (U. Mich.). Human factors and safety.
Thomas Mcdowell, Ph.D. (WVU). Ergonomics, Vibration, Biomechanics.
Paul Hewett, Ph.D., C.I.H. (U. of Pitt.). Exposure assessment strategies with a focus on data analysis paradigms.
Hongwei Hsieo, Ph.D. (U. Mich.). Human factors and safety.
Christopher Pan, Ph.D. (U. of Cinn.). Safety research.
Tom McDowell, Ph.D. (WVU). Ergonomics, Vibration, Biomechanics.
Kevin Michaels, Ph.D. (Penn St.). Industrial hygiene, Hearing protection.

Mechanical and Aerospace Engineering
Professors
Larry Banta, Ph.D. (Ga. Tech.). Associate chairperson and Undergraduate program director. Automation, Controls, Energy management.
Edward F. Byars, Ph.D., P.E. (U. Ill.). Emeritus.
Ismail Celik, Ph.D. (U. Iowa). Fluids engineering.
Bruce Kang, Ph.D. (U. Wash.). Experimental mechanics, Advanced materials.
Steve Lewellen, Ph.D. (UCLA). Research Fluid dynamics.
Manufacturing systems engineering, Instrumentation, Engines and emissions.
In-Meei Neou, Ph.D. (Stanford U.). Emeritus.
Jacky Prucz, Ph.D. (Ga. Tech.). Associate chairperson and graduate program director. Structural design, Composite materials.
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
Assistant Professors
O. Sam Mukaddi, Ph.D. (U. of Co. at Boulder). Bioengineering.
Gregory Thompson, Ph.D. (WVU). Thermodynamics, Machine design.

Research Professors
Chuanyu Feng, Ph.D. (WVU). Research: Microindentation, Materials characterization, Advanced optical methods for NDE.
Andrew Nix, Ph.D. (Vi.a Tech.). Research: Gas turbine engine heat transfer, Film cooling and durability research; Propulsion and power; Alternative fuels and emissions.

Mining Engineering Professors
Christopher John Bise, Ph.D., Chair. Charles T. Holland Distinguished Professor of Mining Engineering and Chairman, Mine design, Health safety.
A. Wahab Khair, Ph.D. (Penn. St.). Rock mechanics, Ground control, Surface mining, Mine survey.
Syd S. Peng, Ph.D. (Stanford U.). Charles E. Lawall, Chair in Mining Engineering. Longwall mining, Ground control.
Kelvin Wu, Ph.D. (U of Wisc.). Adjunct. Health and safety.

Associate Professors

Lecturer
Jim Dean, M.S. (WVU). Mine management.

Petroleum and Natural Gas Engineering Professors

Associate Professor

Assistant Professor

Department of Chemical Engineering
Dady B. Dadyburjor, Ph.D., Chair
403 Engineering Sciences Building
E-mail: che-info@mail.wvu.edu
http://www.che.cemr.wvu.edu

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 12 active tenured faculty members, 75 undergraduates, and 45 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, systems biology, and thermodynamics. These fundamental areas are finding applications in biochemical technology, biotransport, coal gasification and liquefaction, diabetes, electronic materials and devices, gas hydrates, nanotechnology, 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 and presented keynote addresses 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 12 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 prevention, 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 non-equilibrium 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.)


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. 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 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 Civil and Environmental Engineering
Darrell Dean, Ph.D., Interim Chair
623 Engineering Sciences Building
e-mail: cee-info@cemr.wvu.edu
http://www.cee.cemr.wvu.edu

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.
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 may receive an M.S.E. degree.

The Department of Civil and Environmental Engineering has a full-time faculty of 18 who are active in teaching, research, and professional commitments.

Areas of Emphasis
There are four major areas of interest of the faculty and graduate studies:

- Environmental and hydrotechnical 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, which 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, or www.cee.cemr.wvu.edu.

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 the program 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 bachelor’s degree or master’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
Master of Science in Civil Engineering

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 and other engineering disciplines 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.

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.)

524. Groundwater Engineering. 3 Hr. PR: CE 322 or consent. Introduction to the nature, hydrology, mechanics, technology, and quality of groundwater. Well solutions in confined, leaky, and unconfined aquifers. Modeling concepts and public-domain computer programs.

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.)

531. Pedestrian/Bike Transportation. 3 Hr. Planning, design, operation and maintenance of pedestrian and bicycle facilities, including multi-use traile; in-depth examination of policies, programs and design principles to encourage non-motorized travel.

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.)

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.)

547. Applied Wetlands Ecology and Management. 3 Hr. The management and ecology of wetland vegetation, soils, hydrology, and wildlife. (Offered in fall of odd years. Also listed as WMAN 547 and PLSC 547).

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.

561. 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.)

563. 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.)

564. 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.)

566. Advanced Materials for Infrastructure. 3 Hr. PR: CE 462 and CE 463. Introduction to principles of material science; material structure, characterization at coupon and component level, practical information on fiber-reinforced shapes; establishment of failure analysis and standardization. (3 hr. lec.)
567. 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.)

591 A-Z. 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.

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

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, EE 687, MINE 687, IMSE 687, and MAE 687.)

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.)

721. 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.)

722. 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.)

723. 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.)

727. 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.)

768. **Behavior/Design of FRP Members.** 3 Hr. PR: Consent. Studies of Fiber Reinforced Polymer (FRP) composite member behavior including rebars and wraps for concrete, under flexure, axial, shear forces, and combined effects; design, durability, and rehabilitation of FRP members and systems including field applications.

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. **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.

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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 30 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 and by 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 online 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 department. Instead, mail to Office of Admissions and Records, P.O. Box 6009, Morgantown, WV 26506-6009.
Information on degree programs and course descriptions can be found at our CSEE Web site (http://www.lcsee.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 provide the items below to be considered 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 minimum cumulative grade point average of 3.0 or equivalent, based on a 4.0 system.
• Three letters of reference.

Additional Admission Requirements for Specific Programs
M.S., Ph.D. in Computer Science
• An undergraduate curriculum which includes computer science courses consistent with a bachelor’s degree in computer science. The GRE general test is also required.
M.S.E.
• A bachelor’s degree in electrical or computer engineering, and a GRE score on the general test of either the 80th percentile on the quantitative part or 80th percentile total (verbal + quantitative + analytical).
M.S.E.
• A bachelor’s degree in engineering (other than E.E. or C.P.E.) 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 C.P.E. or E.E.
• A master’s degree in engineering or the sciences and a statement of purpose. A GRE score on the general test of either the 80th percentile on the quantitative part or 80th percentile total (verbal and quantitative and analytical).

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, will be considered for admission. Additional criteria may be considered in making a final decision. 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:

- CS 111 Data Structures.
- CS 230 Software Engineering.
- CS 220 Discrete Mathematics.
- CS 221 Analysis of Algorithms.
- CS 350 Computer System Concepts.
- CS 310 Theory of Programming Languages.

As demand justifies and resources permit, the department will offer accelerated courses to assist graduate students in satisfying deficiencies.

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 two areas: theory and systems. The following courses may be used to meet this requirement:

- Theory: CS 510, 520, or 525.
- Systems: CS 550 or 555.

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 Electrical Engineering with Emphasis in Biometrics and Information Assurance
An applicant with a baccalaureate degree or its equivalent from a program accredited by the Accreditation Board for Engineering and Technology (ABET), or an internationally recognized program in engineering will be admitted on the same basis as engineering 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.

All master’s programs require applicants to satisfy the three items below in consideration for admission. Specific programs may have additional requirements.
- A GRE score on the general test.
- A minimum cumulative grade point average of 3.0 or equivalent, based on 4.0 system.
- Three letters of reference.
- Familiarity with the basic concepts of information assurance and biometrics.

Admission as a graduate student is required of all applicants for admission to a program of student and research. 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.
Regular, Provisional, and Non-Degree Admission

Students admitted into a program are designated as regular, provisional, or non-degree status. Regular status is given to students who are granted unconditional admissions. Provisional status is given to students who have deficiencies to make up such as incomplete credentials or other reasons as identified by the graduate coordinator. In all cases, the student’s letter of admission will state what must be done to attain regular status, and students must sign and date this letter no later than the first registration. Non-degree status is granted case-by-case by the graduate coordinator. Basically, a non-degree student is one who may take courses, but sometimes with no plan of study or any guarantee for attaining provisional status.

Master Options

Three options are available to E.E. master’s students for degree completion:

**Thesis Option** Total hours: 32. Eight three-credit courses, at least two hours of graduate seminar, plus 6 credits of research leading to successful thesis defense.

**Problem Report** Total hours: 35. Ten three-credit courses, at least two hours of graduate seminar, plus three credits of research/independent study leading to successful problem report completion.

**Coursework Option** Total hours: 35. Eleven three-credit courses and at least two hours of graduate seminar

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.eceee.wvu.edu for information. If additional information is needed, contact the graduate coordinator of the Department 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. 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. 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.

College of Engineering and Mineral Resources
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 who 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 the doctoral program.

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 must be admitted as an M.S.C.S. student and 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 three sittings to pass the exams, but need not retake exams on which they previously received a passing grade. The student must pass all three qualifying examinations in three consecutive semesters. A Ph.D. student who does not receive a pass on these examinations after three 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 an additional 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 Doc-
toral 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 Computer Science and Electrical Engineering has its main of-
fice, 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 has facilities also located in Eiesland and Armstrong Halls on the downtown
campus.

The department 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 In-
formation and Computation Systems (LAICS), 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 com-
puter systems, clusters, and networks supporting both the instructional and research activities
of the department. These systems include numerous Windows workstations and a clusters
of Linux Servers. 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 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 publica-
tion, and graduate instruction at the forefront of the field. The areas of emphasis are:
• Theory of computation, including foundations, complexity, algorithm analysis, para-
  llelism, 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.
• Electronic and photonic systems, including integrated electronic, optoelectronic, and optical devices and circuits, microelectromechanical systems (MEMS), and micro/nanofabrication.
• 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 foundations of computer science to algorithm design and analysis. A core of faculty performs research in areas such as discrete mathematics (including graph theory and combinatorics) and combinatorial optimization, partly in connection with the Combinatorial Computing and Discrete Mathematics Institute. Another key area of interest are analysis for parallel and distributed systems and problems in bioinformatics. The department offers core graduate courses in design and analysis of algorithms and computational complexity theory. Upper-division graduate courses cover topics such as graph algorithms, information dissemination, approximation and randomized algorithms, linear programming, and combinatorial optimization.

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 biometric areas. Bioengineering is the multidisciplinary application of engineering to medicine and biology. Biometrics uses biological signatures (fingerprint, voice, face, DNA) for identification or authentication in criminal justice, e-commerce, and medical applications. Specific departmental projects in these areas include multimodal biometric system design and performance measures, analysis of temporal fingerprint images for determination of vitality, neural network, and genetic algorithms for matching of fingerprint and dental images, 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, the National Science Foundation, and the Department of Homeland Security. Research entities in the department include the Center for Identification Technology, a 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 choose 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 growth and 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.

The Center for Identification Technology Research (CITeR), (www.citer.wvu.edu) 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 Photonics and Microelectronics Working Group in the Lane Department. The facilities include a micro/nanofabrication laboratory, a photonics laboratory, a CAD/CAE facility with workstations/PCs and commercial/academic software tools, and an electronic and photonics test facility (device through small scale systems testing). 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.

536. Computer Data Forensics. 3 Hr. PR: CPE 310 and CPE 435 or consent. Provides students with a comprehensive overview of collecting, investigating, preserving, and presenting evidence of cybercrime; introduces topics of forensic data examination of computers and other digital storage devices.

538. Intro Computer Security Management. 3 Hr. Develops management tools to build and maintain a secure enterprise. Includes policies, procedures, and the various management and auditing processes that are needed in a networked enterprise.

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.

568. Computer Network Forensics. 3 Hr. PR: CS 450 and CS 453 or consent. Introduction to threat assessment in modern networked computer systems. Techniques, methodologies and technologies for preventing, detecting, recovering from and collecting evidence of intrusions, with the intent of prosecuting the offending parties.

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.)

585. Concurrent Programming in Java. 3 Hr. PR: CS 110 and CS 111 and CS 415 or Consent. This is a project-based laboratory-oriented course aimed at learning the fundamentals of Component-based Software Development (CBD) and Object-Oriented Concurrent Programming. (OOCP) in Java.


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 methodologie. 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.)

684. *Advanced Real-Time Systems*. 3 Hr. PR: CS 415 and CPE 484 or consent. Project based course focused on analysis and design of real-time systems using the Unified Modeling Language. Object-oriented development process based on design patterns and frameworks is described.


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


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.)

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. 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.)

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. Computational Complexity. 3 Hr. PR: CS 422. Introduction to the theory of computational complexity. Topics include: Turning machines, computability, complexity classes P, NP, and co-NP, the theory of NP-completeness, randomized complexity classes, inapproximability, complexity classes beyond NP.

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.

539. Computer Forensics and the Law. 3 Hr. PR: CPE 435. Surveys the emerging field of computer law and how it applies to businesses and law enforcement, both to aid and to circumscribe the policies and procedures to tackle computer crime.

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.

554. *Network Computing.* 3 Hr. PR: CS 540 or Consent. An in-depth study of the Internet, networking fundamentals, protocols, algorithms, and principles of distributed computing, introduction to network security and management.

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.

556. *Distributed and Pervasive Compt.* 3 Hr. PR: CS 350 or Consent. An in-depth study of distributed computing paradigms, standards, and applications that can exploit this paradigm and the emerging pervasive computing infrastructure.

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.

558. *Multimedia Systems.* 3 Hr. PR: SC 350 or EE 465 or consent, Requirements and QOS; multimedia data acquisition, object decomposition, multimedia storage servers; multimedia communications-networking, traffic characterizations, traffic scheduling, multicasting; compression of images, video and audio; multimedia information systems-indexing and retrieval of multimedia data.


568. *Computer Network Forensics.* 3 Hr. PR: CS 450 and CS 453 or consent. Introduction to threat assessment in modern networked computer systems. Techniques, methodologies and technologies for preventing, detecting, recovering from, and collecting evidence of intrusions, with the intent of prosecuting the offending parties.

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.

593 A-Z. *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.
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, 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.

665. **Computer System Security.** 3 Hr. PR: CS 465 or Consent. Course describes modern approaches to information and system security including encryption techniques, secure communication protocols, operating system security principles, and network intrusion detection techniques.

689. **Graduate Internship.** 1-3 Hr. PR: Completion with 3.0 GPA or better of at least 18 credits of graduate study applicable toward degree requirements. Employments in industry related to degree program. (Graded S/U.) May be repeated twice. Cannot be counted toward graduating requirements.

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.)

691 A-Z. **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.** 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.

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.)

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.)

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. (Alternate years.)
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, Gödel’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.

736. Software Performance Engineering. 3 Hr. PR CS 330 or consent. A systematic, quantitative approach to cost-effectively constructing software systems that meet performance models, and effective data gathering and performance measurement techniques.

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.

750. Secure and Survivable Systems. 3 Hr. PR: CS 680 or consent. An in-depth study of principles, standards, practices, and architectures in the area of secure and survivable systems. Case studies, simulations, and games will be used to gain deep understanding of the issues.

751. Digital Enterprises. 3 Hr. PR: CS 680 or consent. An in-depth study of principles, standards, practices, and architectures in the area of digital enterprise. Case studies, and simulations will be used to gain deep understandings of the issues.

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.

770. 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.

772. 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. 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. **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.

**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 and EE 450. This course deals with the design and analysis of analog integrated circuits. First, the course will introduce to special requirements for analog integrated circuit design together with an overview of the different fabrication technologies, including Bipolar, MOS and BiCMOS. (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.)

562. **Wireless Communication System.** 3 Hr. PR: EE 461 and EE 513. Architecture and design of cellular and wireless communication networks, electromagnetic effects of the wireless channel and corresponding statistical models, implementation and performance of diversity reception techniques, multiple-access.

565. **Advanced Image Processing.** 3 Hr. PR: EE 465 or equivalent. Covers the theory of statistically modeling image source, algorithms for analysis and processing of image signals, new applications of image processing into computer vision and biomedical imaging, and MATLAB-based image processing.

568. **Information Theory.** 3 Hr. PR: STAT 215 or equivalent, or consent. Information measures and mutual information; noiseless coding theorem, construction of compact codes; and of universal codes; channel coding theorem and error correcting codes; cryptography and information theory, algorithmic information theory, and rate distortion theory.

569. **Digital Video Processing.** 3 Hr. PR: EE 465. Covers basic theory and algorithmic aspects of digital video processing, along with latest video coding standards, multimedia streaming, security video, and biometrics. Hands-on experience in processing video signals under MATLAB in team-based projects.
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.

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.)

650. Optoelectronics. 3 Hr. PR: EE 450 or PHYS 471 or approval. Semiconductor physics theory of light-emitting diodes, homojunction lasers, single and double heterojunction lasers, separate confinement quantum well lasers, p-i-n and photo detectors and avalanche photo detectors. Optical and electrical analysis of epitaxial and device designs.

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.)

689. Graduate Internship. 1-3 Hr. PR: Completion with 3.0 GPA or better of at least 18 credits of graduate study applicable toward degree requirements. Employment in industry related to degree program. (Graded S/U. May be repeated twice. Cannot be counted toward graduating requirements.)


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.)

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.)

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 two terminal and multi terminal 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.)

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. **Special Topics.** I, II, S. 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.** 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. **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.)

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 Evolution. 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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321 Mineral and Energy Resources Building
E-mail: wafik.iskander@mail.wvu.edu
Graduate Web page: http://www.imse.cemr.wvu.edu/grad/
Graduate Programs offered: http://www.imse.cemr.wvu.edu/grad/degrees.php

Degrees Offered
- Master of Science in Industrial Engineering
- Master of Science in Engineering with a major in Industrial Engineering
- Master of Science in Industrial Hygiene
- 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 14 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 150 to 180 undergraduate, 110 to 130 M.S., and 20 to 25 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 Accreditation Commission (ASAC) of the Accreditation 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 on-going 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 industrial hygiene, 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 and technical/science disciplines. See our graduate Web page at http://www.imse.cemr.wvu.edu/grad/.

• The M.S. engineering degree program is designed for students having a baccalaureate degree in a technical field who wish to pursue a broader, more interdisciplinary program of graduate studies. An undergraduate degree in either an engineering field or the basic sciences is required for admission to the M.S.E. See the graduate Web page at http://www.imse.cemr.wvu.edu/grad/.

• The M.S. in industrial hygiene 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 the graduate program Web page at http://www.imse.cemr.wvu.edu/grad/.

• 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 management. See the safety management graduate program Web page at http://www.imse.cemr.wvu.edu/grad/.

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 (213 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. industrial hygiene 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/corequisite 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, and 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 site: www.imse.cemr.wvu.edu/grad/.
Thesis
When a student elects the thesis or problem report option, the thesis or problem report 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.I.H. 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 3.4 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.

The department offers two Ph.D. degrees—one in industrial engineering, and the other in Occupational Safety and Health. More details are available on the Web site: www.imse.cemr.wvu.edu/grad/.

Industrial Engineering (IENG)
502. Advanced Manufacturing Processes. 3 Hr. PR: IENG 302 and IENG 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.

504. Materials and Processing Systems Design. 3 Hr. PR: IENG 302 and IENG 303. The engineering design process, material design properties and selection systems, decision making and problem analysis techniques for materials and processing. Economic and cost systems, expert systems, failure analysis, and quality systems for materials and process selection.

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.)

506. Computer Aided Process Planning. 3 Hr. PR: Consent. Computer aided process planning for manufacturing applications; selection of processes and parameters; machining, casting, and forming; development of process plans from design data; analysis of effect of changes in design on manufacturability in concurrent engineering.
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: IENG 593 or IENG 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: IENG 314 or Consent. Continuation of IENG 314. More complex experimental design especially useful to engineering and industrial researchers, including factorials and optimum-seeking design. Emphasis on use of existing digital computer routines and interpretation of results.

518. **Technology Forecasting.** 3 Hr. PR: IENG 213 or consent. 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: IENG 350. Different mathematical models useful in the design of effective production control systems. The various models include: static production control models under risk and certainty; dynamic models under certainty, under uncertainty, 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: IENG 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.

554. **Applied Integer/Heuristic Programs.** 3 Hr. PR: IENG 350 or IENG 553 and knowledge of a computer programming language. Applications of integer and heuristic programming techniques for solving combinatorial optimization problems. Topics include computational complexity, relaxations, branch and bound, cutting planes, simulated annealing, tabu search, and genetic algorithms.

555. **Scheduling and Sequencing Methods.** 3 Hr. PR: IENG 350. Theory and applications of analytical models used in the scheduling models; flow shop models; job shop models; and assembly line balancing methods.

556. **Supply Chain Management.** 3 Hr. PR: IENG 350 or IENG 553. Principles and methods for designing and managing supply chain systems. Topics include: forecasting demand, strategies, aggregate planning, inventory control, outsourcing, transportation networks, and locating facilities within the supply chain network.
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: IENG 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.

577. Advanced Engineering Economy. 3 Hr. PR: IENG 377 or 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 project cost control.

578. Costing and Estimating. 3 Hr. PR: IENG 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; and facility cost estimation.

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: IENG 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: IENG 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: IENG 360 or IENG 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.

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.)

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.

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

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.)

751. Nonlinear Programming. 3 Hr. PR: IENG 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: IENG 213 and IENG 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.

753. *Theory of Linear Programming.* 3 Hr. PR: IENG 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.

754. *Inventory Theory.* 3 Hr. PR: IENG 213 and IENG 350 or Consent. Techniques used in optimization of inventory systems. Elements of static, deterministic inventory models, and static, stochastic inventory models. Selected inventory models. Selected topics related to inventory analysis.

755. *Advanced Digital Simulation.* 3 Hr. PR: IENG 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: IENG 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: IENG 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.

759. *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.)

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

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

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

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

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

765. *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.

766. *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.)

767. *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.)

**Industrial Hygiene & Safety (IH&S)**

527. **Noise Measurement and Control.** 3 Hr. PR: Senior or graduate standing. Includes noise physics, effects of noise on hearing and well-being, noise exposure regulations, and engineering of noise control. Practical experience with noise dosimeters and sound level meters is provided by a field trip.

528. **Industrial Ventilation Design.** 3 Hr. PR: Senior or graduate standing. Design of industrial exhaust ventilation for contaminant control. Includes dilution ventilation, hood design, duct system design, selection of fans and air-cleaning devices, and measurement of flows and pressures.

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.

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.** 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.)

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: IENG 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 Management (SAFM)**

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.


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, developing 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.)


640. **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.

642. **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.

689. **Professional Field Experience.** 1-18 Hr. PR: Must have completed 12 hours in SAFM 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.

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

692 A-Z. **Directed Study.** 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.

697. **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.)

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.)

721. **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.

753. **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.
790. **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.)

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. **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.)

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**Department of Mechanical and Aerospace Engineering**

Ever J. Barbero, Ph.D., Chair  
325 Engineering Sciences Building  
E-mail: maeddept@mail.wvu.edu  
http://www.mae.cemr.wvu.edu/

**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 to 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 or aerospace engineering. A direct-track option from the B.S. to the Ph.D. degree is now available for students with outstanding academic records.

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. Application material and information are also accessible online at www.mae.cemr.wvu.edu

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.

Admission to Doctor of Philosophy Program

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 M.S. degree in an engineering discipline from an institution which has an ABET accredited undergraduate program in engineering or an internationally recognized program in engineering. Qualified candidates holding a M.S. degree in applied sciences can also be considered for admission into the Ph.D. program.

Regular 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 listed 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 or an M.S. degree in the USA.) New TOEFL Score is 79.

• 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 admission as a 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 week in the graduate program. 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, I, or U may be received.

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. Only 400-level courses that are technical electives for the mechanical or aerospace engineering programs can be counted toward graduate credit. A minimum of 24 semester hours of coursework is required for an M.S. degree, in addition to six hours of research credit to meet M.S. thesis requirements. For the Ph.D., degree, even though the absolute minimum set by the college is 18 hours of coursework at the 500-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 his/her 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 to meet 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. Every M.S. student must take two core courses and every Ph.D. student must take at least one core course from a list available in the graduate office of the department.

Math Requirements
The Department of Mechanical and Aerospace Engineering requires that the graduate coursework include six hours of advanced mathematics for the M.S. programs of study and a minimum of six additional hours of mathematics for the Ph.D. programs. A list of mathematics courses approved for graduate credit 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. Graduate students should submit a plan of study approved by his or her Advisory and Examining Committee no later than the end of his/her second semester of enrollment in his/her graduate degree program. Students must pass a final examination administered by their Advisory and Examining Committee before being certified for the degree. The final examination for Ph.D. students must take place no later than five years after the student was admitted to Ph.D. candidacy.

Doctor of Philosophy
The doctorate is a research or performance degree which requires the accumulation of only 18 credit hours of coursework. The remaining 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.

Ph.D. 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
second semester of enrollment in the 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 Advisory and Examining 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 or holding a B.S. degree in applied science, normally will be required to strengthen their background. Plans of study must comply with the rules and regulations outlined in the general requirements for graduate work in the College of Engineering and Mineral Resources. The student's plan of study is formulated jointly by the student and his or her Advisory and Examining 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 area of the MAE department. The remainder of the coursework may consist of courses from 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 work on the research thesis.

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 or holding a B.S. degree in applied science, 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 at least 12 semester hours of courses from selected 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 and Examining Committee based upon the background interests and educational goals of the student.

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. 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 background interests and educational goals of the student.

**Ph.D. Degree**

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. or an M.S. degree in some engineering discipline. Qualified candidates holding a M.S. degree in applied sciences can also be considered for admission into the Ph.D. program. While it is possible for a student with a B.S. degree to enroll directly in the Ph.D. program, it is permitted only for exceptional students whose cumulative grade point average (GPA) for the B.S. degree is 3.5 or higher. Students who apply for such direct B.S. to Ph.D. degree track option are also required to submit GRE general test scores, even if they are U.S. citizens.

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 study in a related subject.

**Academic Areas**

Courses in the department are organized under four academic areas: aerodynamics and fluids; materials and structures; design and control systems; thermal sciences, and material sciences. 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 or nano-technology.

**Fluids and Aerodynamics**

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. Two state-of-the-art flight simulation laboratories are available in the department, of which one is a six degree-of-freedom motion simulator. A significant portion of the current activity involves numerical solutions to flow problems and is supported by a computing facility dedicated to graduate research in Computational Fluid Dynamics (CFD).

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.

**Structures and Materials**

The materials and structures 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. Hence, 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 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, MAE graduate 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 (work stations, personal computers, and supercomputers), and shop facilities.

Regardless of the chosen topic of specialty, the 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 student to apply solid mechanics to modern engineering challenges.

**Design and Controls**

The system control and design 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. Selected examples of research areas include flight simulation and controls instrumentation and testing, elastodynamic analysis, computerized design, active control in automated machines, and manufacturing systems engineering.

The research endeavors of the faculty reflect a close association with current industrial-type situations. Faculty are performing research in the areas of engine modeling, energy systems, 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**

Areas of research specialization related to bioengineering 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)**


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.


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.

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

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 multicomponent 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.

635. *Turbomachinery*. 3 Hr. PR: MAE 320 or Consent. Flow problems encountered in design of water, gas, and steam turbines, centrifugal and axial flow pumps and compressors, design parameters.

637. *Multiphase Flows*. 3 Hr. PR: MAE 331. Particle dynamics including particle-particle and particle-surface interactions; fluidized bed concepts; mathematical models and numerical methods as applied to multiphase flows; design and instrumentation pertaining to multiphase units.

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*. I. 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.


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.)


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; mechanical transients.


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 motion 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.)


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.


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.)

791. **Advanced Topics.** I, II, S. 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.

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. **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.** 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**
Christopher John Bise, Ph.D., Chair
365A Mineral Resources Building
http://www.mine.cemr.wvu.edu/

**Degree Offered**
- Master of Science in Mining Engineering
- Doctor of Philosophy in Mining Engineering

**Master of Science in Mining Engineering (M.S.MINE.)**
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 Mining Engineering (Ph.D. MINE.)**

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 an 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 42 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.

613. Ground Control Failures. 3 Hr. PR: MINE 611 or consent. Case studies of ground control failures on coal pillar, roof bolting, roof fall, cutter, floor heave, multiple-seam mining, and longwall mining.


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.

624. Num Analysis in Mineral Engr. 3 Hr. PR: Graduate standing or consent. Application of mathematical and numerical methods in metallurgy and mineral processing problems.


628. Comput Fluid Flow Mineral Eng. 3 Hr. PR: Graduate standing or consent. Applications of appropriate theories for solving fluid transportation problems in mineral engineering. Newtonian and non-Newtonian slurries applications to mineral engineering are emphasized.

629. Mine Wastes Management/Closure. 3 Hr. PR: Consent. Planning and design to control, detoxificate and contain mine openings for mine and mill closure in mineral industry. Regulatory frameworks.

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.


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.

651. Num Analysis for Mine Design. 3 Hr. PR: Graduate standing or consent. An introduction to the formulation and application of boundary-element, finite-difference, and discrete element methods for geomechanical design of mines and geologic structures.

662. Disp. Disc Modeling in Mining. 3 Hr. PR: MINE 661 or consent. An in-depth look into the formulation and application of the displacement discontinuity method for modeling stresses and displacements in single and multiple-seam coal mines.

663. Geomech Modeling with FLAC. 3 Hr. PR: MINE 611 or consent. An in-depth study of the application of the finite-difference program, FLAC, for modeling static and dynamic scenarios in mining, geologic and soil structures.


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.

682. Advanced Mine Power Systems. 3 Hr. PR: Graduate standing or consent. Advanced study of mine electrical power systems from theory to practice covering the vital aspects that go into planning and designing a mine power system.
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 2.** 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 A-Z. **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 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 Pilar 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.

713. **Theory of Roof Bolting.** 3 Hr. PR: MINE 611 or consent. Review and discuss various theories of roof bolting. Review select papers representative of recent developments of design of roof bolts and selection of materials.

714. **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.

716. **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.

717. **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.

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. **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. **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.** 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, Chair
347A Mineral Resources Building
E-mail: sameri@wvu.edu
http://www.pnge.cemr.wvu.edu/

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 their 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, 600, 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 3.0 and 3.2, respectively.

• A score of at least 75 percentile for Graduate Record Examination (GRE) quantitative analysis.

• A score of 213 or better on computer-based TOEFL or 550 or better on the paper-based TOEFL 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 an 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: PHGE 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. **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.)
College of
Human Resources and Education
Dee Hopkins, B.S., M.S., Dean
Lynn Cartwright, Ed.D., Interim Associate Dean for Academic Affairs
James Rye, Ph.D., Interim Associate Dean for Research and Technology
http://www.hre.wvu.edu

Degrees Offered
Clinical Doctorate in Audiology
Doctor of Philosophy in Counseling Psychology
Doctor of Education
Areas of Emphasis:
Curriculum and Instruction
Educational Leadership Studies
Instructional Design and Technology
Special Education
Masters of Arts in Child Development and Family Studies
Master of Arts in Counseling
Master of Arts in Educational Leadership Studies
Master of Arts in Educational Psychology
Master of Arts in Elementary Education
Master of Arts in Instructional Design and Technology
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

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 leadership, educational psychology, elementary education, reading, instructional design and technology, rehabilitation counseling, secondary education, special education, and speech pathology and audiology. 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 instructional design and technology, or special education. Specific information about doctoral studies in these emphasis areas is listed in the program description area of the catalog. Students interested in the clinical doctorate in audiology (Au.D.) and the doctor of philosophy (Ph.D.) in counseling psychology will find information about those programs in separate areas of this catalog.

Admission
Admission, curriculum, and specific 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 cannot 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 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 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, constitute 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, 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.
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. For options A and B two additional faculty members will be assigned to serve as the remainder of the three-member Master's Committee. For option C, only the advisor is required.
   • 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 may require the comprehensive examination in options A, B, and C above. The candidate's committee (options A and B) or advisor (option C) 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.
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.

Child Development and Family Studies

Professors
1Carol Markstrom, Ph.D. (Utah St. U.). Family, adolescent, and social contexts.

Visiting Lecturer
Barbara Pavel-Alvarez, M.S. (WVU). Early childhood development, Child and family relations.

Early Childhood Teacher

Counseling, Rehabilitation Counseling, and Counseling Psychology

Professors
1L. Sherilyn Cormier, Ph.D. (Purdue U.). Emerita.
1Ranjit K. Majumder, Ph.D. (U. Okla.). Emeritus.

Associate Professors
1Margaret 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.
Larry Kontosh, Ph.D. (Ohio St. U.). Career counseling, adult development, and life planning with persons with disabilities.
Assistant Professors
Jennifer Adams, Ph.D. (U. of N.C. at Greensboro). Coordinator of the school counseling master’s program, School counseling, Multicultural counseling.

Visiting Assistant Professors
Amy Wilson Strange, Ph.D. (WVU). Counseling, Counseling psychology, Lifespan development, School counseling, Psychological assessment, Children and adolescents, Behavior disorders, Divorce and parenting issues.

Visiting Instructor
Regina Burges Carrick, M.S. (WVU). Vocational assessment, Rehabilitation counseling.

Curriculum and Instruction-Literacy Studies
Elementary Education
Reading
Secondary Education Professors

Associate Professors
Judy Abbott, Ph.D. (U. Tex.). Literacy education, Children’s writing, Motivation, Children’s literature.

Assistant Professors
Sheila Benson, Ph.D. (U. of Iowa). English education, Literacy, Multiliteracies, Critical literacy.
Allison Swan Dagen, Ph.D. (U. of Pitt.). Instructional and learning reading.
Barbara Merlins, M.S.L.S. (Syracuse U.). Emerita.
Aimee L. Morewood, Ph.D. (U. of Pitt.). Reading education, Professional development, Effective teaching strategies.
Educational Leadership Studies

Professors
Helen M. Hazi, Ph.D. (U. Pitt.). Legal issues affecting instructional supervision.

Associate Professors
Paul Chapman, Ph.D. (Va. Tech.). Public school leadership, organizational dynamics, ethics, and leadership.

Adjunct Teaching and Field Practice Resource Personnel
William H. Hutchens, III, J.D., Higher education law, College student and courts.

Educational Psychology

Professors
Anne H. Nardi, Ph.D. (WVU). Developmental psychology, Problem solving, Adult learning.

Assistant Professors
Neal Shambaugh, Ph.D. (Va. Tech.). Instructional design, Instructional technology, Cognition.

Assistant Professors

Visiting Assistant Professor

Instructional Design and Technology

Professors

Associate Professors
Terence C. Ahern, Ph.D. (Penn. St. U.). Instructional systems design.

Assistant Professors
Ugur Kale, Ph.D. (Ind. U. Bloomington). Instructional technologies, Instructional design, Professional development, Online communication, Teacher education, Content analysis, Social network analysis.

Social and Cultural Foundations

Professors

Assistant Professor
Social and Cultural Foundations

Professors

Assistant Professor

Special Education

Professors

Associate Professor
Ann M. Richards, Ph.D. (U. of Az.). Multicategorical special education, transition, law and policy issues.

Assistant Professors

Speech Pathology and Audiology

Professors
Mary Ellen Tekiel Koay, Ph.D. (U. Okla.). Speech pathology, Cleft palate, Neurophysiology, Neuropathologies, Clinical supervision.
Dennis M. Ruscello, Ph.D. (U. Az.). 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 Instructors

Lecturer
Larry A. Bell, M.S. (WVU). Rehabilitation counseling. Manual communication.
Department of Counseling, Rehabilitation Counseling, and Counseling Psychology
Margaret K. Glenn, Interim Chair
Allen Hall, P.O. Box 6122
http://www.hre.wvu.edu/crc

Degrees Offered
Master of Arts in Counseling
Master of Science in Rehabilitation Counseling
Doctor of Philosophy in Counseling Psychology

Counseling
Edward E. Jacobs, Program Coordinator
Allen Hall, P.O. Box 6122
http://www.hre.wvu.edu/crc

Degree Offered
Master of Arts

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) and is a WVU program of excellence. Variations of the curriculum allow emphasis in school counseling and community counseling. All applicants must comply with University, the College of Human Resources and Education, and departmental requirements.

A degree in counseling provides a broad opportunity to work with children at the elementary-school level, adolescents at the secondary-school level, and all ages at the community level. 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. Community counselors work with all ages and populations in various community settings such as correctional facilities, treatment centers, mental health agencies, etc. Counselors must be equipped to work with both individuals and groups.

Students are encouraged to pursue their studies on a full-time basis; however, part-time students are accepted. Part-time admission is meant only for those who plan to take one or two courses a semester. If admitted with part-time status, students will NOT automatically be able to move into the full-time program. 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 1
COUN 505 Theory and Practice of Human Appraisal
COUN 536 Theories of Human Development
EDP 612 Introduction to Research
COUN 606 Counseling Theory and Techniques 2
COUN 608 School Counseling 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 664 Ethical Issues in Counseling

College of Human Resources and Education
COUN 665 Abnormal Behavior
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 six hours of coursework.

**Required for community counseling students only.

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.
- Three letters of reference.
- Completion of the departmental application to the counseling program.

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. The initial screening decision is based upon this information. Successful applicants are then interviewed by program faculty.

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.

Degree Requirements

Degree requirements include completion of the required counseling coursework, including practicum and internship. A minimum of 60 hours of coursework with a 3.0 grade point average is required.

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 throughout the entire program with special emphasis 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. Graduates seek employment in school settings and in community settings such as mental health centers, drug and alcohol agencies, corrections, and private practice.

Certification

Certification requirements in school counseling are the same as for the master's 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 six-hour block of professional education coursework (see department for list) and competency assessment in addition to the 60-hour master’s degree program.
• Specialization area examination. Satisfactory performance is required for certification eligibility. This examination is administered under the auspices of the State Department of Education.

Counseling Psychology
James W. Bartee, Director of Training
Allen Hall, P.O. Box 6122
http://www.hre.wvu.edu/crc

Degree Offered
Doctor of Philosophy

Doctor of Philosophy in Counseling Psychology
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 practitioner-scholars 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 counseling psychology program at West Virginia University is fully accredited by the American Psychological Association to offer the doctor of philosophy in this specialty area of professional training in psychology. Our next program review is scheduled for 2010. Accreditation is a process that reflects the commitment of the institution to self-study, external review by one’s peers in seeking not only to meet professional standards but also to continuously seek ways in which to enhance the quality of education and training provided by the program.

For more information please refer to: The Office of Program Consultation and Accreditation, American Psychological Association, 750 First Street, NE, Washington, DC 20002-4242, phone: (202) 336-5979, fax: (202) 336-5978, E-mail: apaaccred@apa.org.

Admission
The admission process is a two-stage procedure. Each fall, applications received by December 1 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 or higher, 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. A score of three or better on the Analytic Writing section is taken into account in evaluating the GRE scores.
• 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 December 1 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.
- Passing scores on the written comprehensive examination of major areas in counseling psychology and research.
- Completion of an approved research prospectus.

Internship After admission to candidacy, students are required to enter the national psychology predoctoral internship competition. APA-accredited internships are typically off-campus, often out of the area, and are full-time, 12-month, paid positions. After successful completion of the internship and the research dissertation, students take a final oral examination regarding their dissertation research.

Counseling Psychology (CPSY)


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, competencies and roles. (Alternate years.)

735. Social Psychology. 3 Hr. Classic and contemporary readings/research in social psychology emphasizing the interface of social and counseling psychology and integrating social psychology and counseling psychology practice. Uses a student-centered model with emphasis on student-led discussion and demonstrations.

740. Assessment of Psychopathology. 3 Hr. PR: CPSY 701 and CPSY 769. Assessment and diagnosis of psychopathology, integration of case data, treatment planning from a developmental, multicultural perspective with emphasis on ethical and socially responsible interventions, collaboration of counseling psychology with other health care providers.

745. History and Systems of Psychology. 3 Hr. PR: CPSY 701 and CPSY 760. History of modern psychological thought and methodology including the social, political, philosophical, and cultural factors influencing the major schools and systems of psychology, particularly in relationship to counseling psychology.

750. Physiological Psychology. 3 Hr. PR: CPSY 701 and CPSY 760. Survey of neuroanatomical, neuroendocrinological mechanisms underlying psychological and behavioral processes Motor, sensory, perceptual, behavioral, cognitive, and affective functional systems will be studied. Relevance to normal and pathological development will be reviewed.

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.


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.


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 Assistanships 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.

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

Rehabilitation Counseling
Margaret K. Glenn, Program Coordinator
Allen Hall, P.O. Box 6122
http://www.hre.wvu.edu/crc

Degree Offered
Master of Science

Master of Science in Rehabilitation Counseling
The rehabilitation counselor education program in the College of Human Resources and Education offers a curriculum at the master’s degree level. All students complete coursework related to rehabilitation and disability issues as well as coursework in counseling.

This professional counseling specialty assists individuals with physical, mental, developmental, cognitive, and emotional disabilities to achieve their personal, career, and independent living goals in the most integrated setting possible through the application of the counseling process. The counseling process involves communication, goal setting, and beneficial growth or change through self-advocacy, psychological, vocational, social, and behavioral interventions. Counselors work for federal, state, and private rehabilitation agencies, centers, and community-based programs. They also work in mental health and substance abuse service agencies. The program is fully accredited by the Council on Rehabilitation Education and is a WVU Program of Excellence.

The program of study includes 51 credit hours or coursework including 11 didactic courses, a practicum (150 hours), then a faculty supervised internship (600 hours) in the final semester. Graduation is contingent upon completion of these 51 credit hours with a 3.0 grade point average. In addition to completing coursework satisfactorily, a candidate must demonstrate the ability to assume the responsibilities required of a professional rehabilitation counselor and the personal characteristics essential to effective working relationships with others.

The rehabilitation counseling program is available for both full and part time students. An E-Campus version of the program is offered through Extended Learning. On-campus programs start in the fall and E-campus programs start in the spring semester.

Students may take the professional certification examination to obtain national certification as a rehabilitation counselor during their internship semester. Graduates who take additional coursework (60 hours as advised) and undertake the appropriate level of supervised experience after completion of their degree are typically eligible for licensure as a counselor in West Virginia.
Required Courses
All students are required to take the following core courses:

COUN 501 Counseling Theory and Techniques 1
COUN 505 Theory and Practice of Human Appraisal
COUN 606 Counseling Theory and Techniques 2
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 672 Counseling Practicum
REHB 675 Clinical Practice
REHB 680 Research Seminar
or
EDP 612 Research

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 one involves a review of credentials presented in the application materials including references, department application (relevant major; general quality of application), GPA, and GRE scores (verbal, quantitative, and analytical writing). Step 2 is the department interview which considers personal 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 as well as an assessment of applicants' capacity to complete the rehabilitation counseling curriculum successfully.

The preferred application deadline for receiving completed materials is February 1, however, applications are accepted until April 1 for the on-campus program. The deadline for the E-campus program is October 15.

Counseling (COUN)
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.
536. Theories of Human Development. 3 Hr. Theory and research on emotional, social, and intellectual development over the life span. Emphasis on application of developmental theories within educational and therapeutic settings.


608. School Counseling Services. I, S. 3 Hr. PR: consent. Applications of counseling theories and techniques appropriate to the school counseling setting will be explored. Students will develop needs assessments, review legal and ethical issues related to schools, and develop a professional school counseling portfolio.


611. Community Counseling. I, S. 3 Hr. PR or CONC: COUN 501 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.

612. 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.

613. Consultation Theory and Techniques. 3 Hr. PR: COUN 606. Strategies in schools and agencies.

614. Cultural Issues. I, S. 3 Hr. PR: Program major or Consent. The impact of cultural differences on the counseling process; including gender, race, ethnicity, socioeconomic status, and counseling styles will be discussed. Racial identity development models will be discussed. Group and experiential activities are required.

615. 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.


617. 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 606. Surveys the legal and ethical issues and professional ethics codes in the counseling profession. Ethical principles applied to schools, agencies, and private practice. Meets ethics content requirement for the LPC.

665. **Abnormal Behavior.** 3 Hr. PR: COUN 536 and COUN 606. Framework for exploring the range of personality and behavioral disorders as described in the DSM-IV-TR. Focus on: Descriptive criteria, etiology, assessment, diagnosis, multicultural consideration, psychotropic treatments of, and understanding of the major diagnostic categories.

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 A-Z. **Advanced Topics.** I, II, S. 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.

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 A-Z. **Professional Development.** 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology.) The continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

930. **Professional Development.** 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology.) These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.
Rehabilitation Counseling (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.


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.


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.


672. *Counseling Practicum.* I, II, S. 1-4 Hr. PR: Graduate standing, liability insurance, and Consent. Supervised experience in the application of counseling techniques in the rehabilitation process. Demonstration of high professional standards, counseling skills, and personal characteristics appropriate to the counseling relationship are essential.

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.

675. *Clinical Practice.* 1-15 Hr. PR: Consent. Clinical practice (internship) in selected agencies, rehabilitation centers, clinics, or hospitals conducting an organized program of services for the physically, mentally, emotionally, or socially handicapped. Practice will be under direct supervision of faculty and agency personnel.


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 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. 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.


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, and dissertations. (Grading may be S/U.)

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

**Curriculum and Instruction-Literacy Studies**

Elizabeth A. Dooley, Chair
Allen Hall
http://www.hre.wvu.edu/C&ILs/index.html

**Degrees 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; 33 of the 42 hours must be taken at WVU. In addition to the major area coursework in curriculum and instruction, students must (a) have coursework in an area of specialization; (b) must complete a core of foundations and research courses; (c) successfully complete a comprehensive examination; (d) seek approval of a dissertation topic; and (e) successfully defend dissertation research.
Admission

All applicants must comply with the requirements of West Virginia University, the College of Human Resources and Education, and the curriculum and instruction program area. Requirements for the curriculum and instruction area for the Ed.D. are as follows:

- Completion of a master's degree from an accredited school.
- Graduate grade point average of at least 3.25.
- A goals statement that describes the extent to which the applicant's goals may be accomplished through the program.
- Three letters of references.
- Graduate Records Examination (GRE) or Miller Analogies Test (MAT) are required for admission (score cannot be more than five years old). Please contact the department for minimum score requirements and/or program changes.
- International students from a country in which English is not the native language must have a TOEFL score of at least 550.
- Related teaching and/or other appropriate professional experience.

Applications are reviewed and admission recommendations are made by the program’s Doctoral Admissions Committee. The number of students accepted into the program in each admission period is determined by available resources. For additional information or requirements visit http://www.hre.wvu.edu/C%26ILS/index.html.

Submission and completion of all of the above does not guarantee admission into the program.

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 and oral examination.
- Have a research prospectus approved by the Dissertation Committee.

For additional information concerning admission criteria, program requirements, deadlines, and timelines, please direct inquiries to the Chair, Department of Curriculum and Instruction-Literacy Studies, Allen Hall, College of Human Resources and Education, West Virginia University, P.O. Box 6122, Morgantown, WV 26506-6122; or phone (304) 293-3441.

Elementary Education

Master of Arts

The Department of Curriculum and Instruction-Literacy Studies 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.

Students pursuing a master of arts degree in elementary education may choose one of four program areas. Each program area is designed to meet the educational and career goals of students who pursue this degree area.

I. Master of Arts Elementary Education

Elementary Education (Advanced Program of Study)

This program is designed for individuals who already hold a bachelor’s degree in elementary education in addition to teaching certification in elementary education and for educators or other professionals who have curriculum and instructional responsibilities. Students have the opportunity to advance their knowledge and skills applicable to student learning.

Required Professional Graduate Education Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C&amp;I 604 School Curriculum</td>
<td>3</td>
</tr>
<tr>
<td>C&amp;I 605 21st Century Teaching and Learning</td>
<td>3</td>
</tr>
<tr>
<td>SCFD 620 Philosophy of Education</td>
<td>3</td>
</tr>
<tr>
<td>or SCFD 640 History of Education</td>
<td>3</td>
</tr>
<tr>
<td>or Approved C&amp;I Course</td>
<td>3</td>
</tr>
<tr>
<td>C&amp;I 631 Math in the Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>C&amp;I 648 Science/Technology/Society</td>
<td>3</td>
</tr>
</tbody>
</table>
II. Master of Arts Elementary Education

Elementary Education Program with Initial Teaching Certification

This program is available to those students who hold a bachelor degree in non-education fields or other education fields, and choose to pursue a degree and certification in teacher-education. This program is also designed for career changers; those individuals who choose to change careers after several years on the job.

Required Professional Graduate Education Courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C&amp;I 631 Mathematics in Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>C&amp;I 602 Curriculum and Teaching Principles</td>
<td>3</td>
</tr>
<tr>
<td>C&amp;I 640 Science in Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>C&amp;I 650 Social Studies in Elementary School</td>
<td>3</td>
</tr>
<tr>
<td>C&amp;I 689 Cultural Diversity in the Classroom</td>
<td>3</td>
</tr>
<tr>
<td>EDP 600 Educational Psychology</td>
<td>3</td>
</tr>
<tr>
<td>RDNG 403 Children’s Literature</td>
<td>3</td>
</tr>
<tr>
<td>RDNG 621 Reading and Writing Instruction-Elem Schools</td>
<td>3</td>
</tr>
<tr>
<td>RDNG 640 Instructing Students with Reading Difficulties</td>
<td>3</td>
</tr>
<tr>
<td>RDNG 641 Problems in Reading</td>
<td>3</td>
</tr>
<tr>
<td>SPED 500 Legal/Educntl Foundtns: Spec Ed</td>
<td>3</td>
</tr>
<tr>
<td>SPED 601 Special Education Curriculum/Methods</td>
<td>3</td>
</tr>
</tbody>
</table>

Total hours in the elementary master’s program ............................................. 36

C&I 584 ................................................................................................................................. 9
C&I 594 ................................................................................................................................. 3

Total graduate hours in education [including internship] ........................................ 48

Please note: Students must also complete required content coursework for teaching certification. Contact the department for the additional certification coursework required.

Due to frequent ongoing changes in teacher certification requirements, program requirements may change. Because of this, it is imperative that our students consult with a program advisor prior to the beginning of your program of study.

For further information on admission and program requirements, visit our Web site: http://www.hre.wvu.edu/C&ILS/index.html or write to the Chairperson of Curriculum & Instruction-Literacy Studies, College of Human Resources and Education, Allen Hall, P.O. Box 6122, Morgantown, WV 26506-6122.

III. Master of Arts Elementary Education Early Childhood Education (Pre K-4)

This program is designed for those individuals who choose to become experts in early childhood education. Students gain practical experience by working with young children throughout their educational experience.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>*C&amp;I 410 Early Childhood Education I</td>
<td>3</td>
</tr>
<tr>
<td>or C&amp;I 614 Early Childhood Education</td>
<td></td>
</tr>
<tr>
<td>*C&amp;I 411 Early Childhood Education II</td>
<td>3</td>
</tr>
<tr>
<td>or C&amp;I 612 Early Childhood Curriculum</td>
<td></td>
</tr>
<tr>
<td>EDUC 414 Promoting Creative Expr in Elem-Erly Childhood</td>
<td>3</td>
</tr>
<tr>
<td>or THET 461 Creative Dramatics</td>
<td></td>
</tr>
<tr>
<td>or C&amp;I 693 Special topics: Arts and Education</td>
<td></td>
</tr>
<tr>
<td>PET 493 Special Topics: Kinderskills</td>
<td>3</td>
</tr>
<tr>
<td>or PET 668 Motor Development</td>
<td></td>
</tr>
<tr>
<td>or PET 670 Infant/Early childhood Motor Development</td>
<td></td>
</tr>
</tbody>
</table>
SPA 278 *Speech-Language-Hearing: Development-Disorders* .......................................................... 3
or SPA 608 *Hearing Impaired Children in Schools*
or SPED 500/300 *Survey of Exceptional Children and Adults*
or SPED 601 *Special Education Curriculum/Methods*
or SPED 610 *Typical/Atypical Development Early Intervention*

CDFS 212 *Early Childhood Development* ............................................................................ 3
or *CDFS 316 Child Development Practicum*
or *C&I 587 Clinical Experience Early Childhood*
or *Graduate Course in Child Development*

or equivalent experience

<table>
<thead>
<tr>
<th>Total required hours</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Approved elective hours</td>
<td>18</td>
</tr>
<tr>
<td>Total graduate hours</td>
<td>36</td>
</tr>
</tbody>
</table>

An additional Birth to PreK option adds the following requirement:

CDFS 211 .................................................................................................................................. 3

*Meets performance assessment requirement for field experience: C&I 410, C&I 411, C&I 587, or CDFS 316.

**Other Requirements:**

Graduate students applying for a birth-K certification are required to complete three hours of performance assessment credits in a pre-K classroom or approved equivalent experience. They must also pass the Early Childhood Education Exam, #0530.

(All elective courses must be approved by the advisor before enrollment.)

**IV. Master of Arts Elementary Education (Thesis Option)**

This thesis option is available to those who choose to advance their career through the intensive study of their area of interest while creating an individualized research agenda. Students interested in pursuing this option should contact the chair of the department for program options.

**Requirements** All applicants must comply with the general requirements of the University and the College of Human Resources and Education.

**Graduation**

All students must apply for graduation. Please contact the Center for Student Advising and Records, Room 710 Allen Hall, PO Box 6122, Morgantown, WV 26506-6122.

**Program Policies and Matriculation Benchmarks – Elementary Teaching Certification Programs**

All students enrolled in post B.A. initial certification programs in the Department of Curriculum and Instruction-Literacy Studies must adhere to the following policy. Please consult with your advisor to discuss your program plan.

**Matriculation Benchmarks**

**Phase One** - Admission to the M.A. program in elementary/secondary education

*Criteria*

- Bachelor's degree
- GPA 2.75
- TOEFL (international students)
  TOEFL score must be at least 550 (paper) or 213 (computer) for international students.
  (76 after July 2006)

**Phase Two** Admission to certification teacher education

*Criteria*

- 3.0 GPA in graduate coursework
- Successful completion of C & I 602
  (Must complete class with a grade of B or above.)
Successful completion of:
** PPST (Pre Professional Skills Test - PRAXIS I) unless the student has an M.A. or 26 on ACT or 1125 on the SAT (see State Policy 5100). This policy can be found on the WV department Web site, under State Board (policies – 5100): http://wvde.state.wv.us.
Test scores must be submitted to department.
- Begin collection of artifacts for an exit portfolio

**Phase Three** – Student teaching placement (pre-requisites)

**Criteria**
- Completion of all professional education and subject content coursework.
- Completion and submission of Student Teaching Application.
- Successful passing the PRAXIS II.
Test scores must be submitted to the Advising Center.
- Completion of a minimum 125 hours of field based experience.

**State Policy # 5100**

6.2.3. PPST Waivers. In lieu of taking the WVBE-approved PPST, prospective educators completing WVBE-approved programs may provide evidence of:
- A master's degree from an accredited institution of higher education; or
- Currently holding or having held a West Virginia professional teaching, administrative or student support service license; or
- Attainment of WVBE-approved composite scores from a single administration of the American College Testing (ACT) Program or the Scholastic Achievement Test (SAT). See Appendix E of this policy for currently approved ACT and SAT scores. Waivers a and c do not apply to the institution's required assessments of speaking, listening, and educational technology knowledge and skills. Individuals who currently hold or have held a West Virginia professional teaching, administrative, or student support services license are not required to complete any of the pre-professional skills assessments, (WVDOE Policy 5100).

**Additional Notes**

1. C&I 602 must be taken in the first or second semester after admission into the program.
2. No more than 14 hours at a 400 level plus student teaching may count toward a 36-hour master's degree.
3. Application for transient credit for graduate courses taken at other institutions must be approved by the advisor and the associate dean for academic affairs.
4. Elective courses must be approved by the advisor prior to enrollment.
5. Prior to enrollment in C&I 584 Student Teaching:
   - All coursework must be completed.
   - All students must complete 125 hours of approved fieldwork.
   - All students must submit passing scores (as determined by the West Virginia Department of Education) and copies of the subtest scores for the appropriate PRAXIS II (content area) to the Advising Center test prior to student teaching.
6. All students must successfully complete a professional portfolio that demonstrates mastery of INTASC standards and specialization content. Students submit the portfolio in C&I 594 Capstone.
7. All students must submit passing scores for the PLT to the Advising Center prior to certification.
8. As state certification requirement change, additional coursework may be required.

**Curriculum and Instruction (C&I)**

524. *Middle School Number/Algebra Teaching* 1.1 Hr. PR or CONC: MATH 524. Issues involved with sets of numbers as examples of algebraic systems, properties of groups, rings and fields. Properties of polynomials and polynomial rings. Mathematical modeling with finite differences and least squares. Applications in model curricula.

525. *Middle School Number/Algebra Teaching* 2.1 Hr. PR or CONC: MATH 525. Continuation of C&I 524. Issues involved with sets of numbers as examples of algebraic systems, properties of groups, rings, and fields. Properties of polynomials and polynomial rings. Mathematical modeling with finite differences and least squares.
528. **Middle School Function/Change Teaching 1.** 1 Hr. PR or CONC: MATH 528. Teaching and learning function concept operations on functions, limits, continuity, Intermediate Value Theorem, families of curves, optimization, area. Classroom applications, current research in learning. Applications in model curricula.

529. **Middle School Functions/Change Teaching 2.** 1 Hr. PR or CONC: MATH 529. Continuation of C&I 528. Teaching and learning function concept, operations on functions, limits, continuity, Intermediate Value Theorem, families of curves, optimization, area. Classroom applications, current research in learning. Applications in model curricula.


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.

530. **Independent Research in Curriculum Studies.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

581. **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.

586. **Advanced Clinical Experience.** I, II, S. 1-6 Hr. PR: Consent. Clinical experience in teaching-learning situations at any level.

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

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

593. **Special Topics.** I, II, S. 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.

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.

602. **Curriculum and Teaching Principles.** 3 Hr. This course will give the student a basic foundation in the principles, development, and design of curriculum and teaching models.

604. **School Curriculum.** 3 Hr. PR: Teaching experience or consent. Emphasizes socioeconomic and cultural influences on curriculum; principles of curriculum development; curriculum building in various teaching fields; techniques of experimentation and evaluation.

605. **21st Century Teaching/Learning.** 3 Hr. Interdisciplinary content if a 3-credit-hour course. This course examines new and emerging technologies as they relate to classroom integration and pedagogy.

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. (Alternate years.)

612. *Early Childhood Curriculum.* 1. 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. PR: (C&I 410 and C&I 411) or consent. 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.

618. *Storytelling in Early Childhood.* I, II. 3 Hr. This course will assist students in telling, reading, and creating stories for children. Techniques, methods, and research effective in the art of storytelling will be examined and applied as they relate to total child development.

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. seminar.)

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. seminar.)

630. *Problem Solving in Math.* 3 Hr. A capstone course designed to further develop student's conceptual understanding of mathematics.


644. *Science in the Secondary School.* 3 Hr. PR: C&I 444 or appropriate professional experience. 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.

647. *Science and Mathematics applications for Nutrition and Energy Content.* 3 Hr. This course is designed for teachers (4-12) of science or math. The course integrates nutrition and physical activity content applicable to student's lives.
648. **Science/Technology: Society Perspectives.** 3 Hr. Course provides students with an understanding of the characteristic relationships between science, technology, and society. Course examines impacts of these relationships on social and natural communities.

649. **History/Philosophy of Science.** 3 Hr. Examines the nature of science and how social forces have interacted with the process of science to promote the dynamic development of the current body of scientific knowledge.

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. (Alternate years.)

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 - Hyper Card.

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.

681. **Independent Research in C&I.** 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

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.


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.

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.


707. *Theories, Models and Research of Teaching*. II, S. 3 Hr. PR: SCFD 620 or consent. The theories behind selected models of teaching as well as research in teaching and best practices.


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.)


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.

786. *Curriculum Evaluation*. 3 Hr. This course enables students to develop skills and strategies necessary for curriculum evaluation and improvement of programs. Included will be a historical review of evaluation and analysis of approaches to curriculum evaluation.

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.

790. **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.)

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

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 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. **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.** 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.)

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.)
Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). (These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.)

Reading
Elizabeth A. Dooley, Chair, Curriculum and Instruction-Literacy Studies
Allen Hall
http://www.hre.wvu.edu/c&ils/lithome.html

Degree Offered
Master of Arts

The Department of Curriculum and Instruction-Literacy Studies 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.

Requirements
All applicants must comply with the general West Virginia University requirements, and requirements of the College of Human Resources and Education and the reading program. As State certification requirements change, additional coursework may be required.

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 pre-adult reading programs. Practical opportunities for teachers and specialists-in-training are provided in the University Reading Clinic.

For further information on admission and program requirements, write Chairperson, Department of Curriculum and Instruction-Literacy Studies, College of Human Resources and Education, 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.
• The course requirements in the program lead to reading specialist certification for qualified candidates.

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>RDNG 621</td>
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<tr>
<td>RDNG 622</td>
<td>3</td>
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<tr>
<td>C&amp;I 604</td>
<td>3</td>
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<tr>
<td>RDNG 682</td>
<td>3</td>
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<td>SPED 500</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>36</td>
</tr>
</tbody>
</table>
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.

681A. Independent Research in Literacy. 3 Hr. A program elective, this course offers possibilities for graduate students to pursue independent study and research in literacy. Students study a specific literacy area, theme, or question under the approval and advising of a faculty member.

682. Assessment of Reading Ability. 3 Hr. Focuses on methods and issues related to the assessment of reading ability. Students acquire reading specialist level knowledge and implementation skill of format and informal reading assessment and consider related issues of classroom and clinic application.

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.
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.** 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.

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.

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

791. **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. **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. **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.** I, II, S. 1-6 Hr. PR: Consent. For graduate students not seeking course work credit but who wish to meet residence requirements, use the University’s facilities and cultural programs. Note: Graduate students not actively involved in 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.

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**Secondary Education**

Elizabeth A. Dooley, Chair, Curriculum and Instruction-Literacy Studies

Allen Hall

http://www.hre.wvu.edu/C&ILS/index.html

**Degree Offered**

*Master of Arts*

**Program**

The Department of Curriculum and Instruction-Literacy Studies 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. Students pursuing a master of arts in secondary education may choose one of five specialization areas (English, foreign language, math, science, social studies). In addition students may elect to enroll in the advanced secondary education option.

For further, information on admission and program requirements, please visit http://www.hre.wvu.edu/C&ILS/index.html or contact the Chairperson, Curriculum and Instruction-Literacy Studies, WVU College of Human Resources and Education, Allen Hall, P.O. Box 6122, Morgantown, WV 26506-6122 or phone (304) 293-3441. All applicants must comply with the requirements of the College of Human Resources and Education.
I. Masters of Arts Secondary Education (Advanced Program of Study)

This program is designed for individuals who already hold a bachelor’s degree in secondary education in addition to teaching certification in one of the five specialization areas. Additionally, it is also designed for those educators and or other professionals who are responsible for curriculum and instruction within their discipline and or expertise areas.

Students who choose this option will complete 36 hours of coursework that is designed to broaden their professional knowledge and technical skill set.

<table>
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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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<tr>
<td>C&amp;I 604</td>
<td>School Curriculum (course title change)</td>
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<tr>
<td>C&amp;I 605</td>
<td>21st Century Teaching and Learning</td>
<td>3</td>
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<tr>
<td>SCFD 620</td>
<td>Philosophy of Education</td>
<td>3</td>
</tr>
<tr>
<td>SCFD 640</td>
<td>History of Education</td>
<td>3</td>
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<td>C&amp;I 594</td>
<td>Seminar: Clinical Experience Capstone</td>
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<td>Total graduate hours required</td>
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II. Masters of Arts Secondary Education Secondary Education Program with Initial Teaching Certification

Students may seek initial certification in the following areas: English education, foreign language education, math education, science education, and social studies education.

Students who choose science as a specialization area do not take this course.

Contact the department for specialization requirements.

Contact the department for specific program information and program requirements.
Program Policies and Matriculation Benchmarks – Secondary Teaching Certification Programs

Phase One - Admission to the M.A. program in elementary/secondary education

Criteria
- Bachelor’s degree
- GPA 2.75
- TOEFL (international students)
  TOEFL score must be at least 550 (paper) or 213 (computer) for international students. (76 after July, 2006)

Phase Two - Admission to certification teacher education

Criteria
- 3.0 GPA in graduate coursework
- Successful completion of C & I 602 (Must complete class with a grade of B or above.
- Successful completion of:
  ** PPST (Pre Professional Skills Test - PRAXIS I) unless the student has an M.A. or 26 on ACT / 1125 on the – SAT (see State Policy 5100). This policy can be found on the WV department Web site, under State Board (policies – 5100): http://wvde.state.wv.us
  Test scores must be submitted to department.
- Begin collection of artifacts for exit portfolio.

Phase Three – Student teaching placement (pre-requisites)

Criteria
- Completion of all professional education and subject content coursework.
- Completion and submission of Student Teaching Application.
- Successful passing the PRAXIS II.
  Test scores must be submitted to the Advising Center.
- Completion of a minimum 125 hours of field based experience.

State Policy # 5100

6.2.3. PPST Waivers. In lieu of taking the WVBE-approved PPST, prospective educators completing WVBE-approved programs may provide evidence of:
- A master's degree from an accredited institution of higher education; or
- Currently holding or having held a West Virginia professional teaching, administrative, or student support service license; or
- Attainment of WVBE-approved composite scores from a single administration of the American College Testing (ACT) Program or the Scholastic Achievement Test (SAT).
  See Appendix E of this policy for currently approved ACT and SAT scores. Waivers a and c do not apply to the institution’s required assessments of speaking, listening, and educational technology knowledge and skills. Individuals who currently hold or have held a West Virginia professional teaching, administrative, or student support services license are not required to complete any of the pre-professional skills assessments, (WVDOE Policy 5100).

Due to periodic changes in state certification requirements, program content may change.

Additional Notes
1. C&I 602 must be taken in the first or second semester after admission into the program.
2. No more than 14 hours at a 400 level plus student teaching may count toward a 36-hour master's degree.
3. Application for transient credit for graduate courses taken at other institutions must be approved by the advisor and the associate dean for academic affairs.
4. Elective courses must be approved by the advisor prior to enrollment.
5. Prior to enrollment in C&I 585 Student Teaching:
   - All coursework must be completed.
   - All students must complete 125 hours of approved fieldwork.
   - All students must submit passing scores (as determined by the West Virginia Department of Education) and copies of the subtest scores for the appropriate PRAXIS II (content area) to the Advising Center test prior to student teaching.
6. All students must successfully complete a professional portfolio that demonstrates mastery of INTASC standards and specialization content. Students submit the portfolio in C&I 594.

7. All students must submit passing scores for the PLT to the Advising Center prior to certification.

8. As state certification requirement change, additional coursework may be required.

III. Master of Arts Secondary Education (Thesis Option)

This option is available to those who choose to advance their career through the intensive study of their area interest while creating an individualized research agenda. Students interested in pursuing this option should contact the chair of the department for program options.

Graduation

All students must apply for graduation. Please contact the Center for Student Advising and Records, 710 Allen Hall, P.O. Box 6122, Morgantown, WV 26506-6122.

Curriculum and Instruction (C&I)

524. Middle School Number/Algebra Teaching 1. 1 Hr. PR or CONC: MATH 524. Issues involved with sets of numbers as examples of algebraic systems, properties of groups, rings and fields. Properties of polynomials and polynomial rings. Mathematical modeling with finite differences and least squares. Applications in model curricula.

525. Middle School Number/Algebra Teaching 2. 1 Hr. PR or CONC: MATH 525. Continuation of C&I 524. Issues involved with sets of numbers as examples of algebraic systems, properties of groups, rings, and fields. Properties of polynomials and polynomial rings. Mathematical modeling with finite differences and least squares.

528. Middle School Function/Change Teaching 1. 1 Hr. PR or CONC: MATH 528. Teaching and Learning function concept operations on functions, limits, continuity, Intermediate Value Theorem, families of curves, optimization, area. Classroom applications, current research in learning. Applications in model curricula.

529. Middle School Functions/Change Teaching 2. 1 Hr. PR or CONC: MATH 529. Continuation of C&I 528. Teaching and learning function concept, operations on functions, limits, continuity, Intermediate Value Theorem, families of curves, optimization, area. Classroom applications, current research in learning. Applications in model curricula.


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.

581. Independent Research in Curriculum Studies. 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

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.


592 A-Z. Directed Study. 1-6 Hr. Directed Study, reading, and/or research.
593. **Special Topics.** I, II, S. 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.

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.

602. **Curriculum and Teaching Principles.** 3 Hr. This course will give the student a basic foundation in the principles, development, and design of curriculum and teaching models.

604. **School Curriculum.** 3 Hr. PR: Teaching experience or consent. Emphasizes socioeconomic and cultural influences on curriculum; principles of curriculum development; curriculum building in various teaching fields; techniques of experimentation and evaluation.

605. **21st Century Teaching/Learning.** 3 Hr. Interdisciplinary content if a 3 credit hour course. This course examines new and emerging technologies as they relate to classroom integration and pedagogy.

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. (Alternate years.)

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.

618. **Storytelling in Early Childhood.** I, II. 3 Hr. This course will assist students in telling, reading, and creating stories for children. Techniques, methods, and research effective in the art of storytelling will be examined and applied as they relate to total child development.
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. seminar.)

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. seminar.)

630. *Problem Solving in Math.* 3 Hr. A capstone course designed to further develop student's conceptual understanding of mathematics.


640. *Science in the Elementary School.* I, II, S. 3 Hr. PR: 20 hr. of undergraduate credit in elementary education, or consent. Analysis of methods, curriculum patterns, and trends in elementary school science. Understanding and development of scientific attitudes appropriate at the elementary-school level.

644. *Science in the Secondary School.* 3 Hr. PR: C&I 444 or appropriate professional experience. 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.

647. *Science and Mathematics applications for Nutrition and Energy Content.* 3 Hr. This course is designed for teachers (4-12) of science or math. The course integrates nutrition and physical activity content applicable to student's lives.

648. *Science/Technology: Society Perspectives.* 3 Hr. Course provides students with an understanding of the characteristic relationships between science, technology, and society. Course examines impacts of these relationships on social and natural communities.

649. *History/Philosophy of Science.* 3 Hr. Examines the nature of science and how social forces have interacted with the process of science to promote the dynamic development of the current body of scientific knowledge.

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. (Alternate years.)

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.


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.

681. *Independent Research in C&I.* 1-6 Hr. Faculty supervised study of topics not available through regular course offerings.

685. *Supervision of Student Teachers.* I, II. 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. 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. 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.

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.

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

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

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.)


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 preservice 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.

786. **Curriculum Evaluation.** 3 Hr. This course enables students to develop skills and strategies necessary for curriculum evaluation and improvement of programs. Included will be a historical review of evaluation and analysis of approaches to curriculum evaluation.

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.

790. **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.)

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

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 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. 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. 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.)

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.

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Department of Educational Leadership Studies
Richard A. Hartnett, Department Chair
Allen Hall
http://www.wvu.edu/~edulead

Degrees Offered

Master of Arts
Area of emphasis for Doctor of Education

The educational leadership studies program at West Virginia University prepares individuals for leadership positions in elementary, secondary, and post-secondary educational institutions. While most 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. Students with less than a 2.75 undergraduate GPA will be considered if they score at least a 45 on the Miller Analogies Test or at least 900 total on the quantitative and verbal sections of the GRE. After admission, students must maintain at least a 3.25 GPA to graduate from the program. To apply, students submit an application for admission, all college transcripts, and a nonrefundable service fee to the Office of Admissions and Records, West Virginia University, PO Box 6009, Morgantown, WV 26506-6009. Phone: (304) 293-2121, Fax: (304) 293-3080. The Office of Admissions and Records verifies information and forwards applications to the academic unit. The EDLS program has a “rolling admissions” policy, which allows the faculty to review the credentials of candidates for admission at any time during an instructional term.
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 than 12 hours of credit earned while he or she was classified as a non-degree student toward a degree.

The University Graduate Council sets these minimum standards for admission to graduate study. 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.

Applicants for a master of arts degree in educational leadership studies must comply with the WVU requirements for admission to graduate studies, the requirements of the College of Human Resources and Education, and those of the educational leadership studies program Unit. Admission to all programs is contingent on assessment of complete official transcripts of all higher education work attempted and other evidence the faculty may deem necessary to judge probable success in the graduate program. Admission procedures are explained more completely on the EDLS program admissions page on the department's Web site. In order to graduate, students must earn at least a 3.25 grade point average on all program work attempted.

**Doctor of Education (Ed.D.)**

The doctor of education degree (Ed. D.) is offered in educational leadership studies with emphasis areas in public schools, in higher education, or in related organizations — e.g. state departments of education. Consistent with the regulations of West Virginia University, the College of Human Resources and Education, and the educational leadership studies program, each emphasis area is individually designed by the doctoral student, the student's advisor, and the Doctoral Committee.

The course of study for the doctoral degree may be completed through regular on-campus classes that typically meet once per week. Students who enroll in the cohort programs may meet either on-campus or off-campus once per month (usually Friday evenings and Saturday). On-campus cohorts may meet once per week. Students who enroll in the cohort programs typically take at least two courses per semester and through continuous enrollment, they often complete the program on a faster-paced basis. 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. Information about program options is available from the appropriate EDLS program coordinator, or the program secretary.

**Admissions Procedures**

For admission consideration, applicants are to submit the following documents:

1. Application for Admission to Graduate School
2. All official college transcripts, graduate and undergraduate
3. Graduate Record Examination or Miller Analogies Test scores taken within four years before the date of application. In addition, all applicants whose native language is not English must submit a score of at least 550 on the TOEFL examination, except for those who have recently completed a bachelor's degree in the United States.
4. Statement of professional experiences and career aspirations
5. Professional resume
6. Reference letters for Higher Education Leadership Cohort students

Directions: Send items 1, 2, and 3 to the Office of Admissions and Records, West Virginia University, PO Box 6009, Morgantown, WV 26506-6009. Send items 4, 5, and 6 to the EDLS Program Secretary, West Virginia University, PO Box 6122, Morgantown WV 26506-6122.
Admissions Requirements

The decision to admit a student to doctoral work constitutes a major commitment from the faculty of the department in the form of advising, teaching, chairing and serving on the committee, preparing and evaluating examinations, and guiding the successful completion of the dissertation. To be considered for admission, the applicant must meet the minimal criteria for undergraduate and graduate grade-point averages and for the Graduate Record Examination or the Miller Analogy Test, as identified in the table below.

The applicant should note, however, that the decision to admit students to the doctoral program is a collective judgment of the faculty and represents their determination of the likelihood of the candidate to succeed in all major phases of the degree program. These judgments take into account the candidate’s professional experiences, communication and thinking skills, and other relevant capabilities. Thus, a candidate is not automatically admitted on the basis of meeting only the minimal criteria to be considered for admission.

To be considered for admission, a student must have a zero or positive score on the three criteria listed in the table below. Thus, any minus must be offset by a plus in another criterion. For example, a student having a 2.5 undergraduate GPA (a minus), a 3.7 master's GPA (a plus), and a 57 (or 413) MAT score (a zero) would meet the minimal level for admission.

NOTE: Any applicant with a test score of less than 50 (410) or 1100 will normally not be accepted.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Minus (-)</th>
<th>Zero (0)</th>
<th>Plus (+)</th>
</tr>
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<tbody>
<tr>
<td>Undergraduate GPA</td>
<td>Below 2.75</td>
<td>2.75-3.00</td>
<td>Above 3.00</td>
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<tr>
<td>Master's GPA</td>
<td>Below 3.25</td>
<td>3.25-3.50</td>
<td>Above 3.50</td>
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<tr>
<td>MAT (new scoring)</td>
<td>Below 50 (410)</td>
<td>50-60 (410-416)</td>
<td>Above 60 (416)</td>
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<tr>
<td>GRE (Verbal plus Quantitative)</td>
<td>Below 1100</td>
<td>1100-1200</td>
<td>Above 1200</td>
</tr>
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The department will assess the applicant's fluency, coherence, and clarity of written expression by means of his/her statement of professional experience and career aspirations. The program may require additional writing samples to make this assessment.

For international students, the TOEFL score will be used in interpreting the other three criteria for admission. (This means that the Miller Analogy Test or the Graduate Research Examination will also be required of international students.) The University requires a TOEFL score of at least 550 for acceptance into a doctoral program.

Admissions Decision Procedures

Once a potential student's application is complete, the department chair will review it and the student should receive an official letter within one week. At that time, students will be notified of their status and, if they are accepted, they will also receive information about their assigned advisor.

Appointment of Advisor

The notification of acceptance into the program shall include the name and contact information of the faculty member who will serve as advisor until the Doctoral Committee is constituted. The selection and approval of committee members should occur during the semester when 12-18 hours of program work taken after admission is completed. Either the student or the initial advisor may request that the program coordinator make a change in the faculty advisor at any time before the doctoral committee is constituted.

Public School Program Emphasis Areas

The EDLS doctoral program in public schools may focus on one of the following four administrative areas. The program focus depends upon past experience, career aspirations, personal aptitudes, doctoral program minor, and courses selected for the doctoral program major.

1. General Administration, Superintendency or Principalship. The program concentration should be in an academic field such as law, sociology, anthropology, political science, or public administration. Public school administration experience is expected.

2. Central Office Supervisor or Assistant for Curriculum and Instruction. Several options are available for the concentration area including: curriculum and instruction, educational psychology, special education of reading. Public school administration experience is expected.
3. Central Office Business Manager or Assistant Superintendent for Finance. Several options are available for the concentration including: business and economics, accounting, computer science, or public administration. Public school administration experience is expected.

4. Central Office Personnel Administration. Several options are available for the concentration including: industrial relations, psychology, student personnel administration, or counseling and guidance. Public school administration experience is expected.

The EDLS doctoral program in higher education leadership does not offer program emphases. However, students can tailor a program to meet their needs by carefully selecting appropriate elective courses.

Higher education leadership students who desire to be faculty members or researchers typically take additional research-related courses. Other students who aspire for administrative positions typically take internships to gain important learning experiences.

**Doctoral Program Requirements**

A minimum of 72 credit hours post baccalaureate, excluding dissertation hours, is required. A minimum GPA of 3.25 is required for all coursework beyond the master’s degree.

The academic program consists of three required components: major, minor, and foundation; and it is designed by the student and presented for approval to the Doctoral Committee in a specially convened meeting with all members present. If a member of the committee is unable to attend the meeting, he or she must notify the major advisor and the student in advance and forward in writing all recommendations to be considered at the program approval meeting. No fewer than three members of the committee must be present at the meeting, two of whom must be from educational leadership studies.

1. Major Component. Consists of 24 to 36 hours of work taken in educational leadership Studies. Students take formally approved courses, seminars, special topics, independent study, and internships. The more limited the education and experience in administration, the greater the number of credit hours that will be required. All students must take the Foundation courses as listed in the higher education leadership or public school administration programs. A minimum of 24 hours exclusive of dissertation in the major must be taken following admission into the program. A minimum of 12 hours of dissertation research is required.

2. Minor Component. Consists of 18 to 24 hours of work in a stated area. This must be developed with the minor area committee member(s) and approved by the committee.

3. Foundation. The Doctoral Committee will decide which foundation courses are most appropriate for the student’s program of study in the research, social, and psychological areas. A minimum of three courses will be required in the foundation. These are: statistics, research methods, and other advanced research courses. If a student can demonstrate competence in these areas, the committee may waive these course requirements.

**Courses - Higher Education Leadership Majors**

**Foundation Courses (Required)**
603 Education Leadership
650 Higher Education Administration
708 Education Administration Theory
754 Critical Issues in American Higher Education from Historical and Policy Perspective
755 Higher Education Law
756 Higher Education Finance

**Elective Courses**
651 College Student Development
652 Assessment in Higher Education
653 College Student and the Courts
654 College Student Affairs
655 Institutional Advancement
656 College Business Management
657 Community Colleges Leadership
659 Administrative Procedures in Adult Education
693 Special Topics by Independent Study
706 Organizational Analysis
707 Politics of Education
751 Academic Affairs Administration
752 Governance of Higher Education
753 Adult and Continuing Education
757 Institutional Research and Planning
758 Higher Education Collective Bargaining
760 Curriculum Development and Reform of Academic Program
785 Education Administration Internship
794 Seminars

Courses - Public School Administration Majors

Foundation Courses (Required)
603 Principle of Education Leadership
703 Economics/Education Funding
705 Public Education: Ethics/Law/Policy
707 Politics of Education
708 Education Administration Theory
796 Orientation Seminar

Elective Courses
601 Dynamics of Educational Organizations
602 Human Resources Dynamics
610 School Business Management
611 Principles of Supervision
612 School: Policy/Politics/Laws
613 Planning/Research/Evaluation for School Leaders
614 Community and Media Relations
620 Site Based Leadership
625 Topics in Supervision
693 Special Topics by Independent Study
701 Advanced Supervision
702 Superintendency: Role/Responsibility
704 Educational Facilities: Planning/Evaluation
706 Learning Organizations: Culture/Technology/Change
785 Education Administration Internship

Doctoral Committee
An important part of the doctoral program for the student is choosing the Doctoral Committee. Members approve the program, write and evaluate the comprehensive examination questions, approve the dissertation prospectus, and approve the dissertation. The student should take the first 12 to 18 hours in education leadership studies from several faculty members. This will help the student to decide upon the choice for chairperson. Students are not required to choose the temporary advisor as the major advisor for their Doctoral Committee. The temporary advisor must be a member of the graduate faculty from the major program area and must be willing to accept the advising assignment. The role of the temporary advisor is to assist the student in selecting an initial program of study that will cover no more than the first 18 hours of formal doctoral coursework. Before the student has completed 18 hours of doctoral coursework, the student must select a major advisor and a Doctoral Committee. The temporary advisor and/or the permanent major advisor shall assist the student in the selection of the student's Doctoral Committee which must meet the following minimum standards.

1. The Doctoral Committee must be composed of a minimum of five members, at least three of whom shall be regular members of the graduate faculty.
2. The committee must contain three faculty members from the major ELDS program, one from the minor area, and one additional member who may be a practicing administrator from outside the department. All committee members must hold a terminal degree.
3. The student's major advisor must be from the major program area and must be a regular member of the graduate faculty. No more than two other members may be from the major program area of study.
4. No more than one person may be a non-member of the graduate faculty.
In cooperation with the major advisor, the other committee members will be chosen. Each person agreeing to serve on the committee shall sign the Doctoral Committee form. This form also requires the signatures of the EDLS program coordinator, the department chair, the dean of Human Resources and Education, and the doctoral student. The approved program of study and any approved changes shall be filed in the Center for Student Advising and Records after all required signatures have been affixed.

A change in committee membership may be initiated by the student with the approval of the student's major advisor. This change must be agreed to by the member being replaced (if still available to serve), the student, the major advisor, the new committee member, the program coordinator, department chair, and the dean's office. After approval, a record of the new committee composition shall be filed in the Center for Student Advising and Records.

**Comprehensive Examination**

Evaluative procedures for assessing student competency are required in specific areas of the academic program. The comprehensive examination shall include written components. This examination must cover all areas specified in the program of study, including the major, minor, and foundation courses. It is to be administered after most formal studies have been completed. The method(s) of assessment must be listed on the academic program form before it is signed. The comprehensive examination may be taken separately on the major and minor. The committee member writing each component is responsible for grading the student's product. Scheduling and results of the examination must be reported to the Center for Student Advising and Records.

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 questions are not answered satisfactorily, the entire examination must be repeated. The student must petition through the Doctoral Committee in order to be permitted to repeat the comprehensive examination, and it is anticipated that a waiting period will be specified by the committee during which the student will have opportunity to correct deficiencies. Academic tradition does not allow for a comprehensive examination to be administered more than three times.

**Higher Education Doctoral Comprehensive Exams**

The Higher Education Doctoral Comprehensive Exams are administered at the beginning of fall and spring semesters. A two-page form is required for submission to sit for the exam. To request the form, please contact program secretary at 293-3707 x 1421.

**Admission to Candidacy and Time Limits to Complete the Degree**

The student is admitted to candidacy for the doctorate upon successful completion of the comprehensive examination. Doctoral candidates are allowed no more than five years beyond admission to candidacy to complete the remaining degree requirements. In the event a student fails to complete the doctorate within five years after admission to candidacy, an extension of time (not to exceed one year) may be obtained only by repeating comprehensive examinations and meeting other requirements specified by the student's committee.

Students admitted to candidacy must register for 797 every fall and spring semester until degree completion or they may be dropped from the program. Students not yet admitted to candidacy may be dropped from the program if they fail to enroll for at least one course in any two-year period. After being admitted to candidacy, all students must enroll for at least 12 credit hours of dissertation research credit (797) before graduation.

**Mandatory Ethics Training for All Researchers**

An online ethics training module must be completed by every research prior to submitting his or her next proposal to the Institutional Review Board (IRB) for course-related or dissertation research. After the training has been completed, verification can be provided for subsequent requests for IRB approval without repeating the module. The training module has been developed by National Institutes of Health (NIH), and takes about two hours to complete. The URL to access the module is: http://www.wvu.edu/~rc/irb/ethi_tr.htm.
Dissertation Prospectus

The culminating activity of the doctoral program is a dissertation of a significant and specific area of research that contributes to the knowledge base in the field of educational administration. The prospectus is the examination of the proposed project in careful detail before the student begins any data collection. The prospectus should make clear what is already known about the question(s) to be investigated and what doubtful points remain. It should include:

1. An introduction.
2. Statement of the problem. This should be a very specific problem sentence which lucidly and succinctly presents the main thesis of the study. It may be followed by a series of hypotheses or sub-problem statements.
3. Justification of the study. This section should explain the purpose and rationale for the study. It should specify reasons as to why the problem is worthy of study, including a statement of the theoretical and practical need for the study. This will include logic and a brief review of the literature relating to the problem.
4. A critical review of literature supporting the study and demonstrating the need for the dissertation.
5. Research questions, objectives, and/or hypotheses.
6. Research Procedures. This should be summarized in a conceptual model and followed by an expanded narrative. Quantitative studies should include the following as appropriate: a) population, b) sample, c) needed return, d) statistical treatment, e) methodology for securing data, f) sample tables. Qualitative or non-empirical studies should assume a format appropriate to the nature and design of the study.

Close cooperation with the major advisor is essential in developing a prospectus. Most students will develop several drafts before one is accepted. When the major advisor and the student believe the prospectus is ready, a meeting of the doctoral committee will be held at which time the student presents and defends the prospectus. All committee members must be present for the meeting. When approved, a copy of the prospectus signed by each of the committee members is filed with the Center for Student Advising and Records and a copy provided for each member of the committee.

The student must apply for and receive human subjects approval from the associate dean before conducting the research.

It is strongly recommended that in the development of a prospectus the student consult one of these publications, using the most current edition of the style manual:


Dissertation

The dissertation advisor may be other than the doctoral major advisor. All dissertations completed by students in the department shall follow “Regulations Governing the Preparation of Dissertations and Theses.” In conducting the research, analyzing the data, and preparing the initial draft, the student works closely with the major advisor and any other committee members deemed necessary. After the major advisor reviews and approves a draft, copies are distributed to all committee members. The application for a shuttle sheet is signed by each committee member indicating approval for the defense, and the date, time and place of the defense. This should be done at least one month before the defense.

Before the defense, the student should check with the major advisor to make sure the shuttle sheet has arrived and that two original copies of the dissertation signature page are in the chairperson’s possession. All members of the committee must be present for the defense. If a committee member cannot attend the dissertation defense, permission from the student, the program coordinator, the chair, and the dean (or designee) are required for approval of a substitute member to serve at the defense. There can be no substitute for the major advisor. Only one substitute is allowed, and the request for the substitute must be made in writing before the examination. The request for a substitute should be signed by both the original faculty member and the substitute. A substitute must have the same or higher graduate faculty status as the original faculty member and represent the same academic discipline or specialization.
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 will not be recommended. If a substitute attends the final defense, the substitute signs the shuttle sheet; however, the original committee member must sign the dissertation.

After the defense, the shuttle sheet is signed (pass or fail) by every committee member and is sent to the Center for Student Advising and Records. The student is responsible for making all required changes in the dissertation and for completing all required forms. The professional expectation is that every dissertation will be published in whole or in a series of articles. Major advisors are available to assist in the project.

**Residency Requirements**

Residency requires two consecutive semesters of full-time work (at least nine hours per term) after being admitted to the doctoral program. The two consecutive semesters may be fall-spring, spring-fall, spring-summer, or summer-fall. Courses taken for non-degree credit will not count for graduate residency.

It is also recognized that experiences of equal value may be obtained in situations other than those available on a university campus. Therefore, an individual's program of study may include an alternative residency program. Such an alternative must be described and attached to the program of study form and must be approved by the Doctoral Committee, the Academic Affairs Committee, and the College of Human Resources and Education.

**Education 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. *Research-Evaluation-Assessment*. 3 Hr. PR: Consent. Research, evaluation, and assessment procedures related to administrative decision making and problem solving to increase the general effectiveness of educational institutions.

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 infrastructure. The content will incorporate forces of economic change, development of new societal and educational infrastructures, 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.

755. **Higher Education Law.** 3 Hr. Critical legal issues of higher education-public and private-using a case study approach.
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.

759. Assessment Research In Higher Education. 3 Hr. Students review an array of instruments designed to assess college students' perceptions, satisfaction, and learning. They will also critique these instruments to determine their quality.

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.

761. Prospectus Development in Higher Education. 3 Hr. Students review an array of instruments designed to assess college students’ perceptions, satisfaction, and learning. They will also critique these instruments to determine their quality.

762. College Student Research in Higher Education. 3 Hr. Students will critique research articles pertaining to college student development and conduct research investigating a subpopulation’s development.

785. Education Administration Internship. 3-6 Hr. (May be repeated for credit.) PR: Consent. Practical experiences in the administration of an organizational unit under the supervision of an administrator within the unit.

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 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, 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. Dissertation. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)
Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students not seeking 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.)

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
Barbara L. Ludlow, Chair, Department of Special Education
Allen Hall
http://www.hre.wvu.edu/sped

Degrees Offered
Master of Arts
Area of Emphasis for Doctor of Education

The graduate program leading to the M.A. in special education is designed to prepare master teachers of infants, toddlers, children, and adults with exceptionalities 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 has two program options: the program option in personnel preparation in special education is designed to prepare graduates for roles as faculty members and researchers, while the program option in school leadership for special education is designed to prepare graduates for roles as administrators or supervisors in public schools or community agencies. The program also prepares professionals for emerging roles associated with interdisciplinary services to persons requiring special education or disability services.

Application
All applications must comply with University, college, department, and program requirements. Teacher certification requirements are based on the West Virginia Department of Education’s Policy 5100 Approval of Educational Personnel Preparation Programs and Policy 5202 Licensure of Professional/Paraprofessional Personnel.

Certification and/or Masters Degree Program Options
- Autism Spectrum Disorders (autism grades K-6 and/or 5-adult)
- Early Intervention/Early Childhood Special Education (preschool special needs grades 0-pre-K-K)
- Gifted Education (grades 1-12)
- Low Vision/Blindness (visual impairments grades Prek-adult)
- Multicategorical Special Education (grades K-6 and/or 5-adult)
- Severe/Multiple Disabilities (severe disabilities grades K-adult)

Applicants interested in one of the program areas should review the detailed information provided at http://www.hre.wvu.edu/sped or contact sped@mail.wvu.edu for a brochure and application or an update on availability of specific courses.

Admission
All individuals 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/or degree-seeking student.

Regular status admission to all programs occurs when the following admission criteria have been met.
• An earned baccalaureate degree from a regionally accredited college or university with a minimum grade point average of 2.75.
• Other requirements specific to each program option.

Other Requirements in Certification Programs
The individual must also meet these additional requirements:

- **PRAXIS Preprofessional Skills Tests (PPST) passing scores:** 174 on 0710, 172 on 0720, 172 on 0730 within ten year period or certification through the National Board for Professional Teaching Standards (NBPTS) or prior certification in some area of education or a master's degree from an accredited institution or a composite score of 25 (26 if enhanced) on the American College Test (ACT) or a score of 1035 (1125 if recentered) on the Scholastic Achievement Test.

- **Prior certification in education (only in some programs):**
  - *Autism Spectrum Disorders:* early childhood education (K-4) or elementary education (K-6 or K-8) (for K-6 option only);
  - *Gifted Education:* early childhood education or elementary education; or secondary education with emphasis in biology, chemistry, English, general science, mathematics, physics, reading education or specialist, and/or social studies;
  - *Multicategorical Special Education:* early childhood education (K-4) or elementary education (K-6 or K-8) (for K-6 option only).

**Provisional Status**
The individual who has an earned baccalaureate degree from a regionally accredited college or university with a minimum GPA of 2.5 and prior certification (only in those programs where it is required) 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 12 hours of program credit.

**Non-degree Status**
The individual who has an earned baccalaureate degree from a regionally accredited college or university but who does not seek certification or a master's degree may be admitted as a non-degree student. This status allows the student to take courses for additional endorsement to the professional teaching certificate and/or for professional development and/or for personal growth.

**Additional Requirements for International Students**
The individual who is not a native speaker of English must also meet these requirements:

- Test of English as a Foreign Language (TOEFL) score of 550 or higher (paper) or 215 or higher (computer);
- Personal interview and writing sample to document fluency needed for success in field experiences associated with many courses.

**Retention**
Retention in any program requires an overall 3.0 GPA. Students who fail to maintain that average will be placed on academic probation and must achieved that average within the next semester or risk being dismissed from the program.

Retention in any certification program also requires completion of all required courses with a grade of A or B and a passing score on all required performance assessments.

**Practicum**
All certification programs require completion of a culminating practicum experience. Practicum experiences are available through two options: on-the-job option involving supervision by a colleague in the work setting if the student is employed at a site that meets placement criteria; and full time option involving placement in a classroom with a master professional who meets placement criteria if the student is not employed or on a leave of absence from another position.
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.

Students may consult the program for a complete list of practicum eligibility requirements and practicum application materials.

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 not be eligible to enroll in a second practicum. A student who fails the practicum on the second attempt will be dismissed from the program.

Certification

All applicants for certification must pass required tests in the Praxis series: the Preprofessional Skills (PPST) basic skills tests (before or immediately after admission) as well as the appropriate Principles of Learning and Teaching (PLT) grade-level test and the content specialization test(s) in their area of specialization prior to admission to the culminating experience.

In some areas of specialization, prospective special education teachers also must hold or qualify for a teaching specialization in elementary or secondary education recognized on the professional teaching certificate.

Students are responsible for submitting an application for initial certification or additional endorsement to the appropriate state agency after they have completed all program requirements.

Note: Because of continual changes in federal mandates and state requirements, certification and degree programs in special education are always being revised, so requirements may differ from what currently appears in print; students should contact their faculty advisor for updates on all programs.

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.
- 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.

A. Autism Spectrum Disorders Requirements

Requirements for Certification (39 semester hours minimum
(12 semester hours in all master's degree programs) Hrs.
SPED 500 Legal/Educational Foundations: Special Education ........................................... 3
SPED 601 Academic Interventions for Special Needs .......................................................... 3
SPED 602 Classroom-based Assessment for Special Needs ........................................... 3
SPED 603 Classroom/Behavior Management for Special Needs .................................. 3
SPED 663 Collaborative-Consultative Inclusion Strategies .................................................. 3
SPED 665 Mathematics for Special Needs ................................................................. 3
SPED 666 Reading for Special Needs ................................................................. 3
SPED 668 Secondary Content Methods ................................................................. 3
RDNG 622 Content Area Literacy Instruction .......................................................... 3
SPED 650 Learning Characteristics: Autism ......................................................... 3
SPED 666 Educational Interventions: Autism .......................................................... 3
SPED 658 Culminating Practicum: Autism Spectrum Disorders ........................................ 6
Total ................................................................................................................................... 39
### Additional Requirements for Master's Degree with Certification (39 semester hours minimum)

<table>
<thead>
<tr>
<th>Course</th>
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<th>Hours</th>
</tr>
</thead>
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<td><strong>Total</strong></td>
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### Requirements for master's degree only (36 semester hours minimum)

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tr>
<td>SPED 500</td>
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<td>SPED 601</td>
<td>Academic Interventions for Special Needs</td>
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<td>SPED 602</td>
<td>Classroom-based Assessment for Special Needs</td>
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<td>Classroom/Behavior Management for Special Needs</td>
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<td>SPED 663</td>
<td>Collaborative-Consultative Inclusion Strategies</td>
<td>3</td>
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<td>SPED 650</td>
<td>Learning Characteristics: Autism</td>
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</tr>
<tr>
<td>SPED 666</td>
<td>Educational Interventions: Autism</td>
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<td></td>
<td>Elective requirements for degree</td>
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<tr>
<td>SPED 675</td>
<td>Research to Practice</td>
<td>3</td>
</tr>
<tr>
<td>SPED 680</td>
<td>Culminating Project</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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Electives are to be approved by the student’s advisor.

### Additional Requirements for Master's Degree

<table>
<thead>
<tr>
<th>Course</th>
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<th>Hours</th>
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</thead>
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<tr>
<td>SPED 675</td>
<td>Research to Practice: Special Education</td>
<td>3</td>
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<tr>
<td>SPED 680</td>
<td>Special Education Culminating Project</td>
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<td></td>
<td>Planned Electives – (minimum for degree)</td>
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<td><strong>Total</strong></td>
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### B. Early Intervention/Early Childhood Special Education

#### Requirements for Certification (30 semester hours minimum)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SPED 604</td>
<td>Characteristics/Educational Adaptations: Developmental Disabilities</td>
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<tr>
<td>SPED 605</td>
<td>Family/Professional Collaboration: Developmental Disabilities</td>
<td>3</td>
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<tr>
<td>SPED 606</td>
<td>Communication Intervention: Developmental Disabilities</td>
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<td>SPED 607</td>
<td>Assessment: Developmental Disabilities</td>
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<tr>
<td>SPED 610</td>
<td>Typical/Atypical Development: Early Intervention</td>
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<tr>
<td>SPED 612</td>
<td>Responsive Interventions; Early Intervention</td>
<td>3</td>
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<tr>
<td>SPED 611</td>
<td>Curriculum: Early Intervention</td>
<td>3</td>
</tr>
<tr>
<td>SPED 616</td>
<td>Behavior Guidance/Support: Early Intervention</td>
<td>3</td>
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<td>SPED 619</td>
<td>Culminating Practicum: Early Intervention</td>
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<td><strong>Total</strong></td>
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### Additional Requirements for Master's Degree with Certification (36 semester hours minimum)

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<th>Course</th>
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<td>Elective requirements for degree</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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### Requirements for Master's Degree Only (36 semester hours minimum)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>SPED 604</td>
<td>Characteristics/Educational Adaptations: Developmental Disabilities</td>
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<tr>
<td>SPED 605</td>
<td>Family/Professional Collaboration: Developmental Disabilities</td>
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<td>SPED 606</td>
<td>Communication Intervention: Developmental Disabilities</td>
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<td>SPED 607</td>
<td>Assessment: Developmental Disabilities</td>
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<td>SPED 610</td>
<td>Typical/Atypical Development: Early Intervention</td>
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</tr>
<tr>
<td>SPED 612</td>
<td>Responsive Interventions; Early Intervention</td>
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<tr>
<td>SPED 611</td>
<td>Curriculum: Early Intervention</td>
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<tr>
<td>SPED 616</td>
<td>Behavior Guidance/Support: Early Intervention</td>
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<tr>
<td>SPED 675</td>
<td>Research to Practice</td>
<td>3</td>
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<td>SPED 680</td>
<td>Culminating Project</td>
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<tr>
<td><strong>Total</strong></td>
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<td><strong>36</strong></td>
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</table>

Electives are to be approved by the student’s advisor.
C. Gifted Education Area Requirements
Requirements for Certification (27 semester hours minimum)
SPED 500 Legal/Educational Foundations: Special Education ........................................... 3
SPED 601 Academic Interventions for Special Needs ......................................................... 3
SPED 602 Classroom-based Assessment for Special Needs .............................................. 3
SPED 603 Classroom/Behavior Management for Special Needs ..................................... 3
SPED 663 Collaborative-Consultative Inclusion Strategies .............................................. 3
SPED 670 Introduction to Gifted Education ................................................................. 3
SPED 672 Teaching Strategies: Gifted Education ........................................................... 3
SPED 679 Culminating Practicum: Gifted Education ..................................................... 6
Total ............................................................................................................................ 27

Additional Requirements for Masters Degree with Certification (36 semester hours minimum)
Elective requirements for degree .................................................................................. 9
Total............................................................................................................................ 36

Requirements for Master’s Degree Only (36 semester hours minimum)
SPED 500 Legal/Educational Foundations: Special Education ........................................... 3
SPED 601 Academic Interventions for Special Needs ......................................................... 3
SPED 663 Collaborative-Consultative Inclusion Strategies .............................................. 3
SPED 670 Introduction to Gifted Education ................................................................. 3
Elective requirements for degree .................................................................................. 9
SPED 675 Research to Practice ...................................................................................... 3
SPED 680 Culminating Project ....................................................................................... 3
Total............................................................................................................................ 36

Electives are to be approved by the student’s advisor.

D. Low Vision/Blindness Requirements
Requirements for Certification (39 semester hours minimum)
SPED 500 Legal/Educational Foundations: Special Education ........................................... 3
SPED 601 Academic Interventions for Special Needs ......................................................... 3
SPED 693A Introduction to Low Vision/Blindness ............................................................ 3
SPED 693B Introduction to Braille .................................................................................. 3
SPED 693C Braille Reading and Literacy Development ................................................... 3
SPED 693D Nemeth Code and Mathematics Development ............................................. 3
SPED 691A Instructional Strategies for Low Vision/Blindness ........................................ 3
SPED 691B Instructional Strategies for Multiple Impairments ........................................ 3
SPED 691C Orientation and Mobility Instruction ............................................................ 3
SPED 689 Culminating Practicum: Gifted Education ..................................................... 6
Total ............................................................................................................................ 33

Additional Requirements for Master’s Degree with Certification (39 semester hours minimum)
Elective requirements for degree .................................................................................. 0
Total............................................................................................................................ 39

Requirements for Master’s Degree Only (36 semester hours minimum)
SPED 500 Legal/Educational Foundations: Special Education ........................................... 3
SPED 601 Academic Interventions for Special Needs ......................................................... 3
SPED 603 Classroom/Behavior Management for Special Needs ..................................... 3
SPED 663 Collaborative-Consultative Inclusion Strategies .............................................. 3
SPED 693A Introduction to Low Vision/Blindness ............................................................ 3
SPED 691A Instructional Strategies for Low Vision/Blindness ........................................ 3
SPED 691B Instructional Strategies for Multiple Impairments ........................................ 3
Elective requirements for degree ................................................................. 9
SPED 675 Research to Practice ................................................................. 3
SPED 680 Culminating Project ................................................................. 3
Total ........................................................................................................ 36

Electives are to be approved by the student’s advisor.

E. Multicategorical Special Education (LD, BD, MI)
Certification Requirements (33 semester hours minimum)
SPED 500 Legal/Educational Foundations: Special Education .............. 3
SPED 601 Academic Interventions for Special Needs ......................... 3
SPED 602 Classroom-based Assessment for Special Needs .................. 3
SPED 603 Classroom/Behavior Management for Special Needs .......... 3
SPED 663 Collaborative-Consultative Inclusion Strategies .................. 3
SPED 665 Mathematics for Special Needs ............................................. 3
SPED 666 Reading for Special Needs ..................................................... 3
SPED 668 Secondary Content Methods ................................................. 3
RDNG 622 Content Area Literacy Instruction ....................................... 3
SPED 669 Culminating Practicum: Multicategorical SPED .................. 6
Total ........................................................................................................ 33

Additional Requirements for Master’s Degree with Certification (36 semester hours minimum)
Elective requirements for degree ................................................................. 3
Total ........................................................................................................ 36

Requirements for Master’s Degree Only (36 semester hours minimum)
SPED 500 Legal/Educational Foundations: Special Education .............. 3
SPED 601 Academic Interventions for Special Needs ......................... 3
SPED 602 Classroom-based Assessment for Special Needs .................. 3
SPED 603 Classroom/Behavior Management for Special Needs .......... 3
SPED 663 Collaborative-Consultative Inclusion Strategies .................. 3
SPED 634 Characteristics and Methods: Learning Disabilities .......... 3
SPED 644 Characteristics and Methods: Behavior Disorders .............. 3
SPED 664 Characteristics and Methods: Mental Impairments .............. 3
Elective requirements for degree ................................................................. 6
SPED 675 Research to Practice ................................................................. 3
SPED 680 Culminating Project ................................................................. 3
Total ........................................................................................................ 36

Electives are to be approved by the student’s advisor.

F. Severe/Multiple Disabilities Area
Requirements for Certification (30 semester hours minimum)
SPED 604 Characteristics/Educational Adaptations: Developmental Disabilities ................. 3
SPED 605 Family/Professional Collaboration: Developmental Disabilities .......... 3
SPED 606 Communication Intervention: Developmental Disabilities .... 3
SPED 607 Assessment: Developmental Disabilities ............................. 3
SPED 620 Curriculum: Severe Disabilities ............................................. 3
SPED 622 Instructional Programming: Severe Disabilities ................... 3
SPED 625 Secondary/Adult Programs: Severe Disabilities ................. 3
SPED 629 Positive Behavior Support: Severe Disabilities ................. 3
SPED 621 Culminating Practicum: Severe/Multiple Disabilities .......... 6
Total ........................................................................................................ 30

Additional Requirements for Master’s Degree with Certification (36 semester hours minimum)
Elective requirements for Degree ................................................................. 6
Total ........................................................................................................ 36
## REQUIREMENTS FOR DEGREE

<table>
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<tr>
<th>Course</th>
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<tr>
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<td>SPED 605 Family/Professional Collaboration: Developmental Disabilities</td>
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<td>SPED 606 Communication Intervention: Developmental Disabilities</td>
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<tr>
<td>SPED 607 Assessment: Developmental Disabilities</td>
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<td>SPED 620 Curriculum: Severe Disabilities</td>
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<td>SPED 622 Instructional Programming: Severe Disabilities</td>
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<td>SPED 625 Secondary/Adult Programs: Severe Disabilities</td>
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<td>SPED 629 Positive Behavior Support: Severe Disabilities</td>
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<td><strong>Total</strong></td>
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</table>

All electives are to be approved in writing by the student’s advisor.

### Doctor of Education

- Personnel preparation in special education
- School leadership for special education

Applicants interested in one of the program options should review the detailed information provided at [http://www.hre.wvu.edu/sped](http://www.hre.wvu.edu/sped) or contact sped@mail.wvu.edu for a brochure and application or an update on availability of specific courses.

### Admission

All individuals seeking the doctoral degree emphasis in special education must be admitted into the special education program.

**Regular Status** The individual who meets all admission requirements is granted regular status as a degree-seeking student.

- An earned baccalaureate degree from a regionally accredited college or university with a minimum grade point average of 2.75.
- An earned master’s degree from a regionally accredited college or university in special education or disability services with a minimum grade point average of 3.0.
- Prior certification in some area of special education (for personnel preparation option) or in special education or disability services (for school leadership option).
- Submission of Graduate Record Examination or Miller Analogies Test scores in support of potential for success in doctoral-level study: MAT score of 400 (63 percentile) or GRE score of 1000 total (verbal plus quantitative) with minimum score of 450 verbal and within a five-year period;
- Two years of documented experience providing direct service to children or adults with exceptionalities in special education and/or disability services either in instruction or intervention (for personnel preparation option) or in instruction or intervention, therapeutic interventions, assessment or behavior management, administration or supervision, or other activities (for school leadership option);
- Three letters of reference addressing the candidate’s past academic performance and qualities which would make the person suitable for doctoral-level study.
- A personal goal statement illustrating a lifelong commitment to excellence in special education and/or disability studies and articulating career goals focused on a leadership position in personnel preparation in special education or school leadership for special education.
- A writing sample documenting knowledge of special education and/or disability services and skill in organizing and expressing ideas and citing current sources in the professional literature.
- A personal interview demonstrating communication and interpersonal skills.

Provisional status admission to the program with provisional student status is not permitted at the present time.

Admissions criteria are based on qualifications associated with academic success in doctoral study as well as qualifications that candidates applying for leadership positions are expected to have when seeking employment as faculty at colleges and universities (personnel preparation option) or administrators and supervisors of special education or disability services.
Program of Study

Programs are designed by the doctoral student, the student’s advisor, and the Doctoral Committee to meet the student’s career goals. Programs of study comply with all applicable institutional requirements, but typically they include coursework in excess of the minimum college requirements to meet these goals.

The leadership training provided through this program 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 development, education, and habilitation of persons with exceptionalities. Students may complete 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 and disability services.

Doctoral Program Emphasis in Special Education

Requirements for Program Option: Personnel Preparation in Special Education
SPED 770 Policy Analysis and Development .......................................................... 3
SPED 771 Personnel Preparation Strategies ............................................................. 3
SPED 772 Professional Writing and Grant Writing ................................................. 3
SPED 773 Professional Development Models ....................................................... 3
SPED 774 Analysis and Interpretation of Research ................................................. 3
SPED 779 Contemporary Issues and Trends ............................................................ 3
SPED 781 Orientation to Doctoral Study ................................................................. 1
SPED 783 Internship in Professional Instruction ..................................................... 2
SPED 784 Internship in Practicum Supervision ..................................................... 1
SPED 785 Internship in Research ......................................................................... 3
SPED 797 Research (Comprehensive Exam and Prospectus) ................................ 6
SPED 798 Dissertation (Dissertation and Defense) ............................................... 6-12

Requirements for Program Option: School Leadership for Special Education
SPED 770 Policy Analysis and Development .......................................................... 3
SPED 773 Professional Development Models ....................................................... 3
SPED 774 Analysis and Interpretation of Research ................................................. 3
SPED 775 Program Administration and Supervision .............................................. 3
SPED 776 Leadership for Systems Change .............................................................. 3
SPED 779 Contemporary Issues and Trends ............................................................ 3
SPED 781 Orientation to Doctoral Study ................................................................. 1
SPED 783 Internship in Professional Instruction ..................................................... 2
SPED 784 Internship in Practicum Supervision ..................................................... 1
SPED 785 Internship in Research ......................................................................... 3
SPED 797 Research (Comprehensive Exam and Prospectus) ................................ 6
SPED 798 Dissertation (Dissertation and Defense) ............................................... 6-12

Special Education (SPED)

500. Legal/Educational Foundations: Special Education. 3 Hr. Comprehensive overview of legal requirements and educational practices related to exceptionalities which require special education.

573. Professional Development. 1-6 Hr.

593. Special Topics. 1-6 Hr. A study of contemporary topics selected from recent developments in the field.
600. *Instructional/Assistive Technology*. 3 Hr. Characteristics and functions of instructional and assistive technologies; selection, design and implementation of devices for mobility, manipulation, environmental control communication, and learning; and legal dates, ethical issues and policy initiatives in technology adoption and utilization.

601. *Academic Interventions for Special Needs*. 3 Hr. Curriculum development and instructional programming across academic content areas for students with mild/moderate disabilities.

602. *School-Based Assessment for Special Needs*. 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 for Special Needs*. 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/Educational 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.


609. *Computer Applications for Special Needs*. 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.)

612. *Responsive Intervention: Early Intervention*. 3 Hr. Design, delivery and evaluation of individualized instruction for infants, toddlers, and preschoolers with special needs using relationships and routines-based interventions to promote early development, parent-child interactions, and acquisition of pre-academic skills.

616. *Behavior Guidance/Support: Early Intervention*. 3 Hr. Development guidance and positive behavior support for infants, toddlers and preschoolers with special needs in home-and center-based programs to foster emotion development social skills and appropriate behavior.

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.

621. Culminating Practicum: SMD. 3 Hr. PR: Consent. Internship or advanced student teaching in this area of specialization: severe/multiple disabilities.

622. Instructional Programming: Severe Disabilities. 3 Hr. Design, delivery and evaluation of individualized instruction for children and adults with severe disabilities to promote access to the general education curriculum and develop academic, social and functional skills in inclusive school and community environments.

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.


640. Introduction to Behavior Disorders. 3 Hr. PR: Consent. Historical trends in the education of the behaviorally disordered child. Educational and behavioral management techniques and trends for the future.

641. Behavioral Dynmc Sch Cmmty. 3 Hr.

642. Teaching Strategies: Behavior Disorders. 3 Hr. Practical application of instructional methods for students with behavior disorders: assessment, management, and cognitive behavioral curriculum.

644. Character and Methods: Behavior Disorders. 3 Hr. Educational implications of behavior disorders and current best practices in curriculum design, instructional methods/materials, and transition planning.

650. Learning Characteristics: Autism. 3 Hr. Characteristics and educational implications of autism spectrum disorders, assessment of individual learning and behavior, and planning, implementing and collaborating in the design of programs and services for children and adults.

652. Edl Interventions: Autism. 3 Hr. Design, delivery and evaluation of instruction for individuals with autism spectrum disorders, use of assistive technology and augmentative communication and implementation of functional behavior assessment and positive behavior support for children and adults.

659. Culminating Practicum: ASD. 3 Hr. PR: Consent. Internship or advanced student teaching in this area of specialization: autism spectrum disorders.

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.

664. Characteristics/Methods: Mental Impairments. 3 Hr. Educational implications of mild/moderate mental impairments and current best practices in curriculum design, instructional methods/materials, and transition planning.

665. Mathematics for Special Needs. 3 Hr. Comprehensive approach to mathematics instruction for students with mild/moderate disabilities, curriculum design and modifications, curriculum-based assessment of individual needs and learning outcomes, and research-based strategies to address special needs in mathematics.

666. Reading for Special Needs. 3 Hr. Comprehensive approach to reading instruction for students with mild/moderate disabilities, curriculum design and modifications, curriculum-based assessment of individual needs and learning outcomes, and research-based strategies to address special needs in reading.

667. Elementary Content Methods. 3 Hr. Elementary programs for students with mild/moderate disabilities, planning and delivering research-based intervention in reading, mathematics and written expression to address content standards and learning needs, and academic study survival skills.

668. Secondary Content Methods. 3 Hr. Secondary and post-secondary programs for students with mild/moderate disabilities, planning and delivering research-based intervention in core content areas to address content standards and learning needs and development and implementation of transition plans.

669. Professional Practicum. 9 Hr. PR: Departmental approval. Internship, advanced student teaching in multiple certification areas in mild/moderate disabilities.

670. Introduction to Gifted Education. 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.

674. Teaching Practicum: Severe/Multiple Disabilities. 1-6 Hr. PR: Consent. Internship, advanced student teaching in each certification area; administration and supervision practicum.

689 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.)

770. Policy Analysis and Development. 3 Hr. Advanced foundations of special education and disability services; historical trends and philosophical perspectives; policy review, analysis, research, and formulation; and advocacy roles and activities related to policy development.

771. Personnel Preparation Strategies. 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 and Grant Writing. 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.

773. Professional Development Models. 3 Hr. Design, implement, and evaluate professional development for practitioners in special education and disability services, including induction and mentoring programs, peer and consultant coaching, in-service training for individuals and groups, and communities practice.

774. Analysis and Design of Research. 3 Hr. Research literature in special education and disability services; integrative reviews and research critiques; formulation of research questions; translation of questions into appropriate research designs for participants with exceptionalities; preparation of research proposals.

775. Program Administration and Supervision. 3 Hr. Planning/implementing service delivery for eligibility, placement, program planning, and assessment; developing/managing budgets with multiple funding sources; staffing practices for hiring and monitoring personnel; communication and interaction skills for collaborative activities.

776. Leadership System Change. 3 Hr. Theories of leadership; current and evolving legislative mandates and service paradigms in special education and disability services; planning, implementing and evaluating systems change; collaborative, team building and conflict resolution during innovation.

779. Contemporary Issues and Trends. 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.

781. Orientation to Doctoral Study. 1 Hr. Introduction to doctoral study in special education; University, college, department and program option requirements; leadership roles/responsibilities for teacher education faculty or special education administrators/supervisors; planning for committee selection and program of study preparation.

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 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. 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. **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 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 course work or research are entitled, through enrollment in his/her department's graduate colloquium, to consult with graduate faculty, participate in both formal and informal academic activities sponsored by his/her program, and retain all of the rights and privileges of duly enrolled students. (Grading is S/U; colloquium credit may not be counted against credit requirements for master's programs.)

900. **Professional Development.** 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). The continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

930. **Professional Development.** 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.
Department of Speech Pathology and Audiology
http://www.wvu.edu/~speechpa

Degrees Offered
  Master of Science in Speech Pathology
  Clinical Doctorate in Audiology

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 it believes will be successful in the graduate program. The number of applicants accepted depends upon the number of qualified applicants, the number 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 degree in speech pathology and the clinical doctorate in 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 lower) or U 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 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 may 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.
  • Successful completion of comprehensive examinations in the area of speech-language pathology.
  • Successful completion of the praxis examination in the area of speech-language pathology.

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 clinical doctorate of audiology program is a four-year post-baccalaureate degree. Requirements for completion of the degree include the following:
  • A minimum of 116 semester credit hours including academic coursework and clinic practica.
  • All required courses in the audiology curriculum.
  • A scholarly work submitted in written form, presented orally before a forum of SPA faculty and students and approved by the student’s advisory committee.
  • Successful completion of the PRAXIS examination in audiology.
  • An overall graduate grade point average of at least 3.0 (A=4.0).
  • Successful completion of ASHA-approved practicum experience that is equivalent to a minimum of 12 months of full-time supervised experience.
All regular students in the clinical doctorate program must be full-time in residence during the program of study. The minimum duration for graduate study is 11 consecutive terms (including summer sessions) for students with an undergraduate background in speech-language pathology and audiology. Two additional terms are required for students without an undergraduate background in speech-language pathology and audiology to complete prerequisite coursework.

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)**

602. *Communication Disorders*. 3 Hr. Survey of normal processes and communication disorders of speech, language, hearing in children and adults; professions of speech-language pathology and audiology; job opportunities, designed for students not majoring in speech pathology and audiology.

604. *Seminars Clinical Practice 1*. 1 Hr. PR: Consent. Includes topics necessary for successful completion of clinical practicum.

606. *Seminars Clinical Practice 2*. 1 Hr. PR: Consent. Includes topics to enhance clinical skills of the beginning clinician.

608. *Hearing-Impaired School Child*. 2 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.

614. *Advanced Practice/SLP 3*. I, II, S. 4 Hr. PR: SPA 612 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.

616. *Advanced Practice/SLP 4*. I, II, S. 4 Hr. PR: SPA 614 or consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with speech-language 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.
624. **Phonological Disorders.** I. 3 Hr. PR: SPA 326 or consent. Advanced study of the etiology, assessment, and treatment of phonological disorders in children and adults.

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.

630. **Adult Neurogenic Communication Disorders.** II. 3 Hr. PR: SPA 620. Explores normal adult language processes and the effect of normal aging on communication. Advanced investigation of the etiology, diagnosis, nature, and therapeutic approaches of aphasia, agnosia, apraxia, dysarthria, dementia, right hemisphere impairment, and traumatic brain injury.

632. **Advanced Study: Cleft Palate.** II. 2 Hr. PR: SPA 326 or Consent. Investigation of the etiology, diagnosis, nature, and therapy approaches of communicative disorders in persons with cleft palate.

634. **Language Disorders in Children: Assessment.** S. 2 Hr. PR: SPA 324. Assessment procedures utilized to identify children with language disorders. Standardized tests and non-standardized analysis procedures are introduced.

635. **Language Disorders in Children: Treatment.** S. 2 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. 2 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.


658. *Auditory Processing Disorders*. 3 Hr. PR: Consent. A transdisciplinary approach to evaluation and management of auditory processing disorders in children and adults is presented. This course is for graduate students in speech-language pathology and audiology and professional speech-language pathologists and audiologists.


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.


668. *Clinical Experience in AAC*. 2 Hr. Hands-on AAC and AAC assessment and intervention experience at Camp Gizmo in Romney, West Virginia.


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 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.

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*. 2-4 Hr. PR: Consent. Note: This is an optional course for programs the 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.)

704. *Instrumentation in Audiology.* 3 Hr. PR: Consent. A study of instrumentation utilized in the evaluation of hearing disorders, including, calibration maintenance, minor repair, and use of such instrumentation. The course includes foundational study of electricity and electrical components.

706. *Advanced Audiological Assessment 1.* 4 Hr. PR: SPA 440 or Consent. Audiological test procedures utilized in the evaluation of hearing loss including differential diagnosis, test administration and interpretation.


711. *Audiological Assessment 2.* 4 Hr. PR: SPA 706. An advanced study of evaluation procedures utilized in the evaluation of hearing disorders, including adaptation of test procedures for varying clinical populations.

713. *Advanced Audiological Rehabilitation.* 3 Hr. PR: SPA 442 or consent. 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.


716. *Amplification Lab 1.* 1 Hr. PR: SPA 706 and CoReq SPA 715. Demonstration and introductory experience selecting, fitting and servicing basic hearing aids for individuals with hearing impairment.

717. *Pathology of the Auditory System.* 3 Hr. PR: SPA 702. Detailed study of the nature and etiology of auditory system pathologies from the external ear to the auditory cortex and their audiological manifestation.

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.


723. *Pediatric Audiology.* 3 Hr. PR: SPA 706 or consent. A study of the development of the auditory response and hearing problems of early childhood. Students will learn the construction and application of specialized assessment techniques suitable for the pediatric patient.


726. *Physiological Measures Lab.* 1 Hr. PR: SPA 711 and SPA 714 and Co-Req: SPA 725. Demonstration and introductory experience with otoacoustic emissions and evoked potential test procedures.

729. *Audiology Clinic 1.* 2 Hr. PR: Consent. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with hearing disorders.
734. **Audiory Processing Disorders.** 3 Hr. PR: SPA 725. A study of auditory processing disorders, including evaluation methods and procedures, remediation theories and practices, as well as collaboration with other professions in management of the disorders.

736. **Vestibular Evaluation and Rehabilitation.** 3 Hr. PR: SPA 702 and SPA 714 and Co-Req: SPA 737. Advanced study of balance system function and dysfunction, the principles and methods of evaluating balance, and rehabilitation techniques.

737. **Vestibular Evaluation and Rehabilitation Lab.** 1 Hr. PR: SPA 702 and SPA 714 and Co-Req: SPA 736. Demonstration and introductory experience performing balance system evaluation and rehabilitation techniques.

739. **Audiology Clinic 2.** 2 Hr. PR: SPA 729. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with hearing disorders.

743. **Industrial Audiology.** 3 Hr. PR: SPA 704. A study of various noise parameters and measurement techniques. Industrial hearing conversation procedures and the effects of noise on man.

745. **Clinic Supervision Seminar.** 2 Hr. An investigation into methods and techniques for clinical supervision in audiology.

749. **Audiology Clinic 3.** 3 Hr. PR: SPA 739. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with speech-language disorders.

759. **Audiology Clinic 4.** 4 Hr. PR: SPA 749. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with hearing disorders.

769. **Audiology Clinic 5.** 4 Hr. PR: SPA 759. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with hearing disorders.

779. **Audiology Clinical Externship.** 6 Hr. PR: SPA 769. Supervised clinical practicum that concerns the evaluation and treatment of children and adults with hearing disorders.

789. **Audiology Residency.** 6 - 9 Hr. PR: SPA 779. A semester placement in a clinical facility supervised by a certified audiologist, performing all aspects of audiology as applicable to the facility.

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.

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.)

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.
Master of Arts in Educational Psychology
Major in Child Development and Family Studies

The child development and family studies graduate program is a major option within the educational psychology EDP program. The major provides students with opportunities for conducting research and working with families and children in both educational and clinical settings. Courses in child development, family studies, parenting strategies, and interpersonal communication skills are supplemented with field experiences in a variety of settings. Students also are prepared for continuing study in doctoral programs in child development and family studies, sociology, special education, psychology, and counseling.

The M.A. in educational psychology (Ed.P.) with a major in child development and family studies (CDFS) prepares students to work with children, adolescents, or families in educational, applied, or other clinical settings, as well as preparing students for doctoral-level studies. Relative to employment opportunities, students have obtained positions for which they generally would not have been competitive with the bachelor’s degree, unless they had many years of related experience. Upon graduation, graduates have been hired as directors of child care programs in corporations, hospitals, and the private sector. Some students have obtained positions as instructors and faculty members at four-year colleges and branch campuses of major universities teaching classes in child/human development and family studies. Still other students have become specialists in parenting and curriculum development for Head Start and similar agencies. Graduates have also obtained employment as parenting and family specialists in community-based family agencies and community health care agencies. Some graduate students have entered the program with teaching certificates, and have used their master’s degree in CDFS to broaden the scope of their teaching in elementary and secondary education. Graduates of the master’s degree in CDFS have also successfully pursued positions as Extension agents through land-grant universities. Salaries for CDFS graduates with master’s degrees are highly variable depending on the nature of the position and the location of employment. However, salaries are generally higher than students with only the bachelor’s degree.

In addition to educational and applied careers, some students have entered the program with the aim of pursuing doctoral studies. Through rigorous coursework and the requirement to complete a research-based master’s thesis, students are prepared to pursue doctoral studies in human development, family studies, sociology, special education, developmental psychology, counseling, and related fields.

Admission Requirements and Performance Standards

Ideally, prospective students should have completed an undergraduate curriculum in an area of specialization related to CDFS, such as psychology, sociology, education, or social work. A student whose undergraduate degree is in an unrelated field and/or who lacks preferred foundation courses for graduate studies in CDFS will likely be required to take supplemental undergraduate courses if accepted into the program.

All CDFS faculty members review every graduate application and jointly determine whether a student will be admitted as a regular graduate student, admitted provisionally, or not admitted into the program. A majority of faculty members must indicate acceptance and one faculty member must be able to serve as the major advisor to the student. Final approval for admission rests with the graduate coordinator of the CDFS program. Application materials include the following:
• Completed application
• Undergraduate transcript
• GRE Scores (while a cut-off has not been established, GRE is examined vis-à-vis undergraduate transcript)
• Personal statement of interest
• Three letters of recommendation
• Resume or Curriculum Vita

Program Requirements
The CDFS major requires coursework in child development, family studies, statistics, research methods, elective hours, and thesis credits for a total of 33 hours. Six credits of electives are selected in consultation with the student's faculty adviser and are based on the particular interests of individual students. For instance, students may take their electives in educational psychology, curriculum and instruction, counseling and guidance, psychology, special education, sociology, women's studies, social work, public administration, and related disciplines.

Six credit hours are assigned to the completion of the required research-based thesis. The student and his/her major professor determine the research topic with input from other committee members. The thesis requires six research credits, an extensive literature review, development of a research design with associated methodological procedures, data collection or use of faculty data sets, in-depth analysis of data, and analytic discussion of the results. Most students conduct quantitative/statistically-based theses. However, qualitative research designs are permitted, with appropriate rigorous application of qualitative research methods in the collection and interpretation of data. The format for a thesis must meet the requirements outlined in the CDFS Thesis Manual, available at the WVU Book Store and is written in the style of the Manual of the American Psychological Assn. (5th ed.). Theses at WVU are electronically submitted upon their approval.

Graduate Assistantships
Prospective students can apply for graduate assistantships (GA) in CDFS, which may include teaching or research activities. One graduate student who has demonstrated competence in preschool education is awarded an assistantship to work in the West Virginia University Child Development Laboratory. Graduate students in CDFS also have had success in acquiring assistantships in other academic units in the College of Human Resources and Education and other Colleges at WVU. However, within CDFS, a limited number of graduate assistantships are available on a competitive basis. Awards, granted for a one-year period with consideration for a second year, include tuition waiver and a monthly stipend. Graduate assistants work 20 hours per week, assisting CDFS faculty members in their teaching or research activities. Students recognized for academic excellence and not awarded an assistantship may qualify for a limited number of meritorious hours which results in a tuition reduction.

Child Development / Family Studies (CDFS)
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.

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 fall 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.)

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

593 A-Z. 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.

690. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in college teaching of child development and family 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. I, II, S. 1-6 Hr. Directed study, reading, and/or research.

693. 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. 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. 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.)

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.

Educational Psychology
Daniel E. Hursh, Chair and Program Coordinator
Allen Hall
http://www.wvu.edu/~edpsych

Degree Offered
Master of Arts in Educational Psychology

Master’s Program General Description
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 (M.A.) degree. Professional preparation focuses on learning, development, instruction, and research. Accordingly, students are expected to achieve competencies in these areas. The student plans programs jointly and the student’s advisor to meet the student’s particular career needs.
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 degree. The principal goal of the program is the education and training of professionals who will focus on teaching and learning environments as they carry out their missions associated with instruction, service, and research. Professional preparation centers on the following three content areas: (a) learning and development; (b) instructional development; and (c) measurement, research, and statistics. Accordingly, students are expected to achieve competencies in these areas.

The student, the student’s advisor, plans programs jointly and the student’s committee to meet particular career needs. In addition to the general requirements of the University and the College of Human Resources and Education, there is a core of courses and supporting competencies required of all graduate students in the department.

Educational psychologists function in a variety of settings. The program is dedicated to the preparation and placement of competent educational psychologists for positions in educational settings at all levels; educational agencies at local, state, and federal levels; public and private human service centers; medical centers; business and industrial settings; and other settings.

Admission Requirements and Performance Standards

All applicants must have an undergraduate degree from an accredited institution. Each applicant is required to submit official transcripts of undergraduate and prior graduate work completed, a 500-word written goal statement, a personal vita, and three letters of recommendations. All applicants must submit official scores for either the Graduate Record Examination (GRE) or the Miller Analogy Test (MAT). All faculty members affiliated with the program screen the credentials for all applicants. The following criteria are used as guidelines to evaluate application credentials:

- Total GRE scores of 1100 (on the verbal and quantitative combined) or MAT score of 55 (for an international student from a country in which English is not the native language · TOEFL score of at least 550 and a combined total score of at least 1000 on the GRE verbal and the TOEFL scores),
- An undergraduate GPA of 3.0 or greater,
- Graduate GPA of 3.25 or greater for graduate work completed (if applicable),
- The extent to which the applicant’s goals and objectives may be accomplished if admitted to the program, and
- Favorable recommendations and appropriate background experiences.

To remain in good standing, the student must have an average grade of B or better for all courses in the program and be making satisfactory progress toward the completion of the program competencies (as described in the following section).

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 is required to submit official transcripts of the undergraduate work and the official scores for either the Graduate Record Examination (GRE) or the Miller Analogy Test (MAT), a 500 word written goal statement, a personal vita, and three letters of recommendation.

In conference with the student’s committee, directed by the advisor, with final approval by the committee, the student may complete one of the following two options (including at least 18 EDP credit hours):

Option A
At least 30 semester-hours of course work, including six semester-hours of thesis research.

Option B
At least 30 semester-hours of course work, including three semester-hours of practical product development.

Each student is expected to complete the following core courses as part of the master’s plan of study:
EDP 600 Advanced Educational Psychology
EDP 613 Statistical Methods I
EDP 611 Foundations of Educational Measurement
EDP 612 Introduction to Research
Major in Program Evaluation and Research

The major in program evaluation and research is designed primarily for individuals with interest in conducting research and evaluation projects for private and public educational organizations and agencies. Emphasis is placed on developing proficiency in quantitative, qualitative, and mixed-methods inquiry, providing students with a breadth of methods to study varied educational, programmatic, and social research questions. All students will be required to design and conduct at least one full program evaluation during the course of their studies.

Program Outcomes

The competencies to be developed by this major are listed above under Program Objectives. The more general outcomes for students and the State and region are a cadre of professionals prepared to conduct program evaluations and research in a variety of education and other human services settings. In addition, some of the graduates will directly or eventually enter doctoral programs in disciplines related to educational psychology, program evaluation, and research.

Program Delivery

The students in the majors will be a mix of full time and part time students. While most instruction and mentoring will be face-to-face, online instruction and mentoring of students will be arranged as circumstances require and permit. Specialized delivery technologies may well be utilized as needed on an individual student or learning activity basis.

Clientele and Need

The addition of a major in program evaluation and research is unique within the state and will continue to provide a master’s program for students seeking to attain a strong foundation from which to pursue doctoral study. This major will additionally appeal to students seeking a “quasi”-terminal degree with which to pursue employment in schools and other education oriented entities.

Employment Opportunities

With the current strong emphasis on data based decision-making driven by the No Child Left Behind legislation, Individuals with Disabilities Education Act, and other regulatory mandates, graduates of this program will be in high demand.

Admission Requirements and Performance Standards

All PER faculty members review every graduate application to the program and jointly determine whether a student will be admitted as a regular graduate student, admitted provisionally, or not be accepted into the program. A majority must indicate acceptance and one faculty must be willing to serve as the major advisor. Final approval for admission rests with the coordinator of the educational psychology program. Application materials include the following:

- Application
- Undergraduate transcript (GPA of 2.75)
- GRE (1000) or MAT (50) and TOEFL (550 for students whose primary language is not English)
- Personal statement of interest
- Three letters of recommendation
- Vita

To remain in good standing, the student must have an average grade of B or better for all courses in the program and be making satisfactory progress toward the completion of the program competencies (as described in the following section).

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 is required to submit official transcripts of the undergraduate work and the official scores for either the Graduate Record Examination (GRE) or the Miller Analogy Test (MAT), a 500 word written goal statement, a personal vita, and three letters of recommendation.
Program Objectives, Student Competency Expectations and Opportunities to Learn

Student Competency Expectations
Demonstrate understanding of the philosophical and historical foundations of inquiry.

Apply appropriate quantitative, qualitative, and mixed-methods research tools to answer practical educational, programmatic, and other social research questions.

Apply appropriate program evaluation tools to conduct formative and summative evaluations of existing and prospective educational programs.

Demonstrate understanding of ethical issues in research and evaluation.

Create informative reports of research and evaluation studies tailored appropriately for multiple stakeholders and decision-makers.

Opportunities to Learn
EDP 612 Introduction to Research
EDP 694 Seminar: The Nature of Inquiry

EDP 611 Measurement/Evaluation in Educational Psychology
EDP 613 Statistical Methods I
EDP 617 Program Evaluation
EDP 693 Special Topics: Mixed Methods Research and Evaluation
EDP 685 Practicum I
EDP 698 Thesis
SCFD 615 Qualitative Research Methods

EDP 613 Measurement/Evaluation in Educational Psychology
EDP 617 Program Evaluation
EDP 685 Practicum I
EDP 693 Special Topics: Mixed Methods Research and Evaluation
EDP 698 Thesis

EDP 612 Introduction to Research
EDP 617 Program Evaluation
EDP 685 Practicum I
EDP 698 Thesis
SCFD 615 Qualitative Research Methods

EDP 617 Program Evaluation
EDP 685 Practicum I
EDP 698 Thesis

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 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.

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.* 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.)


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 511 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 covariation involving multiple covariates. Applying SPSS Procedure Matrix for data analyses. (Alternate years.)

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. (Alternate years.)

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. (Alternate years.)

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. (Alternate years.)

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. **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, Professor
Jaci Webb-Dempsey, Assistant Professor
Allen Hall

The social and cultural foundations program in the College of Human Resources and Education offers opportunities for advanced graduate study. While the foundations program does not offer a degree, students are encouraged to minor in the area. The minors might consist of intense study in the areas of history, sociology, philosophy, comparative education, qualitative research, and policy analysis. The minor in foundations offers students the opportunity to tailor, in cooperation with the foundations faculty, a program to meet specific research interests.

**Social and Cultural Foundations (SCFD)**

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. (Also listed as SOCA 332.)

615. **Qualitative Research Methods.** 3 Hr. An introduction to the nature of qualitative research and to techniques of interviewing, observation, and the analysis of documents and other cultural artifacts. Includes guided experience in designing and implementing a qualitative research study.

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.)
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.)

John Dewey Studies. 3 Hr. This seminar focuses on the work of John Dewey. Students examine secondary and primary works. The course traces the influence of Dewey's life and thought from 1859 to present.

Advanced Qualitative Research. 3 Hr. PR: SCFD 615. Advanced exploration of methodological issues related to qualitative research; including basic interpretive, case study, grounded theory, phenomenological, and mixed-methods dissertations and research projects. The course also provides a service course for doctoral students in other colleges.

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.)

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

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

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

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

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

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

Research. 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.)

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

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

Instructional Design and Technology
Neal Shambaugh, Program Coordinator
504N Allen Hall
http://www.wvu.edu/~techedu

Degrees Offered
- Master of Arts and Doctor of Education in Instructional Design and Technology (IDT)
- Master of Arts

A master's level IDT degree is designed for those interested in the design, use, and evaluation of technology in any educational setting. Major features of the program include course preparation in educational psychology, instructional technology, and program evaluation. Information concerning program requirements, course sequence, and advising sequence is available.

College of Human Resources and Education
Entrance Requirements
- Undergraduate GPA of 2.75 or greater
- GRE 1000 minimum; or MAT 410 minimum (or a 50 score from earlier MAT version)
- GRE or MAT scores must be no older than five years old
- TOEFL 550 minimum (for international students)
- Cover letter explaining your interest and motivation for an IDT master’s degree
- Three letters of reference

Program Features
- Thirty-six course hours are prescribed (a University policy when no thesis is required). All courses are required. A two-year sequence is visualized below for those taking a full-time load (nine hours):

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDP 600 Educational Psychology</td>
<td>EDP 694 The Nature of Inquiry</td>
</tr>
<tr>
<td>IDT 691 IDT Foundations</td>
<td>IDT 744 IT Integration</td>
</tr>
<tr>
<td>EDP 640 Instructional Design</td>
<td>IDT 750 Web-Based ID</td>
</tr>
</tbody>
</table>

Summer
- IDT 600 Instructional Materials
- IDT 693 Prototype Studio

Fall
- IDT 611 Computer-Mediated Communication (CMC)
- IDT 601 Distance Education
- IDT 740 Design Studio
- IDT 693 Prototype Studio

Spring
- EDP 617 Program Evaluation

- A two-semester developmental capstone experience is designed into the program. A program evaluation course and application experience are necessary to develop graduates who know how to “evaluate technology innovations.”
- Prototype studio will be scheduled fall, spring, summer. The course is required to be taken only once, but can be enrolled in multiple times as needed to complete projects.

Developmental Capstone Sequence

Fall
- IDT 740 Design Studio
  Develop an IT-based prototype

Spring
- IDT 693 Prototype Studio
  Implement, revise prototype

Spring
- EDP 617 Program Evaluation
  Develop a plan to evaluate the prototype; conduct the evaluation

Doctor of Education
The Ed.D. program is designed to allow a student to immediately apply knowledge and skills to pragmatic needs in education. Knowledge and skill-building are designed into the courses and are developed over the length of the program, and specifically address three areas of concern in educational settings, including interconnectivity, instructional design, software and multimedia design and deployment. Research is framed around the pragmatic needs of students, programs, and institutions. Information concerning program requirements, structure, and advising sequence is available.

Entrance Requirements
- Undergraduate GPA of 2.75 or greater
- GRE 1100 minimum; or MAT 424 minimum (or a score of 60 on the older version)
- GRE or MAT scores must be no older than five years old
• TOEFL: 550 minimum (additional requirement for international students)
• Master’s degree
• Letter of application explaining your purpose and motivation for an IDT Ed.D. degree
• Three letters of references
• Scholarly writing sample
• Vita
• Optional interview

Program Features
• The 72-hour doctoral IDT program (not counting dissertation) requires 42 hours past the master’s degree.
• Advising on a dissertation begins on the first day of the program. Students are encouraged to identify topics of interest and to develop an appropriate topic for inquiry as one takes classes.
• Research in instructional technology is addressed throughout the courses and supplements the college research core requirements.
• The program featured seminar courses that provide opportunities to conduct research and develop instructional interventions, including technological integration of tools.
• Teaching opportunities will be found working with faculty members, the college’s TLTC, and internships in corporate settings in the Morgantown/Fairmont area.

Program Components
• Common Core: foundations and seminars (12 hours)
• HR&E Research Core: (15 hours) required for all college Ed.D. programs.
• Competencies/Constituencies: competencies across three areas: interconnectivity (nine hours), instructional design (nine hours), and software and multimedia design and deployment (nine hours).
• Specializations: courses within HR&E and across the University (18 hours), subject to approval by your doctoral committee.

Program Structure
72 hr. Ed.D.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDP 700 Psychological</td>
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</tr>
<tr>
<td>Foundations of Learning</td>
<td>3</td>
</tr>
<tr>
<td>EDP 740 Principles of Instruction</td>
<td>3</td>
</tr>
<tr>
<td>EDP 799 TLC Graduate Colloquium</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>EDP 612 Introduction to Educational Research</td>
<td></td>
</tr>
<tr>
<td>EDP 613, 614 Statistics Sequence</td>
<td>6</td>
</tr>
<tr>
<td>SCFD 615 Introduction to Qualitative Research</td>
<td></td>
</tr>
<tr>
<td>Research Elective</td>
<td></td>
</tr>
<tr>
<td>EDP 617 Program Evaluation recommended)</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

Students will become competent in three major areas:

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interconnectivity</td>
<td>9</td>
</tr>
<tr>
<td>Instructional Design</td>
<td>9</td>
</tr>
<tr>
<td>Software and multimedia design and deployment</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>27</td>
</tr>
</tbody>
</table>
IDT 794 School Networks: Personal and Physical  
EDP 640 Instructional Design  
IDT 794 Visual Literacy  
IDT 611 Computer Mediated Communication  
IDT 744 Instructional Systems Design  
IDT 600 Development of Instructional Materials  
IDT 750 Web-based Instructional Design  
IDT 740 Design Studio  
IDT 794 Prototype Studio

Specializations

Courses within HR&E or across the University ............................................ 18

Note: IDT 794 courses are seminar courses and will include a 693x code on the online course listing.

**Instructional Design and Technology (IDT)**

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 environment.

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. 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.)

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.

740. Curriculum Development and Technology. 3 Hr. Development of curriculum components for the study of technology.

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.
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.


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 my be S/U.)

798. *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.
Degrees Offered

Master of Science
Doctor of Philosophy

The School of Physical Education is organized into two departments: Department of Coaching and Teaching Studies and Department of Sport Science. The Department of Coaching and Teaching Studies includes the programs in athletic coaching education and physical education/teacher education. The Department of Sport Sciences includes the programs in athletic training, sport and exercise psychology, and sport management.

The doctoral program in kinesiology administered through the College of Physical Activity and Sport Sciences has two major areas: sport and exercise 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 master’s degree program in teacher education is run using a distance education format. The master’s degree programs in athletic coaching and sport management have both on-campus and distance education cohorts.

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 two technology classrooms and seminar rooms, faculty offices, a large gymnasium, a dance studio, and computer 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, 277 Coliseum, P.O. Box 6116, West Virginia University, Morgantown, WV 26506-6116. Telephone (304) 293-3295 x 5287.

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.). Teacher education, Behavior analysis.
†Lynn Houser, Ph.D. (U. Pitt.). Associate dean. Graduate coordinator, Teacher education, Research on teaching.

Associate Professors

†Dallas D. Branch Jr., Ph.D. (Ohio U.). Sport management. Sport marketing.
Bruce Wilmoth, M.S. (Brigham Young U.). Teacher education.

Assistant Professors
*Gonzalo Bravo, Ph.D. (Ohio St. U.). Organizational theory and international sports
Kristen Dieffenbach, Ph.D. (UNCG). Coaching education, professionalism in coaching, women in coaching, overtraining and underrecovery, talent development and performance excellence.
†Michelle Sandrey, Ph.D. (U. Kans.). Athletic training, Tissue biomechanics, Neuromotor aspect of injury.

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 (2.75 minimum for regular status) from an approved institution
• TOEFL scores for international applicants (minimum required: 550 paper; 213 computer; 80 Internet based)
• Three letters of reference
• Resume
• Graduate Record Examination scores (athletic training and athletic coaching education)

Some programs may require a personal interview if feasible. The sport management program also requires the following:
• Autobiographical description and professional goal statement (one to two pages on professional background, goals, and reasons for pursuing the master’s degree in sport management)

Athletic Coaching Education
This major is designed to develop the skills and knowledge necessary to be an athletic coach. The medical, legal, growth and developmental, psychosocial, biophysical, and technical aspects of coaching are emphasized. Application deadline is March 1 for fall on-campus admission, and March 1 for distance education program summer admission.

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 40 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 25 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 January 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 starting in mid February.

Sport Management
The sport management major requires 36 credit hours, including a six-hour internship. Applicants deadline is January 15 for fall admission to on-campus program and May 22 deadline for summer admission for distance education program. The application for graduate school, official transcript(s), and application fee must be submitted to the Office of Admissions and Records to be processed and reviewed in our office by the January 15 deadline for on-campus
program and May 22 for distance education program. The selection process for the 15 applicants (on-campus program only) who are accepted into the program is conducted during the spring semester and a personal or phone interview is a part of the selection process. Applicants will be notified of their selection by April 1 and June 8 for distance education program.

**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 master’s program includes a balance of online 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). Practical application of research-based and developmentally appropriate teaching practices is emphasized by the program.

No more than 12 graduate hours may be taken toward the master’s degree as a non-degree graduate student.

**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 2.5; 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 philosophy in kinesiology are available in two major areas: sport and exercise psychology and teacher education. The students admitted into the doctoral program in sport and exercise psychology also complete a master’s degree in community counseling. Students can be admitted into either doctoral program in sport and exercise 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.

**Application Deadline**

Application procedures for the Ph.D. in sport and exercise psychology must be submitted by to the Admissions and Records office to be processed and received in the department by December 15. Incomplete applications will not be reviewed. International applicants are encouraged to submit their information by November 1 to allow extra time for processing. 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, including 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 or 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 of 3.0 from an approved institution
- Master’s degree grade point average of 3.5 from an approved institution (if applicable)
• Graduate Record Examination scores–1050 (verbal/quantitative) or 1750 (verbal/quantitative/analytical for sport and exercise psychology doctoral program and 1000 (verbal/quantitative) for physical education/teacher education doctoral program.
• TOEFL scores for international applicants (minimum required: 550 paper; 213 computer, 80 Internet based)
• Three letters of reference
• Professional goal statement (one to two 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/%7Ephysed/sportpsych/spdoc.htm (sport and exercise psychology) and at http://www.wvu.edu/%7Ephysed/petenew0103/Doctoral_index.htm (teacher education.)

**Doctoral Degree Requirements**

The sport and exercise 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, and other faculty, 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 one year 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.
• Qualifying Exam. Doctoral students in the teacher education program take six credits of readings in their first year and must pass a written oral examination in order to continue in the program.
• 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 written and oral 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.

630. Coaching Education Administration. 3 Hr. An administrative focus of leadership, finance, fundraising, planning, facility development, personnel supervision, public relations, rules and regulations, purchase and care of equipment and the conducting of athletic events.

645. Contemporary Issues in Sport. 3 Hr. Contemporary issues in sport; to make you a more successful coach, expose you to situations in today’s coaching profession, and prepare you to plan for situations that may arise.

650. Sport Movement Analysis. 3 Hr. This course applies the laws of physics to sport activities with the objective of finding the most efficient use of the human body to achieve the highest 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.

662. Sports and Drugs. 3 Hr. This course will examine accurate information about drugs and their effects on the health performance and daily lives of athletes and the concept of coaches as influential role models.

671. Women in Sport. 3 Hr. Ace Graduate: Study the history of women in sport, and investigate issues that are directly related to women in sport as participants, coaches, administration, parents and fans.

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.

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.

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)

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

618. Anatomy Laboratory. 3 Hr. Cadaver laboratory dissection involving an anatomical analysis of the trunk and extremities.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
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</thead>
<tbody>
<tr>
<td>620</td>
<td>Athletic Training Practicum 1</td>
<td>1 Hr.</td>
<td>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.</td>
</tr>
<tr>
<td>621</td>
<td>Athletic Training Practicum 2</td>
<td>1 Hr.</td>
<td>PR: ATTR 620. Clinical experience in athletic training that allows students to broaden their exposure to administrative duties.</td>
</tr>
<tr>
<td>622</td>
<td>Athletic Training Practicum 3</td>
<td>1 Hr.</td>
<td>PR: ATTR 621. Clinical experience in athletic training that allows students to broaden their experience and to develop advanced clinical and writing skills.</td>
</tr>
<tr>
<td>623</td>
<td>Athletic Training Practicum 4</td>
<td>1 Hr.</td>
<td>PR: ATTR 622. Clinical experience in athletic training that allows students to broaden their clinical thinking and problem solving abilities.</td>
</tr>
<tr>
<td>624</td>
<td>Issues in Athletic Training</td>
<td>3 Hr.</td>
<td>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.</td>
</tr>
<tr>
<td>625</td>
<td>Science and Theory of Rehabilitation</td>
<td>3 Hr.</td>
<td>PR: Consent. This course will present the current theory of therapeutic exercise techniques as they relate to the rehabilitation of the physically active individual.</td>
</tr>
<tr>
<td>627</td>
<td>Biomechanics</td>
<td>3 Hr.</td>
<td>PR: Consent. To provide the athletic trainer with an understanding of applied, clinical biomechanics and its relationship to specific joints, sports and pathologies.</td>
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<tr>
<td>640</td>
<td>Critical Thinking in Injury Assessment</td>
<td>3 Hr.</td>
<td>PR: Consent. A course designed to demonstrate knowledge in critical thinking skills and evidence-based clinical practice guidelines as they relate to the evaluation process.</td>
</tr>
<tr>
<td>650</td>
<td>Medical and Surgical Aspects of Athletic Training</td>
<td>3 Hr.</td>
<td>PR: Consent. Variety of current medical and surgical procedures commonly performed on athletic populations.</td>
</tr>
<tr>
<td>691</td>
<td>Advanced Topics</td>
<td>1-6 Hr.</td>
<td>PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.</td>
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<td>691 A-Z</td>
<td>Advanced Topics</td>
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<td>693 A-Z</td>
<td>Special Topics</td>
<td>I, II, S. 1-6 Hr.</td>
<td>A study of contemporary topics selected from recent developments in the field.</td>
</tr>
<tr>
<td>695</td>
<td>Independent Study</td>
<td>I, II, S. Variable 1-6 Hr.</td>
<td>Faculty supervised study of topics not available through regular course offerings.</td>
</tr>
<tr>
<td>697</td>
<td>Research</td>
<td>1-15 Hr.</td>
<td>PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)</td>
</tr>
<tr>
<td>698</td>
<td>Thesis</td>
<td>I, II, S. 2-4 Hr.</td>
<td>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.)</td>
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</tbody>
</table>

**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 methodological skill. 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.

644. *Pedagogical Kinesiology.* 3 Hr. Qualitative analysis of fundamental motor skills and sport-specific performances; discussion of research, application of self-directed experiments, and presentations of selected research papers. (Offered fall and every third summer.)

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.

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. *Issues in Motor Development.* 3 Hr. Examines the contributions made to the body of knowledge of motor development by various theories of child development, psychology, learning, and ecology. A variety of theoretical perspectives, assessment techniques, and issues will be reviewed.

670. *Infant/Early Childhood Motor Development.* 3 Hr. Examination of motor development during infancy and early childhood focusing on physical education’s interactive role with the developmental process. Emphasizing current developmental research related to the area.

671. *Childhood Motor Development.* 3 Hr. PR: PET 668. This course will study changes during childhood in motor behavior which reflect the interaction of the mover with contextual features of the environment and the demands of the movement task. Laboratory experiences with children included.

672. *Advanced Laboratory in Physical Education.* 1-6 Hr. Provides graduate students with teaching experiences in physical activity programs for children. Students can choose between pre-school or elementary school age children and land-based or water-based learning environments. Open to all majors.

680. *Theory of Fitness Education.* 3 Hr. This course explores the theoretical foundations and related literature underlying the provision of fitness education and the role of this content in physical education programs.

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.)
687. Physical Education-Classroom Teacher. 3 Hr. Focus is on the most contemporary issues and trends in elementary physical education. The class is designed specifically for classroom teachers.

688. Applied Motor Learning. 3 Hr. Examines the theoretical foundations and related literature that underlie the learning, performance, and retention of motor skills with applications to teaching and coaching.

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. 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.)

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.

770. Motor Behavior Issues Seminar. 3 Hr. This course is a readings, discussion, research, and application seminar in human movement production. Emphasis will be placed on bridging theory to practice. Applications focus on teaching/learning, fundamental motor skills, and rehabilitation of motor skills.

780. Research on Teaching. 3 Hr. The history methods, findings, and educational implications of research on behavioral and cognitive processes that underlie teaching.

781. Research on Teaching in PE. 3 Hr. This course is designed to examine issues related to the provision of quality physical education in P-12 programs, and to the integration of many elements contributing to the student's professional preparation.

785. Behavior Analysis. 3 Hr. Examination of basic and advanced concepts of applied behavior analysis as they relate to research in physical education and related fields as well as course design and implementation at the college level.

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.

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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. 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.)

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.
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 and Exercise Psychology (SEP)

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.)

620. Individual Interaction in Sport and Physical Activity. 3 Hr. PR: SEP 615. Designed to acquaint the student with the reciprocal relationships between sport and physical activity and the societies and culture from which sport emerges.

640. Psychology of Sport and Physical Activity. 3 Hr. PR: SEP 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.

686. Internship in 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).

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

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. 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 and dissertations. (Grading may be S/U.)

699. Graduate Colloquium. 1-6 Hr. PR: Consent. For graduate students nor 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 nor 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.)

719. Group Influences in Sport. 3 Hr. PR: SS 640. An examination of how and why behavior and performance affected by interactions with others in sport. An emphasis is placed upon group functioning.
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 Healthy 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.* 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.)

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

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. *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.)

**Sport Management (SM)**

610. *Sport Broadcasting.* 3 Hr. PR: Graduate standing or consent. The collegiate and professional sport environment in radio and television; elements of radio/television production; ratings and marketing/sales techniques.
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.

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.

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 in 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.

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.)

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 may be S/U.)

698. **Thesis.** 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 and 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 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.)

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.)

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. 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.)

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 right 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

**Division of Animal and Nutritional Sciences**
- Master of Science in Animal & Nutritional Sciences
- Master of Science in Reproductive Physiology
- Doctor of Philosophy in Agricultural Sciences
- Doctor of Philosophy in Reproductive Physiology

**Division of Forestry and Natural Resources**
- Master of Science in Forestry
- Master of Science in Recreation, Parks, & Tourism Resources
- Master of Science in Wildlife & Fisheries Resources
- Doctor of Philosophy in Forest Resources Science

**Division of Plant and Soil Sciences**
- Master of Science in Genetics & Developmental Biology
- Master of Science in Plant & Soil Sciences
- Doctor of Philosophy in Agricultural Sciences
- Doctor of Philosophy in Genetics & Developmental Biology

**Division of Resource Management**
- Master of Science in Agricultural & Extension Education
- Master of Science in Agricultural & Resource Economics
- Doctor of Philosophy in Resource Management & Sustainable Development
- Agricultural & Extension Education, Natural Resource Economics

**Interdisciplinary Programs**
- Master of Agriculture, Forestry & Consumer Sciences
- Master of Science in Genetics & Developmental Biology
- Master of Science in Reproductive Physiology
- Doctor of Philosophy in Agricultural Sciences
- Animal & Food Science, Plant & Soil Sciences
- Doctor of Philosophy in Genetics & Developmental Biology
- Doctor of Philosophy in Reproductive Physiology
- Doctor of Philosophy in Resource Management & Sustainable Development
- Human & Community Development, Resource Management

The Davis College of Agriculture, Forestry, and Consumer Sciences is comprised of five divisions: animal and nutritional sciences; design and merchandising; forestry and natural resources; plant and soil sciences; and resource management. The college’s faculty and staff are located in four buildings on the Evansdale 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.

Students study many different subjects concerned with human behavior, plants, animals, trees, and microorganisms. Curricula in the college stress the life sciences, applied and basic research, and economic and social 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 natural environment and resources from which we produce our food, fiber, wood, and leisure activities.
The Davis College of Agriculture, Forestry, and Consumer Sciences research is conducted in the West Virginia Agricultural and Forestry Experiment Station. Research proposals are generated, evaluated, approved, and funded through the Experiment Station. The University controls extensive lands, which are administered by the college, with specific areas set aside for research and teaching purposes in livestock, poultry, forestry, wildlife management, organic production, horticulture, agronomy, entomology, and soils. Graduate students in the Davis College benefit from a variety of educational and research settings and from extensive opportunities for hands-on learning.

**Master's Programs**

The Davis College of Agriculture, Forestry, and Consumer Sciences offers nine degree programs at the master’s level. Students can choose from the following majors for a master’s degree: agricultural and extension education; agricultural and resource economics; agronomy; animal and nutritional sciences; entomology; environmental microbiology; horticulture; forestry; plant pathology; 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 major in animal and food sciences or plant and soil sciences.
- **Ph.D. in Forest Resources Science** – Doctoral students may choose from the following areas of emphases: forest resource management; recreation, parks, and tourism resources; wildlife and fisheries management; or wood science.
- **Ph.D. in Resource Management and Sustainable Development** – Doctoral students may choose from the following majors: agricultural and extension education; human and community development; natural resource economics; or resource management.
- **Ph.D. in Genetics and Developmental Biology** – Doctoral students may select areas of study 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, pharmacology, physiology, reproductive physiology and statistics 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 paper TOEFL examination or 213 on the electronic TOEFL examination if their native language is not English.
5. The specific graduate programs may have additional requirements for admission.
Provisional – A student may be admitted as a provisional graduate student when the student possesses a baccalaureate degree but 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 that does not meet grade point requirements for regular admission. After successful fulfillment of the deficiencies, the student will be granted regular graduate student status.

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. A student must present evidence of a baccalaureate degree and obtain a 2.5 grade point average on the first 12 credit hours of graduate 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.

Division of Animal and Veterinary Sciences

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

Associate Professors
†Kenneth P. Blemings, Ph.D. (U. Wisc.). Nutritional biochemistry.
†Cindy W. Fitch, Ph.D. (Case Western Reserve U.). Applied human nutrition, Pediatric nutrition, Nutritional assessment, Medical nutrition therapy.

Assistant Professors
Kimberly M. Barnes, Ph.D (U. Neb.). Biochemistry.
†Eugene E. Felton, Ph.D. (U. Mo.). Ruminant nutrition.
†Matthew E. Wilson, Ph.D. (Iowa St. U.). Reproductive physiology.
†Jianbo Yao, Ph.D. (McGill U.). Functional genomics.

Clinical Assistant Professor

Lecturer

Visiting Assistant Professor
Kathleen T. Timperman, M.S. (U. of Ill. at Urbana-Champaign). Human nutrition and foods.
Design and Merchandising

Professor
†Nora M. Macdonald, M.S. (Iowa St. U.). Apparel design, Clothing for special needs, Fashion merchandising.

Assistant Professors
†Cindy V. Beacham, Ph.D. (VPI & SU). Design for children, Intergenerational design, Interior design pedagogy, Design for special needs.
†Barbara McFall, Ph.D. (Saybrook). Design for quality of living, Personal resource system management, Human systems theory, “Wicked” problems.
†Jeong-Ju Yoo, M.S. (U. of Okla.). Merchandising, Social and psychological aspects of clothing, Consumer behavior.

Forestry and Natural Resources

Professors
†Ray R. Hicks, Jr., Ph.D. (SUNY). Forest management. Forest ecology, Forest pest management.
†Joseph McNeel, Ph.D. (VPI & SU) Director. Forest engineering/forest operations.
†Steven W. Selin, Ph.D. (U. Ore.). Recreation and parks. Tourism development.

Associate Professors
†James P. Armstrong, Ph.D. (SUNY). Wood science.
†Patricia Mazik, Ph.D. (Memphis St. U.). Adjunct. Cooperative Fish and Wildlife Research Unit. Fish physiology.
†J. Todd Petty, Ph.D. (U. of Ga.). Fisheries and stream ecology.
†Chad D. Pierskalla, Ph.D. (U. of Minn.). Wildland recreation management and policy.
†Jingxin Wang, Ph.D. (U. of Ga.). Forest operations and management.

Assistant Professors
†Kathryn Arano, Ph.D. (Va. Tech.). Primary and secondary wood processing.
†Jinyang Deng, Ph.D. (U. Alberta). Recreation, parks, and tourism development.
†Kathryn Piatek, Ph.D. (N.C. St. U.). Forest soils.

Genetics and Developmental Biology

Professors
†Nyles, Charon, Ph.D. (U. Minn.). Medical bacteriology. Genetics and physiology of spirochetes.
†Daniel Panaccone, Ph.D. (Purdue U). Gene cloning, Gene transfer.
†Robert Pore, Ph.D. (U. Cal.). Mycology, Pathobiology, Mycoses.
†Lisa Salati, Ph.D. (U. Minn.). Regulation of gene expression by fatty acids.
†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

†Kenneth P. Blemings, Ph.D. (U. Wisc.). Nutritional biochemistry.

†Keith Garbutt, Ph.D. (U. Wales). Population genetics.


Bing-Hua Jiang, Ph.D. (U. Miss.). Role of kinase in angiogenesis.

Jia Luo, Ph.D. (U. of Iowa.). Neurobiology.


†James Sheil, Ph.D. (U. Ky.). Immunology, Mechanisms of cytotoxic T lymphocyte-mediated antigen recognition and effector function.

†Sven Verlinden, Ph.D. (Purdue U.). Horticulture, Molecular biology.

Assistant Professors


Timothy Nurkiewicz, Ph.D. (WVU). Particulate air pollution and vascular biology.


†Janet Tou, Ph.D. (Ontario U.). Human nutrition and reproduction.

†Todd West, Ph.D. (SIU). Nursery production, Germplasm storage and aquaculture.


Plant and Soil Sciences

Professors

†James W. Amrine, Jr., Ph.D. (Iowa St. U.). Entomology. Medical entomology, Apiculture, Biological control.


†Cameron R. Hackney, Ph.D. (N.C. St. U.). Dean and director. Food safety, Environmental microbiology.


†Daniel Panaccione, Ph.D. (Purdue U.). Mycology, Plant pathology.


Associate Professors

†James B. Kotcon, Ph.D. (U. Wisc.). Plant pathology.

†Louis McDonald, Ph.D. (U. Ky). Soil chemistry.

†Sven Verlinden, Ph.D. (Purdue U.). Horticulture.

Assistant Professors

†Jedediah Doelling, Ph.D. (Wash. U.). Genetics, Molecular biology, Protein degradation.


†Yong-Lak Park, Ph.D. (Iowa St. U.). Insect ecology, Pest management.

Eugenia Pena-Yewtukhiw, Ph.D. (U. Ky.). Soil science.

James A. Thompson, Ph.D. (U. of Minn.). Pedology and land use.

Resource Management
Professors
† Jerald J. Fletcher, Ph.D. (U. Cal.). Resource economics.
† Stacy A. Gartin, Ph.D. (Ohio St. U.). Communications, Program planning, Leadership development, Teaching methods.
† Tim T. Phipps, Ph.D. (U. Ca.). Director. Resource economics, Agricultural policy.
† Peter V. Schaeffer, Ph.D. (U. Southern Ca.). Regional science, Applied microeconomics.
† Dennis K. Smith, Ph.D. (Penn. St. U.). Associate Dean. Rural development, Agribusiness management.

Associate Professors
* Donald R. Armstrong, M.L.A. (Iowa St.). Site design, Design implementation.

Assistant Professors
* Claudia Bernasconi, M. Arch. (Roma Tre. U.). Environmental aesthetics, Transportation aesthetics, Cross-cultural and Interdisciplinary education.
* Deborah A. Boone, Ph.D. (Ohio St. U.). Extension education, Leadership development, Program evaluation and development.
* Cheryl Brown, Ph.D. (U. Ca., Bk.). Agricultural policy, Resource economics, Agribusiness.
* Ashley Kyber, M.F.A. (Cranbrook). Community design, Ecological design studies, Landscape sculpture.
* Michael Strager, Ph.D. (WVU) Spatial analysis, Decision support.

Reproductive Physiology
Professors
† Robert Cochrane, Ph.D. (U. Wisc.). Adjunct. Reproduction in laboratory and fur animals.
† Robert A. Dailey, Ph.D. (U. Wisc.). Neuroendocrine control of reproduction, Follicular development, Ovulation.
† Robert L. Goodman, Ph.D. (U. Pitt.). Neuroendocrine control of ovarian function.
† E. Keith Inskeep, Ph.D. (U. Pitt.). Neuroendocrine control of ovarian function.
† 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.
† Michael W. Vernon, Ph.D. (U. of Fla.). Reproductive endocrinology.

Associate Professors

Assistant Professors
† Stanley M. Hileman, Ph.D. (U. of Ky.). Reproductive neuroendocrinology.
† Matthew E. Wilson, Ph.D. (Iowa St. U.). Reproductive physiology.
Division of Animal and Veterinary Sciences
Paul E. Lewis, Director, Division of Animal and Nutritional Sciences
e-mail: plewis@wvu.edu
G038 Agricultural Sciences Building
http://www.caf.wvu.edu/avs/index.html

Degrees Offered

Master of Science in Animal and Nutritional Sciences
Doctor of Philosophy in Agricultural Sciences
Master of Science and Doctor of Philosophy in Reproductive Physiology

The master of science in animal and nutritional 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 1000 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)
512. *Nutritional Biochemistry*. II. 3 Hr. PR: AGBI 410 or Consent. Nutritional biochemistry of domestic animals.

513. *Nutritional Biochemistry Laboratory*. II. 1 Hr. PR: AGBI 410 and AGBI 411 and CONC: AGBI 412. Experiments to determine the nutritional constituents in animal and plant tissues.

514. *Animal Biotechnology*. 4 Hr. The course will introduce students to the concepts and techniques of molecular biology and the application of these technologies in animal research. It will give the students laboratory experience in many molecular biology techniques.

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

611. *Laboratory Experiments in Biochemistry*. I. 2 Hr. PR or CONC: AGBI 610. Experiments designed to demonstrate some of the basic tools and procedures of biochemical research.

612. *General Biochemistry*. 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.

690. *Teaching Practicum*. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of agricultural 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.)


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 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.)

698. 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 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.)

714. Enzymes. II. 3 Hr. PR: AGBI 612 or Consent. A survey of enzymology covering general principles as well as current concepts and methods.

715. Advanced Biochemistry Laboratory. II. 2 Hr. PR or CONC: AGBI 612. Experiments in the areas of intermediary metabolism and enzymology.

716. Vitamin and Coenzyme Biochemistry. 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.)

722. Plant Biochemistry. 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.)

724. Advanced Nutritional Biochemistry. 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.)

728. Biomembranes and Muscle Biochemistry. 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.)

Animal and Veterinary Science (A&VS)


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.)

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. 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. 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.)


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

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. 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.
690. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of animal nutrition. 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. **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.** 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.** 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.)

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)**

675. **Reproduction Colloquium.** 1 Hr. PR: Graduate standing. Weekly discussions by graduate students and faculty in reproductive physiology program of current literature in the field of reproductive physiology, particularly of mammalian species.

691. **Advanced Topics.** I, II, S. 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, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

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 neuro-hormonal 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.)

790. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of animal 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 will be S/U.)


792. Directed Study. I, II, S. 1-6 Hr. Direct ed 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.


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. 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 their enrollment in his/her department’s graduate colloquium, to consult with graduate faculty, participate in 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 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.

690. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of animal production. 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. 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. 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. 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 is 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.)

Veterinary Science (VETS)


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.)

Division of Forestry and Natural Resources

Joseph F. McNeel, Director, Division of Forestry and Natural Resources
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Degrees Offered

- Doctor of Philosophy in Forest Resources Science
- Master of Science in Recreation, Parks, and Tourism Resources
- Master of Science in Wildlife and Fisheries Resources
- Master of Science in 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 resources; wood science and technology; or wildlife and fisheries resources. Within these major fields of study, specialization is limited only by the range of competencies in the graduate faculty.
Curriculum Requirements for Ph.D.
Curriculum requirements for all Ph.D. 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 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 emphasize in forest biometry, forest ecology, forest economics, forest genetics, forest management, forest meteorology, silviculture, or wood science and technology. 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 and Natural Resources 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 and Natural Resources lead to the master of science 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.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

491. Professional Field Experience. I, II, S. 1-18 Hr. PR: Consent. (May be repeated up to a maximum of 18 hours.) 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.


494. Seminar. I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

496. Senior Thesis. I, II, S. 1-3 Hr. PR: Consent.

498. Honors. I, II, S. 1-3 Hr. PR: Students in Honors Program and Consent by the honors director. Independent study, reading or research.
Forest Management (FMAN)


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)

693 A-Z. 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 may be S/U.)

790. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of forest 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.)


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. 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. 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)

575. Forest Soils: Ecology and Management. 3 Hr. PR: AGRN 410 or AGRN 425 or consent. Properties, nutrient cycling processes, and sustainable management of forest soils, with examples from the most important wood fiber-producing regions of the U.S.: the southeast, Pacific north-west, and the central hardwood forest. (Offered in spring of even years.)

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.)


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

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, S. 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.

650. Economics, Environment and Education in WV. 3 Hr. this course is designed for K-12 classroom teachers with little previous background in economics. We introduce the principles of economics using the WV forest products industry to provide examples.


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.)

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. 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.)

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

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 Res (RPTR)

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.

691 A-Z. Advanced Topics. 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, 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.


718. Participatory Approaches NRM. 3 Hr. This seminar-style class focuses on the adoption of more participatory approaches to managing natural resources. Specific topics will include the use of advisory committees, mediating conflicts, facilitation skills, management partnerships and public participation plans.

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

792 A-Z. **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. **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.)

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.)

**Wildlife and Fisheries Management (WMAN)**

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. **Conservation Biology.** 3 Hr. Discussion of current topics in conservation biology, the applied science of maintaining earth's biological diversity. Emphasis is on current literature with some guest lectures by topic experts. (3 hr. lec. offered in odd years.)

640. **Fish Physiology.** 3 Hr. (Even years). This course will cover all the physiological systems in fish. Included are sensory, digestive, circulatory, nervous and endocrine, feeding, osmoregulation, movement, reproduction and development systems.
641. Aquatic Toxicology. (Odd years). 3 Hr. Class will cover toxicity testing, the environmental fate of contaminants and toxicological assessment. The class will emphasize fish toxicity.

642. Advanced Fish Management. 3 Hr. Class covers important topics in fisheries assessment and management. Primary area discussed include fish sampling, indices, and exploitation and harvest regulations.

643. Advance Ichthyology. 3 Hr. An in-depth study of fishes, with emphasis on ecology, morphology, systematics, and zoogeography. Identification of fishes within the Appalachian region is emphasized through lab and field study.

644. Wildlife Data Analysis 1. 3 Hr. This course will cover data interpretations, statistical power, data techniques, use of correct data methods and alternatives and interpretation of results.

645. Wildlife Data Analysis 2. 3 Hr. PR: WMAN 644. This course will cover statistical power and sample size, selection of proper methods, identify assumptions of methods and use of proper alternatives, and identify results.

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

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

692 A-Z. Directed Study. I, II, S. 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.

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.)

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

790. Teaching Practicum. 1-3 Hr. PR: Consent. Supervised practice in the college teaching of wildlife and fisheries 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.)

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

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. *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.

**Wood Science (WDSC)**

520. *Wood Microstructure.* I. 3 hr. PR: WDSC 223; senior standing. Detailed examination of wood microstructure as it relates to processing, behavior, and identification.

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.

555. *Computer Applications in Forest Resource Management.* II. 3 Hr. Computer programming/system modeling in forest resource management. Emphasis on basic programming/modeling skills and application examples in forest operations, management, and engineering.

562. *Forest Products Operations Research Models.* II. 3 hr. PR: WDSC 362 and demonstrated knowledge of Fortran and Basic, or consent. Analysis of operations research models currently used by the forest products industry. Students will develop new models. (Offered in spring of even years.)


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

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.* 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.

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.)

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. 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.)

Division of Plant and Soil Sciences
Barton S. Baker, Director, Division of Plant and Soil Sciences and Graduate Program Coordinator
e-mail: bbaker2@wvu.edu
1090 Agricultural Sciences Building
http://www.caf.wvu.edu/plsc

Degrees Offered
- Master of Science in Plant and Soil Sciences
- Master of Science and Doctor of Philosophy in Genetics and Developmental Biology
- Doctor of Philosophy in Agricultural Sciences

Areas of Emphasis
The master of science in plant and soil sciences degree 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 or soil scientists. These disciplines are critical to maintaining agriculture and forest productivity, solving environmental problems, and promoting 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 213 on the computer-based 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. **Principles of Weed Science.** 3 Hr: PLSC 206 and AGRN 202 and AGRN 203 or consent. Fundamental principles of weed science including identification, ecology, and control in crops. (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.)
490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

491. Professional Field Experience. I, II, S. 1-18 Hr. PR: Consent. (May be repeated up to a maximum of 18 hours.) 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.


494. Seminar. I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

496. Senior Thesis. I, II, S. 1-3 Hr. PR: Consent.

498. Honors. I, II, S. 1-3 Hr. PR: Students in honors program and Consent by the honors director. Independent reading, study or research.

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.)

552. Pedology. S. 3 Hr. PR: AGRN 417 or Consent. Genesis and evolution of soils considered as natural bodies; including both macro- and micromorphological properties. Week-long field trip required at student's expense. (2 hr. lec., 1 hr. lab.) (Offered in summer of odd years.)

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.)

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

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. 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)**

404. Principles of Entomology. I. 4 Hr. PR: BIOL 101 and BIOL 103 and BIOL 102 and BIOL 104 or equiv. Basic course dealing with the anatomy, morphology, physiology, reproduction, systematics, ecology, and management of insects.

410. Insect Pests in the Agroecosystems. I. 4 Hr. PR: ENTO 404 or Consent. Life cycle, damage, and economic impact of pestiferous insects in the agroecosystem. Included are insect pests of agricultural and ornamental plants, stored products, structures, and livestock. (3 lec., 1 lab.)

412. Pest Management. II. 4 Hr. PR: ENTO 404 or Consent. An in-depth look at current problems and solutions in controlling insect pests in an environmentally compatible manner. Management techniques include cultural, mechanical, physical, biological, regulatory, and chemical practices. (Also listed as ENVP 412.)

450. Insect Ecology. 3 Hr. PR: ENTO 404. Population biology of insects in various ecosystems. emphasis on spatial ecology of insects and ecological methods, experimentation, and applications.

470. Forest Pest Management. II. 4 Hr. PR: FMAN 311 and (BIOL 101 and BIOL 103 and PLSC 206) or (BIOL 115 and and BIOL 117). Relationship of insects and disease organisms to the forest ecosystem; recognition of agents that affect forest health; management strategies for regulating their damage. (Cross-listed with PPTH 470.)
471. Urban Tree and Shrub Health. 1 Hr. PR: PPTH 470 or ENTO 470 or PPTH 401 or ENTO 404. Presents the unique problems associated with managing trees and woody shrubs in an urban environment; management options will be evaluated.

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

491. Professional Field Experience. I, II, S. 1-18 Hr. PR: Consent. (May be repeated up to a maximum of 18 hours.) 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.


494. Seminar. I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

496. Senior Thesis. I, II, S. 1-3 Hr. PR: Consent.

498. Honors. I, II, S. 1-3 Hr. PR: Students in honors program and Consent by the honors director. Independent reading, study, or research.

590. Teaching Practicum. 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.)


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 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. *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.* 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)**

401. *Environmental Microbiology.* II. 4 Hr. PR: ENVM 341 or Consent. Microbiology as applied to soil, water, wastewater, sewage, air, and the general environment. Occurrence, distribution, ecology, and detection of microorganisms in these environments. (Also listed as ENVP 401.)

408. *Applied Water Microbiology.* 3 Hr. PR: ENVM 341. Microbiology and health hazards associated with surface and ground water intended for consumption, recreation, waste disposal, and agriculture/industry applications.

420. *Soil Microbiology.* I. 3 Hr. PR: ENVM 341. Microbiology and biochemistry of the soil environment. Occurrence, distribution, ecology, and detection of micro-organisms in soil. (Offered in fall of even years. Also listed as AGRN 420 and ENVP 420.)

445. *Food Microbiology.* 3 Hr. PR: ENVM 341. The relationships of microorganisms to food-borne illness and intoxications, microbial food safety and food quality, food spoilage, food preservation and bio-processing. The emerging food preservation and technologies and predictive microbiology will be introduced.

449. *Food Microbiology Lab.* 1 Hr. PR: ENVM 445. Laboratory training in methods used in microbiological examination of foods. This laboratory will provide hands-on experience for students who take or have taken ENVM 445.

490. *Teaching Practicum.* I, II, S. 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

491. *Professional Field Experience.* I, II, S. 1-18 Hr. PR: Consent. (May be repeated up to a maximum of 18 hours.) 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.


494. *Seminar.* I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

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


498. *Honors.* I, II, S. 1-3 Hr. PR: Students in honors program and Consent by the honors director. Independent reading, study, or research.

508. *Applied Water Microbiology.* 3 Hr. PR: ENVM 341 or consent. Microbiology and health hazards associated with surface and ground water intended for consumption, recreation, waste disposal, and agriculture/industry applications.

545. *Food Microbiology.* 3 Hr. PR: ENVM 341. The relationships of micro-organisms to food-borne illness and intoxications, microbial food quality, food spoilage, food preservation and bio-processing. The emerging food preservation technologies and predictive microbiology will be introduced.
549. **Food Microbiology Lab.** 1 Hr. PR: ENVM 545. Laboratory training in methods used in microbiological examination of foods. This Laboratory will provide hands-on experience for students who take or have taken FDST 545.

591. **Advanced Topics.** I, II, S. 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.

748. **Sanitary Microbiology.** II. 3 Hr. PR: ENVM 341 or Consent. Microbiology and health hazards associated with food handling, water treatment, and sanitary waste disposal. (Offered in spring of even years.)

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

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.)

### Environmental Protection (ENVP)

401. **Environmental Microbiology.** II. 4 Hr. PR: ENVM 341 or Consent. Microbiology as applied to soil, water, wastewater, sewage, air, and the general environment. Occurrence, distribution, ecology, detection of microorganisms in these environments. (Also listed as ENVM 401.)

412. **Pest Management.** II. 3 Hr. PR: ENTO 404 or Consent. An in-depth look at current problems and solution in controlling insect pests in an environmentally compatible manner. Management techniques include cultural, mechanical, physical, biological, regulatory, and chemical practices. (3 hr. lec.) (Also listed as ENTO 412.)

415. **Hazardous Waste Training.** 3 Hr. Introduction to hazardous waste training. Lectures and hands-on experience with health and safety plan development, selecting personal protective equipment, air monitoring, incident command, site characterization, decontamination and toxicology. Includes two full-scale disaster exercises.

420. **Soil Microbiology.** I. 3 Hr. PR: ENVM 341. Microbiology and biochemistry of the soil environment. Occurrence, distribution, ecology, and detection of microorganisms in soil. (Offered in fall of even years. Also listed as ENVM 420 and AGRN 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 AGRN 425.)

451. **Principles of Weed Science.** 3 Hr. PR: PLSC 206 and AGRN 202 and AGRN 203 or consent. Fundamental principles of weed science including identification, ecology and control in crops. (2 hr. lec., 1 hr. lab.) (Offered in fall of odd years.) (Also listed as AGRN 451.)

455. **Reclamation of Disturbed Soils.** 3 Hr. PR: Junior standing or above. Principles of soil science, geology, hydrology, and engineering will be applied to surface mine planning, overburden handling during mining, soil replacement and amendments, revegetation practices, acid mine drainage control and treatment, hazardous wastes, and land management of disturbed areas. Field trip required. (Also listed as AGRN 455.)

460. **Environmental Impact Assessment.** I. 3 Hr. PR: BIOL 101 and BIOL 102 and BIOL 103 and BIOL 104 and CHEM 115 and CHEM 116. Application of physical, biological and social science principles to assess environmental impacts. Review and prepare environmental assessments, permits, site assessments and ecological risk assessments for environmental decision-making.
515. Hazardous Waste Training. 3 Hr. PR: ENVP 155 or consent. A course covering important aspects of hazardous waste training. Includes health and safety plan development, protective equipment, air monitoring, incident command, site characterization, toxicology, full-scale disaster exercises, risk assessment and safety plan writing.

555. Environmental Sampling and Analysis. 3 Hr. PR: ENVP 155 or consent. Introduction to environmental sampling and analysis. Lecture and hands-on experience will include sampling plan development, sampling point selection, sampling equipment use, containers, preservatives sample analysis, chain-of-custody, protective equipment and technical report development.

Horticulture (HORT)

420. Plant Propagation. II. 3 Hr. PR: PLSC 206 or consent. Study of practices of plant propagation and factors involved in reproduction in plants. (Offered spring of even years.)

441. Garden Center Management. 3 Hr. PR: PLSC 206 and HORT 220, or consent. Principles of the operation and management of nursery, garden center, and landscape installation businesses with an emphasis on current issues.

442. Small Fruits. I. 3 Hr. PR: PLSC 206, HORT 220, or Consent. (One 2-day field trip required.) Taxonomic, physiological, and ecological principles involved in production and handling of small-fruits. (2 hr. lec., 1 hr. scheduled lab.) (Offered in fall of odd years.)

443. Vegetable Crops. I. 3 Hr. PR: PLSC 206 or consent. (One 3-day field trip required.) Botanical and ecological characteristics influencing the production of vegetable crops. (2 hr. lec., 1 hr. lab.) (Offered in fall of even years.)

444. Handling and Storage of Horticultural Crops. I. 3 Hr. PR: PLSC 206 and CHEM 116. Characteristics of perishable crops. Methods and materials used to maintain quality. (2 hr. lec., 1 hr. lab.) (Offered in fall of odd years.)

445. Greenhouse Management. II. 3 Hr. PR: Two semesters of inorganic chemistry and HORT 220 or consent. Greenhouse as a controlled plant environment. How to regulate factors influencing plant growth and development within specialized environments of greenhouses.

446. Tree Fruits. I. 3 Hr. PR: PLSC 206 or consent. Principles and practices involved in production of tree fruits. (2 hr. lec., 1 hr. scheduled lab.) (Offered in fall of even years.)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

491. Professional Field Experience. I, II, S. 1-18 Hr. PR: Consent (May be repeated up to a maximum of 18 hours.) 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.


494. Seminar. I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

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

496. Senior Thesis. I, II, S. 1-3 Hr. PR: Consent.

498. Honors. I, II, S. 1-3 Hr. PR: Students in honors program and Consent by the honors director. Independent reading, study, or research.

501. Post Harvest Physiology. 3 Hr.
590. **Teaching Practicum.** 1-3 Hr. PR: Consent. Supervised practice in college teaching of horticulture. 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. Investigation of advanced topics not covered in regularly scheduled courses.

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

**Plant Pathology (PPTH)**


409. **Nematology.** 3 Hr. Nematode biology, ecology, taxonomy, and control, with particular emphasis on plant parasitic forms. (Offered spring of odd years)

470. **Forest Pest Management.** II. 4 Hr. PR: (FMAN 311 and BIOL 101 and BIOL 103 and PLSC 206) or BIOL 115 and BIOL 117. Relationship of insects and disease organisms to the forest ecosystem; recognition of agents that affect forest health; management strategies for regulating their damage. (Also listed as ENTO 470.)

471. **Urban Tree and Shrub Health.** 1 Hr. PR: PPTH 470 or ENTO 470 or PPTH 401 or ENTO 404. The unique problems associated with managing trees and woody shrubs in an urban environment will be observed and discussed; management options will be evaluated. (Equiv to ENTO 471.)

490. **Teaching Practicum.** 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

491. **Professional Field Experience.** 1-18 Hr. PR: Consen (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.

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

494. **Seminar.** 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

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

496. **Senior Thesis.** 1-3 Hr. PR: Consent.

498. **Honors.** 1-3 Hr. PR: Students in honors program and Consent by the honors director. Independent reading, study, or research.

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. 2-Diseases of ornamental plants and field and forage crops; S-Diseases of forest trees. Students may register for 1-3 Hrs. in Fall and Spring and 2 hr. in summer until 8 hours of credit are accumulated). (Offered in alternate years.)

502. **Principals of Plant Pathology.** II. 4 Hr. PR: PPT 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.)

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. *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 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)**

553. *Organic Crop Production*. 3 Hr. PR: PLSC 206 and AGRN 202 and AGRN 203 or Consent. Principles, practices, history, philosophy and economics of organic farming and gardening. Crop/livestock systems, national and international research on organic production. (Students may not receive credit for both PLSC 453 and PLSC 553).
591. **Advanced Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

592 **A-Z. Directed Study.** 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.

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

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 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.)

791. **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 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 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.)

798. **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.** 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.)
Division of Resource Management
Tim Phipps, Director, Division of Resource Management
e-mail: Tim.Phipps@mail.wvu.edu
2016 Agricultural Sciences Building

There are three graduate programs in the Division of Resource Management. Master of science programs are available in agricultural and extension education, and agricultural and resource economics. A Ph.D. program is offered in resource management and sustainable development with four major options: natural resource economics, agricultural and extension education, resource management, and human and community development. A limited number of graduate research assistantships are available to highly qualified students on a competitive basis.

Jerald J. Fletcher, Graduate Program Coordinator, Ph.D. in Resource Management and Sustainable Development.
e-mail: JJFletcher@mail.wvu.edu
2004 Agricultural Sciences Building
http://www.caf.wvu.edu/resm

Degree Offered

Doctor of Philosophy

The Ph.D. in resource management and sustainable development encompasses four majors:

- Natural resource economics (NRE)
- Agricultural and extension education (AGEE)
- Resource management (RM)
- Human and community development (HCD)

The objective of the degree program is to provide doctoral students the opportunity to study and conduct research with faculty in areas of excellence in the Division of Resource Management, in particular, and in other divisions in the Davis College of Agriculture, Forestry and Consumer Sciences, in general. Within these major fields of study, specialization is limited only by the range of expertise of the graduate faculty and specific major requirements. Students entering the program will complete a common core consisting of research methods, graduate seminars, and teaching practicum. Beyond the core each of the four majors has specific requirements for additional specialization.

Students entering the NRE area of emphasis may focus on natural resource and environmental economics or economic development. The AGEE major prepares students for leadership responsibilities in teacher education, educational administration, program development and evaluation, and research as it pertains to agriculture and extension. The RM and HCD majors both have an interdisciplinary focus. The RM major, designed primarily for students with a master’s degree in the sciences or engineering, consists of an applied economics foundation developed jointly by the student and the graduate advisory committee. Students choosing the HCD major may focus their studies and research in the areas of education and human resources development, social and cultural improvement of the community, governmental issues and policy, economic growth and impact, or areas associated with the students’ professional goals developed in consultation with their graduate advisory committee.

Admission Requirements

The following admission and performance standards, in addition to university and college requirements, are normally required to qualify for acceptance as a regular student to the Ph.D. program in resource management and sustainable development:

- A master’s degree and a grade-point average (GPA) of 3.0 or higher (on a 4.0 scale) in graduate courses is normally required for the AGEE, RM and HCD majors. Applicants for the NRE major that are not prepared to take the Ph.D. sequence in microeconomic theory, mathematical economics, and econometrics will be admitted to the M.S. program in agricultural and resource economics.
• A minimum combined score of 1000 for the verbal and quantitative sections of the Graduate Record Examination (GRE).
• Three letters of reference from individuals who can attest to the applicant’s potential for academic success and/or relevant career-related experiences should be sent directly to the graduate program coordinator, Division of Resource Management or sealed in an envelope with the writer’s signature over the seal and included with the other application materials.
• A résumé or curriculum vita.
• Coursework in intermediate microeconomics theory and introductory classes in statistics and calculus for those seeking admittance into the RM or NRE option areas.
• Four years of career-related experience is required for those seeking admittance into the AGEE option.
• Other supporting materials you wish to have considered with your application.
Applications are reviewed by the Graduate Admission Committee, the graduate program coordinator, and the division director who jointly make the admission decision. Applicants who do not meet the requirements but have special qualifications or circumstances may be admitted as provisional graduate students.

Degree Requirements
All doctoral students must satisfactorily complete a set of common core courses in research methods, a teaching practicum, and graduate seminars for a total of at least nine credit hours. Course requirements may be waived if the student has received equivalent training in prior coursework. Coursework pertaining to the student’s major and additional specialization will be determined by the student’s graduate advisory committee and the major requirements.

Students take written and oral qualifying examinations after the completion of the core and majors field courses. Upon satisfactory completion of the qualifying examinations and field of specialization requirements, the student will be eligible for admittance to candidacy for the Ph.D. in resource management and sustainable development.

Each candidate for the Ph.D. degree must meet the following general requirements:
• Successful completion of written and oral qualifying examinations and examinations in a minimum of two fields of specialization. A master’s degree may serve as one field exam, subject to approval by the Graduate Committee.
• Dissertation research on an approved research project leading to the successful completion and oral defense of a dissertation.

The faculty expects that doctoral students present the results of their research at professional meetings and submit articles based on their research to refereed scholarly journals.

Agricultural and Extension Education
Harry N. Boone, Graduate Program Coordinator
e-mail: hrb Boone@wvu.edu
2054 Agricultural Sciences Building
http://www.cafcs.wvu.edu/resm/aee

Degree Offered
Master of Science in Agricultural and Extension Education
Doctor of Philosophy

The agricultural and extension education faculty offer master’s programs for persons desiring advanced study in teaching agriculture in public schools, communications and leadership, or extension education. 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 extension 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 extension 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.

All graduate courses offered toward the degree must be approved by the student’s Graduate Committee. A thesis is required as part of the 30 credit-hour graduation requirement. The agricultural and extension education faculty offers a Ph.D. with a major in agricultural and extension education (AGEE) or human and community development (HCD) as part of the Ph.D. program in resource management and sustainable development.

- Beyond the core, AGEE majors take four courses covering research design, data analysis, program development, and program evaluation. Additional courses in teaching and learning theory, educational psychology, supervision, administration and leadership, and statistics are recommended. Students will have two fields of specialization consisting of a minimum of 12 to 15 semester hours of coursework each, not counting research.
- Beyond the core, HCD majors take four courses covering research design, data analysis, program development, and program evaluation. Additional courses related to qualitative research, policy, administration, and the philosophical, theoretical and empirical foundations related to human community growth and sustainability. Students will have two fields or specialization consisting of a minimum of 12 to 15 semester hours of coursework each.

**Agricultural/Environmental Education (AGEE)**

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.

642. **Ag Ed Research Methods/Design.** 3 Hr. Explores definition of the problem, identification of related literature, selection of an appropriate research design, interpretation of results from data analysis procedures, and the reporting of research findings with emphasis on agricultural education.

644. **Data Analysis/Interpretation.** 3 Hr. Explores the selection of appropriate statistical methods, use of statistical software packages to analyze data, interpretation of results from data analysis procedures, and the report of research findings with emphasis on agricultural education.

650. **Program Development in Community Education.** 3 Hr. Planning, implementation and evaluation of programs in non-formal rural and community educational settings.

651. **Program Evaluation in Comm Ed.** 3 Hr. Evaluation principals, models, designs and procedures used in developing and analyzing, agricultural and extension education programs. Evaluations role in needs assessments, implementation and marketing to stakeholders.

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.)

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

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.

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.
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.** 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, theses, 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.)

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.

**Agricultural and Resource Economics**
Jerald J. Fletcher, Graduate Program Coordinator
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2004 Agricultural Sciences Building
http://www.caf.wvu.edu/resm/are

**Degree Offered**
*Master of Science in Agricultural and Resource Economics*
*Doctor of Philosophy*

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

In addition to general university and college admission requirements, students must have the following:

- 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.

Students seeking a master of science in agricultural and resource economics may be accepted on a regular or provisional basis. The Graduate 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.

Either a thesis or 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 must select the thesis option.
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 student’s Graduate Committee.

The agricultural and resource economics faculty offer a Ph.D. with a major in natural resource economics (NRE), resource management (RM), or human and community development (HCD) as part of the Ph.D. program in resource management and sustainable development.

- Beyond the core, NRE majors take a minimum of six courses in advanced microeconomic theory, mathematical economics, econometrics, resource and environmental economics, quantitative methods, and policy analysis. Two fields of specialization are required.

- Beyond the core, RM majors take five courses covering theory, policy analysis, econometrics/statistics, and management applications. Each of two mandatory fields of specialization require a minimum of 12 hours.

- Beyond the core, HCD majors take four courses covering research design, data analysis, program development, and program evaluation. Additional courses can relate to qualitative research, policy, administration, economic analysis, and the philosophical, theoretical and empirical foundations related to human and community growth and sustainability. Students will have two fields of specialization, each consisting of a minimum of 12-15 semester hours of coursework.

- For NRE and RM majors, two field examinations in the fields of specialization are required. Students entering the NRE or RM majors with a masters degree may petition their Graduate Committee to accept this degree as meeting the requirements for one field examination. Approval depends on the relevance of the degree to the major and proposed fields of specialization, among, the GPA received, and the time since earning the degree.

Agricultural and Resource Economics (ARE)

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.

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.

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.

601. **Applied Microeconomics.** 3 Hr. PR: ECON 301 and ECON 421 or equiv. Producer and consumer economics used in resource, environmental and agricultural analysis.

602. **Production Economics.** 3 Hr. PR: ARE 601. Developments in producer economics applied to natural resources, environmental, and agricultural issues.

621. **Quantitative Methods in Resource Economics.** 3 Hr. PR: ARE 601 and ECON 421 or equivalents. Optimization techniques in economic analysis of natural resources; environmental and agricultural management problems; linear, nonlinear, and dynamic programming.

624. **Econometric Methods in Resource Economics.** 3 Hr. PR: ECON 425. Application methods to natural resource, environmental, and agricultural economic problems; single and simultaneous equation models, specification problems, topics in time series, and cross-sectional analysis.

625. **Advanced Special Topics.** 1-6 Hr.

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.

643. **Project Analysis and Evaluation.** 4 Hr. Analysis, and evaluation of investment projects; economic and financial aspects of project analysis; risk analysis; preparation of feasibility reports.

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.

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

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

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

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698. **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 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.

**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 in Genetics and Developmental Biology**

**Doctor of Philosophy in Genetics and Developmental Biology**

**Areas of Emphasis**

The master of science and doctor of philosophy degrees are offered in genetics and developmental biology, an interdisciplinary program involving the faculty and facilities of a number of departments in the various colleges and schools of the University. A student may concentrate in genetics or developmental biology. The areas in which emphases are offered are as follows.
Genetics – Biochemical and molecular genetics, cytogenetics, developmental genetics, immunogenetics, mutagenesis, toxicology, human genetics, plant genetics, population and quantitative genetics, and animal breeding.

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

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

Requirements

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

Program Objective

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

Admission

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

Gre and New MCAT

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

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

Developmental Biology

The following courses in the departments of anatomy, biochemistry, and biology may be applied toward the requirements for a major in developmental biology: Anatomy 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)

490. Teaching Practicum. I, II, S. 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

491. Professional Field Experience. I, II, S. 1-18 Hr. PR: Consent. (May be repeated up to a maximum of 18 hours.) 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.
493. **Special Topics.** I, II, S. 1-6 Hr. PR: Consent. Investigation of topics not covered in regularly scheduled courses.

494. **Seminar.** I, II, S. 1-3 Hr. PR: Consent. Presentation and discussion of topics of mutual concern to students and faculty.

496. **Senior Thesis.** I, II, S. 1-3 Hr. PR: Consent.

497. **Research.** I, II, S. 1-6 Hr. Independent research projects.

498. **Honors.** I, II, S. 1-3 Hr. PR: Students in honors program and Consent by the honors director. Independent reading, study, or research.

521. **Basic Concepts of Modern Genetics.** I. 3 Hr. PR: 8 hr. Biological sciences and one year chemistry. Independent inheritance, linkage. Chemical nature of genetic material. Control of phenotype by genetic material. Gene action and coding of genetic material.

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, assertive mating, and inbreeding in relation to single gene pairs. Application of these concepts to multigenetic 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.)

591. **Advanced Topics.** I, II, S. 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.

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 371 or GEN 521. 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 of 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.)

791. **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. **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. **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.** 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 in Reproductive Physiology*
- *Doctor of Philosophy in Reproductive Physiology*

**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 Nutritional 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 gonadotropin 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, Academic Affairs/Program Coordinator
e-mail: dsmith3@wvu.edu
1006 Agricultural Sciences Building
http://www.caf.wvu.edu

Degree Offered
Master of Agriculture, Forestry, and Consumer Sciences

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 independent 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, Division Animal and Nutritional 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 in Agricultural Sciences

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 Agricultural 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

Mary Ellen Mazey, Ph.D., Dean
Rudolph P. Almasy, Ph.D., Associate Dean
Joan S. Gorham, Ed.D., Associate Dean
Katherine Karraker, Ph.D., Assistant Dean
Fred L. King, Ph.D., Associate Dean
Asuntina S. Levelle, J.D., Assistant Dean
L. Christopher Pleen, Ph.D., Assistant Dean, School of Applied Social Science

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, Doctor of Philosophy 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 in History and Public History, 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, Master of Science, 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, West Virginia University's largest college, has approximately 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 18 graduate programs, 11 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 $10,000,000 annually in external support for research and instruction.

The Eberly College of Arts and Sciences offers doctoral programs in biology, chemistry, communication studies, 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.
- Communication studies—instructional, interpersonal, and organizational.
- 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, electrophysics, elementary particle physics, and radio astronomy.
• 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, legal studies, liberal arts, mathematics, physics, psychology, public administration, social work, 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
† Jim Belanger, Ph.D. (U. Toronto). Neural basis of behavior; adaptive behavior; comparative physiology.
† Ashok Bidwai, Ph.D. (Utah St. U.). Biochemical and molecular genetic analysis of protein kinases.
† Jonathan R. Cumming, Ph.D. (Cornell U.). Assistant Vice President for Graduate Education. Plant physiology, Rhizosphere ecology.
† Christy Foran, Ph.D. (Cornell U.). Environmental physiology, Endocrine disruption.

Clinical Associate Professor

Assistant Professors
† Carina Barth, Ph.D. (Heinrich Heine U.) Molecular biology of plant defense signaling pathways.
† Kevin C. Daly, Ph.D. (U. of Az.). Psychophysics and neurophysiology of Manduca sexta.
† Sarah M. Farris, Ph.D. (U. of Ill.). Nervous system evolution and development, entomology.

Clinical Assistant Professor
Jane Caldwell, Ph.D. (U. Wis.). Protein structure and function.

Chemistry

Professors
† Charles Jaffe, Ph.D. (U. Colo.). Theoretical chemistry, Molecular and atomic physics, Nonlinear dynamics, Astrodynamics, Forensics.
† Fred L. King, Ph.D. (U. Va.). Associate Dean. Analytical chemistry, Mass spectrometry, Gas-phase ion chemistry.
† Jeffrey L. Petersen, Ph.D. (U. Wisc.). Associate chairperson. Physical inorganic chemistry, Organometallic chemistry, X-ray diffraction, Catalysis, Olefin polymerization.
† Kenneth Showalter, Ph.D. (U. Colo.). C. Eugene Bennett Chair of Chemistry, Chemical kinetics, Multi stability and oscillating systems.
**Associate Professors**

5. Aaron Timperman, Ph.D. (U. Ill.). Development of microfluidic devices for proteomic analysis of cancer, Application of proteomics to marine chemistry and carbon cycling.

**Assistant Professors**

1. Suzanne Bell, Ph.D. (U. New Mex.). Forensic chemistry, chemometrics, Ion mobility spectrometry.

**Communication Studies**

**Professors**

3. Matthew M. Martin, Ph.D. (Kent St.). Chairperson. Interpersonal, instructional, communication traits.

**Associate Professors**

1. Theodore A. Avgtis, Ph.D. (Kent St.). Interpersonal, organizational, family, and personality communication.
3. Scott A. Myers, Ph.D. (Kent St.). Group, instructional, and interpersonal communication.

**Assistant Professors**

Maria Brann, Ph.D. (U. of Ky.). Health, Interpersonal and qualitative research methods.


**English**

**Professors**

5. Laura Brady, Ph.D. (U. Minn.). Composition and rhetorical theory, Women’s studies.

**Associate Professors**

5. 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.

Assistant Professors
Brian Ballentine, Ph.D. (Case Western U.). Technical and professional writing, digital literacy.
Ryan Claycomb, Ph.D. (U. Md.). 20th-century British literature, Modern and contemporary drama, Gender studies.
Jay Dolmage, Ph.D. (Miami U.). Composition and rhetoric, Disability studies.
Lara Farina, Ph.D. (Fordham U.). Medieval literature and culture, Gender studies.
Catherine Gouge, Ph.D. (WVU). Medieval literature and culture, Gender studies.
Scott Wible, Ph.D. (Penn. St. U.). Professional and technical writing, Composition and rhetoric.

Foreign Languages
Professors

Associate Professors
Cynthia Chalupa, Ph.D. (Ohio St. U.). German. 19th- and 20th-century German literature, Poetry, Foreign language pedagogy.
Deborah Janson, Ph.D. (U. Ca.). German. Enlightenment, Romanticism, GDR and post-Wende literature, Ecofeminism.
Johan Seynnaeve, Ph.D. (Cornell U.). General linguistics, Sociolinguistics, Phonology, Medieval linguistics.
Assistant Professors

Geology and Geography
Professors
Timothy R. Carr, Ph.D. (U. Wisc.) Energy geology.
Trevor M. Harris, Ph.D. (U. Hull). Chairperson. GISci, Participatory GIS, Humanities GIS, Virtual Reality and GIS.
Randall Jackson, Ph.D. (U. of Ill. — Urbana). Director Regional Research Institute. Economic geography, regional economic geography, Regional economic health and performance, Regional science.
Thomas W. Kammer, Ph.D. (Ind. U.). Paleontology, Paleoeology, Stratigraphy
Mary Ellen Mazezy, Ph.D. (U. of Cinn.). Urban geography, Strategic planning and regionalism, Regional cooperation, University, community partnership.
John J. Renton, Ph.D. (WVU). Geochemistry.

Associate Professors
Amy Hessl, Ph.D. (U. Ariz.). Biogeography, Forest ecosystems.
J. Steven Kite, Ph.D. (U. Wisc.). Quaternary studies, geomorphology, stream restoration, geoarchaeology.
Helen Lang, Ph.D. (U. Ore.). Petrology and mineralogy.
Ge Lin, Ph.D. (SUNY at Buffalo). Demography, GIS, Modeling.
Jamie Toro, Ph.D. (Stanford). Structural geology.

Assistant Professors
Dorothy Vesper, Ph.D. (Penn. St. U.) Geochemistry and hydrogeology.

History
Professors
Robert E. Blobaum, Ph.D. (U. Nebr.). Eberly Family Professor. Modern Central and Eastern Europe.
Steven M. Zdatny, Ph.D. (U. Penn.). Chairperson. Modern Europe, France, social.

Associate Professors
Katherine Aaslestad, Ph.D. (U. Ill.). Modern Europe, Germany, cultural.
Gregory A. Good, Ph.D. (U. Toronto). History of science, environmental history.
A. Michal McMahon, Ph.D. (U. of Tex.). Nineteenth century U.S., urban, environmental.
Matthew A. Vester, Ph.D. (U.C. L.A.). Early modern Europe, Italy.
Assistant Professors
†Joseph M. Hodge, Ph.D. (Queen’s U.). Britain, British empire.
†Barbara Rasmussen, Ph.D. (WVU). Coordinator, public history.
*Kate Staples, Ph.D. (U. Minn.). Medieval history.

Mathematics
Professors
†Weifu Fang, Ph.D. (Claremont). Applied mathematics.
†John Goldwasser, Ph.D. (U. Wisc.). Combinatorics, Graph theory.
†Harumi Hattori, Ph.D. (RPI). Differential equations, Continuum mechanics.
†Hong-Jian Lai, Ph.D. (Wayne St. U.). Graph theory, Matroid theory.
†Dening Li, Ph.D. (Fudan U.). Partial differential equations.
†Michael E. Mays, Ph.D. (Penn. St. U.). Director, Institute for Mathematics Learning. Number theory.
†Sherman D. Riemenschneider, Ph.D. (Syracuse U.). Chairperson. Approximation theory, Wavelet theory.
†Jerzy Wojciechowski, Ph.D. (Cambridge U.). Combinatorics, Graph theory.
†Cun-Quan Zhang, Ph.D. (Simon Fraser U.). Graph theory, Combinatorics.

Associate Professors
Marjorie Darrah, Ph.D. (WVU) Graph theory, Discrete mathematics, Mathematics education.
†Andrzej Karwowski, Ph.D. (Rutgers U.). Continuum mechanics.

Assistant Professors
†Mary Ann Clarke, Ph.D. (Va. Tech.). Applied mathematics.
†Edgar Fuller, Ph.D. (U. Ga.). Geometric knot theory. Mathematics education.
Matthew Pascal, Ph.D. (American U.) Mathematics Education.

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 Professors
†David Cerbone, Ph.D. (U. Ca., Berkley). Continental philosophy, Epistemology, History of analytic philosophy.
†Richard A. Montgomery, Ph.D. (U. Ill.—Chicago). Philosophy of mind/cognitive science, Philosophy of science.

Assistant Professors

Physics
Professors
†Wathiq Abdul-Razzaq, Ph.D. (U. Ill., Chicago Circle). Solid state physics, Experiment.
†Martin V. Ferer, Ph.D. (U. Ill.). Phase transitions and critical phenomena, Theory.
†Nancy C. Giles, Ph.D. (N.C. St. U.). Optical properties of semiconductors, Experiment.
†Larry E. Halliburton, Ph.D. (U. Mo.). Solid state physics, Experiment.
†Mark E. Koepke, Ph.D. (U. Md.). Byrd Professor. Plasma physics, Experiment.
†David Lederman, Ph.D. (U. Ca., Santa Barbara). Condensed matter physics, Experiment.
†Thomas H. Myers, Ph.D. (N.C. St. U.). Byrd Professor. MBE growth of II-VI semiconductors.
†H. Arthur Weldon, Ph.D. (MIT). Particle physics, Quantum fields, Theory.

Associate Professor

Assistant Professors
†Feruz Ganikhanov, Ph.D. (Moscow St. U.). Nonlinear optics.
†Duncan Lorimer, Ph.D. (U. Manchester). Radio astronomy, Experiment.
†Maura McLaughlin, Ph.D. (Cornell U.). Radio astronomy, Experiment.

Research Professor

Research Assistant Professor

Political Science
Professors
†Joe D. Hagan, Ph.D. (U. Ky.). Barnette professor and Department chair. International relations and world politics, Comparative 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.
†Jeffrey S. Worsham, Ph.D. (U. Wisc.). Director of graduate studies. Public policy (regulation, social welfare), Bureaucratic politics and public administration.

Associate Professors
†Neil Berch, Ph.D. (U. Wash.). Public policy (political economy), American politics (state and local).
†R. Scott Chirchlow, Ph.D. (L.S.U.). International relations, Foreign policy decision-making, Middle East politics.
†Allan S. Hammock, Ph.D. (U. Va.). American government, Public policy (civil rights, health care).
†Susan Hunter, Ph.D. (Ohio St. U.). Public policy (environment, policy design, and ethics), Contemporary political theory.

Karleen A. Jones, Ph.D. (U. of Iowa). Comparative politics developing areas. (Latin America).
†Kevin Leyden, Ph.D. (U. Iowa). Congress, Political behavior, Interest groups, Research methods.

Assistant Professors
†Erin Cassese, Ph.D. (SUNY, Stoney Brook). American politics and political behavior, Gender, religion, and public opinion, Political psychology, and Research methods.
†Philip Michelbach, Ph.D. (UC, San Diego). Political theory, American political thought, German political thought, Comparative democratic theory.

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.). Eberly Family Professor. Older adult assessment and decision making.
†Kevin T. Larkin, Ph.D. (U. of Pitt.). Cardiovascular reactivity and its implication in the development of cardiovascular disorders and anxiety-related problems.
†Kennon A. Lattal, Ph.D. (U. Ala.). Centennial Professor. Animal learning and behavior, Issues in the history and philosophy of psychology, Human-pet relations.


†Daniel W. McNeil, Ph.D. (U. of Ala.). Eberly Family Professor. Experimental psychopathology, Behavioral dentistry and behavioral medicine, Clinical research training and clinical supervision.


Associate Professors


†B. Kent Parker, Ph.D. (U. Utah). Stimulus control, memory, and complex sequential learning in animals, Research design.

†Julie Hicks Patrick, Ph.D. (U. of Akron). Woodburn Associate Professor. Decision-making. Caregiving issues related to chronic mental illness and retardation, Non-traditional family constellations.

†JoNell Strough, Ph.D. (U. Utah). Collaborative problem solving, Peer relationships, Gender.

Assistant Professors

†Karen Anderson, Ph.D. (U. Fla.). Behavioral pharmacology, Determinants of choice.

†Steve Branstetter, Ph.D. (U. Denver). Drug and alcohol use in adolescents.


Amy Gentzler, Ph.D. (Kent St. U.). Investigation of emotional experiences and the regulation of emotions.

Elisa Krackow, Ph.D. (Binghamton U., SUNY). Children's eyewitness memory, child depression.

†Hawley Montgomery-Downs, Ph.D. (U. Conn.). Pediatric sleep medicine.

†Claire St. Peter Pipkin, Ph.D. (U. of Fla.). Assessment and treatment of severe problem behavior, caregiver training, treatment integrity failures, reinforcement history, and translational research methods.

Public Administration

Professor

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

Associate Professors

†Mohamad Alkadry, Ph.D. (Fla. Atlantic U.). Public administration research and theory, Organizational behavior, Citizen participation.

†L. Christopher Plein, Ph.D. (U. Mo.). Chairperson and Eberly Professor of Outstanding Public Service. Public policy, Legal and political foundations.

Assistant Professors

Nancy Adams, Ph.D. (Fielding). Healthcare administration, Organizational development.

Brian Gerber, Ph.D. (Stony Brook U.). Research methods and public policy analysis.

†Odd J. Stalebrink, Ph.D. (George Mason U.). Public finance and budget, Organizational theory and financial, Behavioral economics.

Extension Professor


Social Work

Professors

†Karen V. Harper-Dorton, Ph.D. (Ohio St. U.). Professor. Title IV-E Program Director Center for West Virginia Families and Communities. Social administration, Child welfare.

Nancy Lohmann, Ph.D. (Brandeis U.). Professor. Social administration, Research measurement.

†Roger A. Lohmann, Ph.D. (Brandeis U.). Professor. Nonprofit management, Rural social services, Social policy.

Associate Professors

†Barry L. Locke, Ed.D. (WVU). Associate Professor. Social work in rural areas, Generalist practice, Program development.

†Virginia Majewski, Ph.D. (U. Pitt.). Associate Professor. Chairperson and M.S.W. Program Director. Community organizing, Hunger and food insecurity, American Indian issues, International social work.

Neal Newfield, Ph.D. (Tex. Tech. U.), (WVU). Associate Professor. Strategic therapy, Hypnosis, Solution focused therapy, Social documentary photography.

Elizabeth Randall, Ph.D. (U. of Ga.). Associate Professor. Clinical practice, mental health.

Michael Zakour, Ph.D. (Wash. U.). Associate Professor and Associate Director, Nova Institute. Organizations and communities, nonprofit management, disaster response.
Assistant Professors
Helen Hartnett, Ph.D. (The Ohio St. U.). Assistant Professor. Community and organizational practice, Homelessness.
Carrie Rishel, Ph.D. (U. Pitt.). Assistant Professor. Child mental health. Program evaluation.
†Leslie Tower, Ph.D. (Barry U.). Assistant Professor. Domestic violence, Women’s issues, Health care administration.
Meenakshi Venkataraman, Ph.D. (U. Ill.). Visiting Assistant Professor. Mental health.

Senior Lecturers and Faculty Equivalents
Lori Fell, MDiv, M.S.W. (WVU). Senior Lecturer. Group work, Spirituality in social work practice, Substance abuse treatment and recovery.
Chatman Neely, M.S.W. Senior Lecturer. Wheeling coordinator.

Emeritus Faculty
Marjorie H. Buckholz-Cleveland, Ph.D. (WVU).
Caroline T. Mudd, M.S.W. (U. of Pa.).
Robert A. Porter, Ph.D. (Brandeis U.).
Victor L. Schneider, Ph.D. (U. Mich.).

Sociology and Anthropology

Professors
†Lawrence T. Nichols, Ph.D. (Boston C.). Sociology. Criminology, Sociology of business, Theory, Qualitative methods.

Associate Professors
†Patricia Rice, M.A. (Ohio St.). Anthropology. Prehistoric art, Physical archaeology.

Assistant Professors
Corey Colyer, Ph.D. (Syracuse U.). Substance abuse, Criminology, Qualitative methods.
Rachel Woldoff, Ph.D. (Ohio St.). Sociology. Urban society, Crime and community, Research methods, Race relations.

Research Assistant Professor

Statistics

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


Adjunct Professor
Michael Andrew, Ph.D. (U. Wy.). Epidemiological analysis, Statistical modeling, Time series analysis.

Associate Professors

Adjunct Associate Professor

Assistant Professors

Clinical Assistant Professor

Research Assistant Professor

Women's Studies

Professor

Associate Professors
Gwen Bergner, Ph.D.
†Barbara J. Howe, Ph.D. (Temple U.). Women's history, Women's studies.

Assistant Professor
J. Kasi Jackson, Ph.D. (U. of Ky.). Gender and science, Women's studies.

Adjunct Professors
W. Graeme Donovan, Ph.D. (Cornell).
Kathleen McNerney, Ph.D. (U. of N.M.).
Janice S. Spleth, Ph.D. (Rice U.).

Adjunct Associate Professors
S. Melissa Latimer, Ph.D. (U. of Ky.)

Adjunct Assistant Professors
Shelly Barrick Parsons, Ph.D. (Union Theological Seminary and the Presbyterian Sch. of Christian Ed.).
Cynthia K. Stackpole, D. Min. (Wesley Theological Seminary).
Bei Wu, Ph.D. (U. Mass.—Boston).

Biology

Jeffrey D. Wells, Chairperson
3157 Life Sciences Building
http://www.as.wvu.edu/biology

Degrees Offered

Master of Science
Doctor of Philosophy

Nature of the Program

The Department of Biology’s graduate program is dedicated to scholarship in academics and research. The objectives of the program are to empower students to: 1) recognize important biological problems; 2) design, execute, and analyze experiments aimed at solving important problems; and 3) communicate their findings in oral and written form. In addition, the program hopes to foster an awareness of the social and political issues of the day related to biology, and a desire to continue independent study after graduation. The Department of Biology offers graduate courses and research that lead to M.S. and Ph.D. degrees in biology. The focal areas of research in the graduate program are ecology and evolutionary biology (EEB), forensic biology (FB), genetics and genome biology (GGB), and neurobiology and endocrinology (NE).
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 and mathematics background (normally one year of mathematics, one year of physics, and two years of chemistry). Certain international applicants must have a TOEFL score greater than 100 for the internet-based exam, or greater than 250 for the computer-based exam, or greater than 600 for the paper-based test.

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. Prior to admission, a member of the faculty must agree to provisionally serve as the student’s faculty advisor. 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 that 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 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 is required. 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 by the end of the second semester 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 third semester in residence. The proposal exam is taken no later than the end of the third semester in residence. The proposal exam is taken no later than the end of the third semester in residence. The proposal exam is taken no later than the end of the third semester in residence. The proposal exam is taken no later than the end of the third 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)**

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

690. *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.)

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 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.)

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. (3 hr. lec., 3 hr. lab., 6 hrs. contact.)

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, cytology, phytochemistry, statistics and cladistics.

752. **Physiological Plant Ecology.** 3 Hr. PR: BIOL 350 and consent. Advanced studies on the interactions between plants and their environment focusing on whole-plant carbon exchange, water relations, and nutrient uptake, with reference to specific biomes.

753. **Water and Nutrient Relations of Plants.** 3 Hr. PR: BIOL 350 and consent. Advanced studies on water and nutrient acquisition, use, and transformation in plants with focus on plant-soil interactions, symbiotic associations, and acclimation and adaption mechanisms operating in plants.

754. **Plant Growth and Development.** 3 Hr. PR: BIOL 350 an and consent. Advanced studies of the mechanisms and patterns underlying growth and development, with emphasis on hormonal regulation and molecular processes in plants.

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. **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.** 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.

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. **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.)
Professional Development. 1-6 Hr. Professional development course 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.

Chemistry
Terry Gullion, Chair
222 Clark Hall
Harry O. Finklea, Director of Graduate Studies
http://www.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.

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 required 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 required to attend special lectures and seminars offered by visiting scientists.
Graduate students in the Ph.D. program are required to satisfactorily complete 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. After notification of successful completion of the written cumulative exams, the student will present and defend an original research proposal. The proposal must demonstrate originality and independence on the part of the student. This proposal 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)**


516. *Bioanalytical Chemistry*. 3 Hr. PR: (CHEM 310 and AGBI 410) or equivalent. Analytical principles and instrumental methods as they are applied to biochemical questions. Students are taught to evaluate and formulate methods and approaches for biochemical analyses.

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.)

547. *Chemical Crystallography*. 3 Hr. PR or Conc: (CHEM 346 and CHEM 348) or CHEM 341 or Consent. Applications of x-ray diffraction of crystals to the study or crystal and molecular structure. Includes diffraction theory, space group symmetry, and crystallographic methods of analysis. (3 hr. lec.)

591 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.)


713. *Electrochemistry and Instrumentation*. I. 3 Hr. PR: CHEM 310. Electronic instrumentation applied to study of mass transfer kinetics of electrode reactions, voltammetry, 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.)

750. Introduction to Proteomics. 3 Hr. PR: CHEM 233 and CHEM 234. Introduction to protein separations and sequencing by modern mass spectrometry, and the application of these methods to the study of biological systems in health and environmental sciences.

789. Research Seminar. I, II. 1 Hr. PR: Graduate student in chemistry. Research seminars by visiting lecturers.

790. 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.)


792 A-Z. Directed Study. I, II. 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.

798. 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. 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://communicationstudies.wvu.edu/

Degrees Offered
Master of Arts
Doctor of Philosophy

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.

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 and 616.
• 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.

Doctor of Philosophy
The Ph.D. program in Communication Studies is a 54 hour program (including dissertation hours) which affords students the opportunity to focus on three domains of communication: instructional communication, interpersonal communication, and organizational communication. Students will be awarded the Ph.D. upon completing 54 graduate credit hours, passing comprehensive exams; writing a dissertation proposal; and writing and defending a dissertation. Students are required to take:
1. Twelve hours of required courses: COMM 600, COMM 602, COMM 606, and COMM 700.
2. Nine hours of core COMM courses at the 700 level, which may include COMM 702, COMM 706, and COMM 719.
3. Six hours of research methods beyond COMM 701.
4. Nine hours of additional COMM courses.
5. Eighteen hours of dissertation research (i.e., COMM 797).
A GPA of 3.0 is required for graduation and any grade lower than B does not count toward the 54 hours. Students who receive more than six hours of C may not be permitted to remain in the program.
Upon admission to the program, students are advised by the coordinator of On-Campus Graduate Studies. Working with the coordinator, students devise their schedule for their first semester. During the first semester, in conjunction with the coordinator, students select an advisor. This advisor serves as the chair of each student’s comprehensive examination and dissertation committees. Working with their advisor, students then select four other committee members, at least one of which, but no more than two, must be graduate faculty members external to the Department of Communication Studies.
Upon completion of the 36 hours of coursework, students take a comprehensive examination. The comprehensive examination consists of three sections on which students will be tested: one of the three domains of communication emphasis (i.e., instructional, interpersonal, organizational), one domain of communication selected by the student, and quantitative research methods. The written examination will be followed by an oral examination approximately one week later.
Once the written and oral comprehensive examinations have been successfully defended (as determined by the committee), students write a dissertation proposal and submit the proposal to their committee. Once the proposal has been approved, students write and defend their dissertation. The dissertation defense is open to the public.
Applying for Admission to the Program

To apply for admission to the Ph.D. program, applicants must submit the following materials:

1. The application for admission to graduate school at West Virginia University.
2. Scores on the Graduate Record Examination (GRE). Applicants should have a minimum combined score of 1000 on the verbal and quantitative components of the GRE and a minimum score of 4.0 on the analytical component of the GRE. Scores should not be older than five years at the time of application.
3. Scores on the Test of English as a Foreign Language Examination (TOEFL) (for International Students only whose native language is not English). Scores will be accepted from any of three versions (i.e., internet-based test, computer-based test, paper-based test). Applicants should score in the 90th percentile of the test version taken.
4. All official undergraduate and graduate transcripts. Transcripts must be mailed directly from the registrar of the college and/or university attended. Applicants should have a minimum undergraduate GPA of 2.75 and a minimum graduate GPA of 3.30.
5. A vita. The vita should include all formal education, any teaching or professional work experience, and any research projects conducted to date.
6. A statement of interest. The statement of interest is a three to four-page, typed document in which applicants identify (1) their reasons for pursuing a Ph.D. in communication studies, (2) their reasons for wanting to attain their Ph.D. degree in communication studies at West Virginia University, (3) their research interests and how these interests correspond with the research conducted by the department faculty, (4) the faculty members whose research interests are most closely aligned with their own educational and career goals, and (5) why attaining the Ph.D. degree in communication studies specifically from West Virginia University is vital to the achievement of their career goals.
7. Three letters of recommendation from individuals familiar with the applicant's academic progress and potential. These letters of recommendation should address whether the applicant has the ability to succeed in the Ph.D. program in communication studies at West Virginia University as both a Ph.D. student and as a graduate teaching assistant.
8. A sole-authored sample of scholarly writing completed in the applicant's M.A. program. This sample can be a course paper, a convention paper, a thesis or major project, or a journal article.
9. Any additional supporting evidence. This evidence can include, but is not limited to, awards received for outstanding research, teaching, or academic endeavors; a convention paper or journal article of which the applicant is a co-author; a newspaper or magazine article; or teaching evaluations.

The transcripts, vita, statement of interest, recommendation letters, scholarly writing example, and supporting evidence should be mailed directly to the On-Campus Graduate Coordinator, Department of Communication Studies, P.O. Box 6293, West Virginia University, Morgantown, WV 26506-6293.

Communication Studies (COMM)

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

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

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 receive 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’ perdispositional 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.

623. Leadership. 3 Hr. Leadership styles, models and theories in classical and contemporary settings are covered. Emphasis is given to leadership in groups and organizations.

624. Communication Ethics. 3 Hr. This course focuses on communication ethics with a particular emphasis on communication ethics in the organizational context. Communication issues and situations are explored from various ethical perspectives.

625. Computer Mediated Communication. 3 Hr. This course explored the relationships between CMC and various aspects of human activity. This course investigates established and emerging CMC-based social, cultural, organizational, and instructional activities.

626. Intercultural Communication: Theory and Research. 3 Hr. Advanced seminar in communication of various cultures. Special emphasis on research in diffusion of innovations.
627. **Teachers In Film.** 3 Hr. This course focuses on how teachers and schools are portrayed in film. Students will use course readings, and personal experiences, to offer critical analyses of these films.

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 developments in the field.

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

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 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.

702. **Advanced Interpersonal Communications.** 3 Hr. PR: COMM 602. This course examines how interpersonal communication patterns are linked to relational processes, both as influences and outcomes. Emphasis is on in-depth analysis of social science interpersonal research.

706. **Advanced Organizational Communications.** 3 Hr. PR: COMM 606. This course provides an overview of the history and development of organizational communication. Additionally, current organizational theories and perspectives are investigated.

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.

712. **Communication Measurement.** 3 Hr. PR: COMM 701. This course investigates measures and instruments used in the field of communication studies. Focus is placed on the creation and validation of communication measures.

713. **Qualitative Research Methods.** 3 Hr. Qualitative research methods in human communication and related professional areas with major emphasis on conducting and evaluation qualitative research procedures. Special focus on practical application.

719. **Advanced Instructional Communications.** 3 Hr. Examination of issues surrounding instructional communication. Topics include study of history, paradigms, and programmatic areas of research of instructional communication.

790. **Teaching Practicum.** 1-3 Hr. PR: Consent. Supervised practice in college teaching of communication studies. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students on assistantships to gain teaching experience. (Grading will be S/U.)

791 A-Z. **Advanced Topics.** 1-6 Hr. PR: Consent. 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 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. 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 satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.

English
Donald Hall, Chair
Dennis Allen, Ph.D. Supervisor
John Lamb, M.A. Supervisor
Mark Brazaitis, M.F.A. Supervisor
Brian Ballentine, M.A., P.W.E. Supervisor
Colson Hall
http://english.wvu.edu/

Degrees Offered
Master of Arts
Master of Arts in Professional Writing and Editing
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.
Non-thesis Option
Course Requirements
M.A. candidates selecting the non-thesis option must successfully complete 30 hours of coursework in English, according to the following distribution and breadth requirements, and must fulfill the foreign language requirement. Students may take three hours of coursework in another department, subject to the approval of the Graduate Program Committee.

Distribution Requirements
ENGL 609 College Composition Pedagogy (required of all graduate teaching assistants in their first semester in residence; students who do not hold an assistantship will substitute three additional hours of elective).

Foundation course: either ENGL 680 Introduction to Literary Research or ENGL 682 Recent Literary Criticism.

Electives: 18 hours of 600-level courses or 700-level seminars in English (excluding ENGL 790 Teaching Practicum). A maximum of three hours of Independent Study (ENGL 695 or 795) may be counted toward the elective hours.

Seminars: six hours of 700-level seminars (excluding ENGL 790 Teaching Practicum).

Breadth Requirements
At least one course from among the electives and seminars must be substantially devoted to pre-1800 texts; at least one must be substantially devoted to post-1800 texts. At least one course must be in American literature; at least one must be in British literature.

Thesis Option
Course Requirements
M.A. candidates selecting the non-thesis option must successfully complete 30 hours of coursework in English, according to the following distribution and breadth requirements, and must fulfill the foreign language requirement. Students may take three hours of coursework in other departments subject to the approval of Graduate Program Committee.

Distribution Requirements
ENGL 609 College Composition Pedagogy (required of all graduate teaching assistants in their first semester in residence; students who do not hold an assistantship will substitute three additional hours of elective).

Foundation course: either ENGL 680 Introduction to Literary Research or ENGL 682 Recent Literary Criticism.

Electives: 18 hours of 600-level courses or 700-level seminars in English (excluding ENGL 790 Teaching Practicum). A maximum of three hours of Independent Study (ENGL 695 or 795) may be counted toward the elective hours.

Seminars: six hours of 700-level seminars (excluding ENGL 790 Teaching Practicum).

Thesis: six hours of ENGL 698 Thesis.

Breadth Requirements
At least one course from among the electives and seminars must be substantially devoted to pre-1800 texts; at least one must be substantially devoted to post-1800 texts. At least one course must be in American literature; at least one must be in British literature.

Foreign Language Requirement
The foreign language requirement for the M.A. is satisfied by successfully completing (receiving an 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; or by passing (with a B or better) the examination administered by the Department of Foreign Languages for “credit by exam” for the fourth semester course of a language sequence. Exams are available in French, German, Spanish, or Latin.

Master of Arts in Professional Writing and Editing
Admission Prospective candidates for admission are expected to have completed an undergraduate degree in English or an allied field with a record distinctly above average or to have at least two years’ work experience in writing and editing. Applications must be supported by a
portfolio of written work and three letters of recommendation. The GRE analytical writing test, taken within the last five years, is recommended; successful candidates will typically present a score of five or above. The program recognizes, however, that not all potentially excellent graduate students fit this profile and welcomes applications from individuals who can make a strong case that they will succeed. Non-native English speakers must present TOEFL scores of at least 600 for the written exam or equivalent scores for the online version.

Course Requirements The M.A. in PWE requires 30 hours of coursework distributed in four areas: foundations of professional writing and editing (9 hours); electives in professional writing and editing (6 hours); general distribution (9–12 hours); and practical experience (3–6 hours). Students must work with an advisor to file an approved plan of study by the end of their first semester of study. Students may choose either the thesis or the non-thesis option (see below under Practical Experience).

Foundations of Professional Writing and Editing (9 hours) The following three classes are required of every student: ENGL 601 Studies in Composition and Rhetoric, ENGL 602 Editing, ENGL 605 Professional Writing Theory. Electives in professional writing and editing (6 hours). In consultation with the advisor, students will individualize their plan of study by choosing two 600-level courses that develop a specific focus within the general field of professional writing and editing.

General Distribution (9–12 hours) Students must complete 9–12 hours of general English studies. Courses will include literature, writing, and/or linguistics courses offered by the Department of English and chosen in consultation with the advisor. General distribution hours may often include requirements dictated by graduate teaching status, prior coursework, and departmental guidelines. Students may not use the same course(s) to fulfill the general distribution and professional writing electives requirements.

Practical Experience (3–6 hours) Students must choose one of the following two summative experiences: ENGL 610 Professional Writing Internship (3–6 hours), ENGL 698 Thesis (6 hours). The directed study option is a workplace internship. The thesis option is recommended for students who anticipate advanced study at the doctoral level.

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: 15 hours of creative writing workshops (including one workshop in another genre); 12 hours of graduate-level English courses (non-creative writing); three hours of creative writing pedagogy; 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 (ideally 48 pages in poetry, 150 pages in fiction), suitable 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. Non-native 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. Students may take up to 12 hours of course work in another department, subject to the approval of the Graduate Program Committee.

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.

English (ENGL)


602. Editing. 3 Hr. Introduces students to the theory and practice of editing.

605. Professional Writing Theory. 3 Hr. Introduces students to the history of, development of, and current issues in professional writing theory and research.

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 online media, pedagogy); creative writing in digital media.

608. Writing Project Summer Institute. 3-6 HR. Experienced teachers examine issues in the teaching of writing and study current and past research in the field.

609. College Composition Pedagogy. 3 Hr. Introduces students to theories, practices, and current issues in teaching college composition. Restricted to GTAs in the English department.

610. Professional Writing Internship. 3 or 6 Hr. PR: ENGL 601 and ENGL 602 and ENGL 605. Student applies research and theory to writing tasks in a professional setting; 100 workplace hours for 3 credits; 200 hours for 6 credits.

611. Sturm Workshop. 1 Hr. PR: Consent. Creative writing workshop conducted by Sturm Visiting Writer in Residence.

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.

689. Writing and Editing Practicum. 1-3 Hr. Supervised practice in writing and editing. (Grading will be S/U.)

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. 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.

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.

798. 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.** 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.)

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.)

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.

**Foreign Languages**  
Ángel T. Tuninetti, Chair  
205-B Chitwood Hall  
Susan Braidi, Graduate Coordinator  
205-C 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, 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, Italian, and Spanish, and occasionally in Chinese, Japanese, linguistics, and Russian) available to help defray the cost of graduate study. The assistantships carry full tuition remission and a nine-month stipend (August–May); there are also limited opportunities to teach during the University’s summer session. 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 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, 217 on the computer version, or 79 on the Internet 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, 237 on the computer version, or 92 on the Internet version of the TOEFL Test in order to concentrate in that area of study. Note that the IEP-TOEFL condition (IEP courses with a 3.0 GPA and a TOEFL score of 530) will not be accepted for applicants to the TESOL program.

To be considered for a graduate teaching assistantship (GTA), students must complete the GTA Application Form and submit a cassette tape in the language of 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. International students whose native language is not English and who are seeking a graduate teaching assistantship must present a minimum SPEAK test score of 50. Those who are seeking to teach English as a Second Language in the Intensive English Program must present a minimum TOEFL score of 600 (paper version)/250 (computer version)/100 (Internet version) and a minimum SPEAK test score of 60.

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 (to be assigned by the chairperson). 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-I 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 an optional Practical Training Visa should apply for it four to five months before the initial work date, which must be within 60 days of the date of 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, of which 30 hours of coursework must be taken within the department. No more than 12 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 and Spanish (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, 237 on the computer version, or 92 on the Internet version.

Areas of Emphasis

Students must sign a formal plan of study by midterm 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. (GTAs 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 request to write a thesis and prepare an oral defense. The feasibility of writing a thesis may be limited due to faculty availability, the student's academic performance, or other factors. 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 LANG 621 (or 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 may be ineligible for an assistantship in this department.

**Bibliography (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.

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.

611. *Introduction to Research*. 1-3 Hr. PR: Graduate standing. Pro-seminar in graduate-level research in foreign languages, literature, and linguistics.


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.)
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.)

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

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)
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.)

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

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

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

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

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

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.)

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

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

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

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

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

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

Research. 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.)
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.

**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 Lit in Translation (FLIT)**

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


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.

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.)

**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.)

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.

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.

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.

**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 A-Z. **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.)

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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.
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.

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.)

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

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

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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.)

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.)

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

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.

Linguistics (LING)

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.

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.

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.

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.

613. **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.

616. **Language Typology.** 3 Hr. PR: LING 101 or LING 311 or equivalent. Study of the uniformity and diversity of the world’s languages. Which characteristics of human languages are universal and which are subject to cross-linguistic variation? An overview of the main results and methodology of typological research.

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.** 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.

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.)

**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. Directed study, reading, and/or research.

593 A-Z. 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. 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.

643. Contemporary Spanish Narrative. 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 ensure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be S/U.)

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*. 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.

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.


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.

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 M. Harris, Chair
330 Brooks Hall
http://www.geo.wvu.edu

Geography
Kenneth C. Martis, Associate Chair for Geography
237 Brooks Hall
http://www.geo.wvu.edu

Degrees Offered
  Master of Arts
  Doctor of Philosophy

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.
  • Environmental geography.
  • Space, place, and development.

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 330 Brooks Hall, P.O. Box 6300, Morgantown, WV 26506. Priority will be given to applications for fall admission and teaching assistantships received by January 1. To apply for fall admission without financial assistance, all application material must be received by April 1. 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 University Board of Trustees in 1998 and by the Board of Governors in 2003. 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 (environmental geography; geographic information science; and space, place, and development). 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, three hours).
- Complete either Quantitative Methods (GEOG 701) or Qualitative Methods (GEOG 603) (three hours).
- Complete the Colloquium Series (GEOG 600) for four semesters (total of four hours).
- Complete nine 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:
  - Thesis option
    Complete and successfully defend a written research thesis (GEOG 697, six hours).
  - Non-thesis option
    Complete a one-semester project (GEOG 780, three hours) and an additional graduate course (400 level and above, three 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 780). 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 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 11 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 780).

If the student completes and defends the project, but is unable to submit the project to the library by the University deadline, the student will be assigned an 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 780 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 either Quantitative Methods (GEOG 701) or Qualitative Methods (GEOG 603) (three hours) 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 no later than the fourth semester. The student will be examined on two areas of specialization and the student’s dissertation research topic. Upon successful completion of the comprehensive examination and no later than the end of the fifth semester, 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. Ph.D. teaching assistants who meet all comprehensive exam and dissertation proposal deadlines, have made excellent progress towards the completion of their dissertation research, and have applied for at least one external research grant, may request an additional year of funding. 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 has extensive computing facilities housed in a new 98,000 square foot building dedicated exclusively to geography and geology. The new building has five computer laboratories dedicated to teaching.

The department has ESRI ArcGIS and ERDAS Imagine site licenses. In addition, the department supports SAS, SAS-Graph, Surface III, Oracle, and extensive database and statistical packages.
The department’s geovisualization research group operates an immersive 3D display environment, or CAVE. The remote sensing program operates an ASD full-range portable spectroradiometer, and shares an ADAR Aerial Digital Imaging System 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.

550. Geographic Information Science. 4 Hr. PR: Instructor’s permission. Principles and practice of geographical information science. Geospatial data handling for research, planning and decision-making. Spatial analysis, information production and display.

553. Environmental Impact Assessment. 3 Hr. Study of the process and methods, including GIS, by which the environmental consequences of development actions are assessed and evaluated in advance of their occurrence.

600. Geography Research Colloquium. 1 Hr. PR: Consent. Lectures and presentation on recent and current research by resident and visiting scholars.

601. Geographic Traditions. 3 Hr. PR: Consent. Review of the major approaches in geographic scholarship.

602. Geographic Research-Design. 3 Hr. PR: GEOG 300 and GEOG 601. Choosing, preparing, and developing research problems of geographic interest. Emphasizes proposal writing and research design alternatives.

603. Qualitative Research in Geography. 3 Hr. PR: GEOG 602 or consent. Analysis of qualitative research in geography and related fields. Examine methodological approaches and techniques that explore and interpret issues in the development of geographical research projects.

607. Geography of Fire. 3 Hr. PR: Graduate standing. Course explores spatial science and human environment relations through a review of fire ecology literature. This is a seminar-style course with weekly readings, discussion, and a term project required by each student.

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.

612. Gender, Society and Space. 3 Hr. PR: GEOG 601 or consent. Examines how gender and feminist perspectives are an integral part of how space is used, distributed, and perceived in society. Overviews of major developments in field including diversity and difference, representation, identity, and nature.

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 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.
630. **Sem: Land Use and Cover Change.** 3 Hr. Review, discussion, and critique of major scientific approaches to the study of land use and cover change. All world regions and biomes covered. Includes theoretical and technical discussions of change, human dimensions, and policy issues.

651. **Geographic Information Science: Technical Issues.** 3 Hr. PR: GEOG 350. Current issues in GIS research. Technical aspects of GIS operations, algorithms, theory of geographical data structures, and error handlings. Labs focus on tools, data structures, database languages and macros. (2 hr. lec., 1 hr. lab.)

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 A-Z. **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.** 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.)

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701. **Advanced Research Methods.** 3 Hr. PR: GEOG 601. Review of quantitative and qualitative methods used in geographic research.

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.

753. **Exploratory Spatial Data Analysis.** 3 Hr. Develop expertise in spatial analytical techniques for use in geographical data analysis and 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.)

780. Non-Thesis Project. 3 Hr. Research activities leading to a non-thesis project report.

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**
Helen M. Lang, Associate Chair for Geology
249 Brooks Hall
http://www.geo.wvu.edu/

**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, paleoecology, diagenesis, and plate tectonics.
- Energy geology and geophysics, with strengths in the exploration and development of oil, gas, and coal, and the computational analysis of hydrocarbon systems and environmental impacts of fossil fuel usages.

**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 1. 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 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, business, 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 (GEOL 697) 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-based, 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 research hours (GEOL 697) are required for graduation. The research 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 are an integral part of the program. Research hours may be earned in conjunction with off-campus experiences by consent of the candidate’s Advisory Committee.

**Required to graduate:** 42 hours (34 course-based, eight research) including certain required courses specified by the advisor.

**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. Participation in two Ph.D. seminars is required. No formal course requirements exist; these are chosen by the student in conjunction with his or her Research Committee.
Research Linkages Around Morgantown

The WV Geological and Economic Survey (WVGES), located five miles from Morgantown, makes available laboratory equipment, fossil collections, cataloged drill cuttings and core, and subsurface logs from deep wells in the region. WVGES also offers students work and thesis opportunities in coal resources and petroleum geology. Several survey geologists are adjunct faculty.

The National Energy Technology Laboratory (NETL) of the U.S. Department of Energy laboratory located in Morgantown carries out and funds research on fossil-fuel resources and environmental problems. NETL projects support geology faculty and graduate-student research.

Extensive mining in the Appalachian region provides an excellent opportunity for students to study the environmental effects of coal extraction. WVU geology faculty collaborate with the National Mine Land Reclamation Center (NMLRC) based on the WVU Evandsale campus. The NMLRC is the main center for coordination of acid-mine drainage research in the U.S. WVU Geology has instrumented groundwater-research sites in the region for training and research.

The department houses the Statewide GIS Technical Center, the central source for GIS resources in West Virginia. The tech center is responsible for scanning and digitization of USGS DLGs, DOQs, and a host of other data products. The center provides technical-support services for the development and operation of GIS in West Virginia. A limited number of RA opportunities are available related to center activities.

Facilities

Computer Facilities And Network

Both research and teaching computing facilities are outstanding for a department of fewer than 100 graduate students. These facilities are centered around a Windows NT client-server network. The research cluster has access to >1 terabyte of redundant networked storage based on a series of RAID servers, as well as diverse networked printers, large-format plotters, large-format digitizers, and scanners. The teaching cluster provides interactive computing resources for 26 students on networked Athlon-based computers with privacy workstations. Classroom demonstration facilities are available in the teaching labs. The research cluster includes exclusively workstation-class machines with large-format displays. All resources are regularly upgraded with a replacement period of one to two years. Clusters for the GEO workgroup are linked across the NT intranet to the WVGIS center and have gateway access 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, NTSYS) allow students to undertake detailed statistical analysis, whereas graphical analysis packages (TruFlite, Surfer, Geographix, RockWorks) enable users to render both 2-D and 3-D surfaces. GIS licenses include ARC-INFO, Arc View, IDRISI, GRASS, and SPANS, all 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, Adobe Illustrator, CorelDraw, and other graphics design packages allow accurate rendering of technical diagrams.

State-of-the-art geological and geophysical modeling and processing software are available for instructional and research use. Landmark Inc. GeoGraphix Discovery Suite, Seismic Micro Technology’s Kingdom Suite, and Schlumberger’s Petral software provide state-of-the-art tools for analysis of seismic reflection data and geophysical logs. Seismic processing capability is provided through Landmark’s ProMax 2D, 3D, and VSP. We use Sensors and Software’s EKKO View Deluxe software for processing and display of ground penetrating radar data. Interpex’s IXID software is available for forward and inverse modeling of resistivity and terrain conductivity data. Northwest Geophysical Associates’ GM-SYS software is used in the forward and inverse modeling of gravity and magnetic data. A host of Landmark products including Discovery Suite, Seisworks, Strat-works, and seismic modeling packages enhance geophysical
and subsurface studies. We have recently improved our capability in integrated subsurface analysis through the addition of IHS Petra, and Schlumberger’s Interactive Petrophysics for reservoir property analysis, and Petrel. The focus of these products is on collaborative workflows that unite geophysics, geology, and reservoir engineering domains.

Software for groundwater simulation includes aquifer characterization packages (AQTESOLV), finite-difference flow and particle-tracking codes (MODFLOW2000, MODPATH3), solute-transport codes (MT3-D, MODFLOWT), and preprocessors (Groundwater Vistas). Streamflow-modeling capabilities includes HEC-2 step-backwater and peak value flood frequency software.

For structural geology studies we use 2-D and 3-D move (Midland Valley) and TriShear (created by R. Almendinger) in addition to standard structural analysis software. Basin modeling and evaluation of the generation of hydrocarbons are carried out with the GENEX (Baisip-Franlab) software.

**Laboratory and Field Instrumentation**

**Geological**

The department has a rock-crushing room equipped with jaw crusher and disk grinder as well as laboratories devoted to geological sample preparation which include standard mineral separation equipment (Frantz magnetic separator, Gemeni table, and heavy liquids set-up).

**Geophysical**

The department owns a Geonics very low frequency sensor an EM34 terrain conductivity meter a Bison Instruments 12 Channel Seismograph and a Geometrics magnetometer. The geophysics facility also offers large format plotting on 24-42 inch HP plotters. Additional survey equipment includes a Leitz Model 2100 Total Station Survey System and a two-station GPS Traveler. A wide spectrum of software resources (see above) enhance geophysical research.

**Geochemical**

Department laboratories own a Philips PW1800 X-ray diffraction unit for solid-state mineral analyses and a Philips PW9550 energy dispersion spectrometer for elemental analyses. A complete suite of equipment is available for the analysis of organic-rich materials including a Leco sulfur analyzer, a Leco proximate analyzer for moisture, carbon, and ash content a Leco CHN analyzer for coal and shale, a Leco calorimeter, and a Biorad FTIR with microscope attachment to do FTIR analysis of microscopic entities in rocks. Water analytical facilities include a Dionex 100 Ion Chromatograph and a Beckmen Autotitrator. Outside White Hall, Varian sequential ICP and Finnemat ICP-MS units for water analysis are available to geology faculty in the WV Water Research Institute.

**Hydrogeological**

Groundwater field equipment includes an array of Global Water vented pressure transducer/datalogger instruments, Grundfos 4” and Redi-Flo 2 pumps, Geotech peristaltic pumps and flow-through sampling cells, and analog well recorders, as well as a variety of generators, sampling pumps, flumes, pH and conductivity meters, bailers, and current meters.

**Quaternary Geology and Geomorphology**

Quaternary geology and geomorphology research is served by a particle-size analysis laboratory as well as field instrumentation such as Garmin and Trimble GPS units and a Leica TC400 electronic distance meter.

**Remote Sensing**

The Remote Sensing Laboratory has a comprehensive suite of computing and field equipment. The laboratory operates two portable full-range (0.4 to 2.5 micrometer) field spectroradiometers and an aerial small format photography system based on two Nikon cameras. The laboratory shares a digital ADAR infra-red aerial acquisition system with biology and resource management. The ADAR system can be deployed in both helicopters and fixed wing aircraft. Remote sensing software includes site licenses for ERDAS Imagine, ENVI/IDL, and ARC/INFO image analysis and GIS 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.

580. Organic Contaminant Geochemistry. 3 Hr. This course focuses on fundamental chemical properties and structures of organic contaminants that control their functionality, fate, and transport in the environment. Natural organic matter and inorganic phases are discussed relative to contaminant mobility.

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.

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. Seminars arranged for advanced graduate students.

610. Advanced Stratigraphy. 3 Hr.

611. Carbonate Sedimentology. 4 Hr. PR: GEOL 331 and GEOL 311. Origin and distribution of modern marine carbonate sediments as models for interpretation of ancient limestone and dolomite facies.

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.

692 A-Z. *Directed Studies*. 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.


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.)

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. **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.

**History**
Steve Zdatny, Chair
220 Woodburn Hall
Gregory A. Good, Associate Chair, Director of Graduate Studies
202 Woodburn Hall
http://www.as.wvu.edu/history

**Degrees Offered**
- Master of Arts
- Master of Arts in Public History
- 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 regular 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 1000 on the verbal and quantitative sections and 4.0 on the written section of the Graduate Record Examination General Aptitude Test.
Requirements This program requires the completion of a minimum of 30 hours of course-
work, including six hours of thesis research, 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 (HIST 701 and higher). Also required are the department’s research methods course
(HIST 613), historiography course (HIST 700), and continuous enrollment in HIST 799 Depart-
ment Colloquium. Credit for this last 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. Candidates for the M.A. are required to pass a
final oral examination on their core area of study and thesis.

Public History and Cultural Resource Management
The department offers a 36-hour M.A. in public history. The Eberly College also offers a
graduate-level 15-hour certificate in cultural resource management (CRM). Public historians
generally work outside academic settings and CRM specialists pay special attention to heritage
sites and objects. Graduates of both programs may enter positions in historic preservation,
contract historical work, heritage tourism or park administration, or federal preservation law
compliance. No other university in West Virginia offers similar programs.

Admission Students apply for admission to public history as they would for the M.A. in his-
tory. The statement of purpose should highlight relevant background and reasons for interest
in public history. Students in public history should have an undergraduate degree in history.
Applicants lacking this degree may be required to make up deficiencies or may test out of
some courses.

Requirements The public history program consists of 30 hours of coursework plus a six-hour
internship or thesis. Half the courses will be public history courses and half will be selected
from other history offerings. Students must take one readings/seminar sequence (HIST 701
and higher). Relevant coursework outside the department will be considered. Public history
students are not required to meet the foreign language requirement. Students are expected
to enroll continuously in HIST 799 Department Colloquium. Credit for this course does not
count towards the degree.

Master of Arts (4+1 Track)
The 4+1 track enables excellent students at WVU to accelerate their progress through
the B.A. and M.A. in history. This track is also available in public history. History majors with a
strong record should enquire about the application procedure early in the junior year. Contact
the director of graduate studies.

Doctor of Philosophy
Program Students seeking admission to the doctor of philosophy program should have the
equivalent of a M.A. in history. Application requirements include a transcript (a minimum of
a 3.0 average in graduate history courses is required), three letters of recommendation, and
combined scores of 1000 on the verbal and quantitative sections and 4.0 on the written section
of 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 for the Ph.D. degree in history include the general WVU requirements; achieve-
ment of proficiency in one foreign language with a second language at the discretion of the
department; completion of two readings/seminar sequences (HIST 701 and above) beyond
those offered for the M.A.; HIST 700 Historiography, 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 investiga-
tion; 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, history of science, and world history. At least one field must be in a geographic area outside the major field of concentration for dissertation work.

Dissertation work should normally be in United States history, twentieth-century Europe, European social history, Appalachia/regional, world history, 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)
550. West Virginia History. 3 Hr. Elective course for public history graduate students and cultural resource management students.

575. Hollywood and History. 3 Hr. Examines twentieth century American culture, politics, and society through film It explores the relationship between film and history, using films as primary sources for understanding the past and it examines how film is used in teaching history.

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

600. Cultural Resource Management. 3 Hr. PR: Consent. Explores principles and practices of managing cultural and material historic resources, with an overview of best practices, federal requirements, and fundamental skills expected of the practitioner.

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.

614. Internship in Public History. 6 Hr. PR: HIST 412 and two intermediate public history courses. A professional internship at an agency involved in a relevant area of public history. Supervision will be exercised by both the Department of History and the host agency. Research report or finished professional project required.

615. Museum Studies. 3 Hr. Introduction to museum management and curation of collections of historic or archaeological significance. Students will learn the basic skills necessary to work with and use museum collections.

616. History of American Architecture. 3 Hr. Overview of American architecture and architectural styles to enable students to correctly identify building styles in the field.

619. Understanding Preservation Law. 3 Hr. Overview of legal issues and federal regulations and guidelines in the practice of historic preservation.

620. Internship in Cultural Resource Management. 3 Hr. Three-hundred contact hours of professional placement or project designed to be the capstone experience for students in the CRM graduate certificate program. Placement is tailored to the area of student interest.
691 A-Z. **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.** 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 dissertation. (Grading may be S/U.)

700. **Historiography.** 3 Hr. Core course for entering graduate students: critical survey of important contemporary approaches to history writing, methodological practices, and current issues in the field.

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 Early Modern History.** 3 Hr. Directed readings on selected major historiographic themes in European history relating to the period from the Renaissance to the French Revolution.

706. **Seminar in Early Modern History.** II. 3 Hr. Research and writing of an article-length paper based on extensive and/or in-depth analysis of early modern primary sources. Class presentations and discussions of colleagues' work.

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.) (Alternate years)

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.) (Alternate years)

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.


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. 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 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.

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**Legal Studies**  
L. Christopher Plein, Chairperson, Division of Public Administration  
Nancy Adams, Program Director  
209 Knapp Hall  
http://www.wvu.edu/mls

**Degree Offered**  
*Master of Legal Studies*

**Nature of the Program**  
West Virginia University’s master of legal studies degree program is an online degree program designed to build greater public understanding of law and the legal system, to provide graduates with the ability to apply knowledge and skills gained to performing their jobs more effectively and to provide private and public organizations the benefit of enhanced experience. It is a graduate program of study for professionals practicing in areas such as human relations, criminal justice, juvenile justice, journalism, social work, or regulatory agencies. It is neither a law degree nor a paralegal program.

The master of legal studies is entirely online and operates in a cohort system. Courses are offered each term. Students should be able to finish in six terms (36 hours of coursework).

**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 online at www.applyweb.com/apply/wvu/index.html.

The master of legal studies program is designed for students interested in gaining greater understanding of law and the legal system, to perform their jobs more effectively, and/or to pursue further career or personal goals. Students with any undergraduate major may be admitted. The Admissions Committee considers several relevant factors in making its admissions decisions: undergraduate GPA, standardized test scores, graduate educational experience, professional experience, letters of recommendation, and a personal statement on the subject of why and how the master of legal studies degree program will further the applicant’s career or special interests. Results of any of the standardized graduate-level tests (i.e., LSAT, GRE, GMAT, or MCAT) will be accepted. An applicant may petition for waiver of the test requirement if he or she has extensive graduate education or professional work experience. You may request provisional admission to the M.L.S. program if your undergraduate GPA is below 2.75 but special considerations (e.g., subsequent professional Loretta Hoover, Division of Public Administration, P.O. Box 6322, Morgantown, WV 26506-6322, Loretta.Hoover@mail.wvu.edu, or (304) 293-2614, www.as.wvu.edu/mls
Curriculum

The 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.

Required Courses

Law and the Legal System. Introduction for non-lawyers to the law and its functions, the structure of the U.S. legal system, the actors in the legal system, the organized bar, the judiciary, civil litigation, criminal litigation, and the policy-making role of constitutions and appellate courts.

Researching the Law. Provides experience in locating and interpreting primary (the law) and secondary (commentary on the law) legal authority: federal and state constitutions, legislative statutes, judicial case law, government agency rules and regulations, encyclopedias, legal periodicals, treatises, and restatements.

Alternative Dispute Resolution. A theoretical and practical examination of negotiation, court-annexed and private mediation and arbitration, summary jury and mini trial, and other alternative dispute resolution processes, including assessment of the appropriateness of ADR for particular legal disputes. Students will engage in the dispute resolution practices studied and develop conflict resolution skills which may be utilized to resolve individual or small workgroup 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 health care 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.

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

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

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.)

Liberal Studies

Barbara J. Howe, Coordinator
218 Eiesland Hall
http://www.as.wvu.edu/new_folder/mals/req.htm

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 five-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. (Applicants should contact the office of the M.A.L.S. director for more detailed information concerning the format for the M.A.L.S. plan of study.)
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 discipline.
   b. No more than nine hours of independent study will be approved. (This limit applies only to courses labeled either “independent study” or “directed study” in the graduate catalog. It does not apply to any of the following kinds of courses: Professional Field Experience, Internship Research, Thesis Teaching, Practicum, and so on.)
   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. The final project can take any of a number of forms depending on an applicant’s interests and proposal plan of study. Possibilities include a master’s thesis, a comprehensive examination, a lecture, a recital, a portfolio of creative work, the design of a Web site, and so on. Applicants are urged to consider including information about their proposed project in their application essay.

Mathematics
Sherman D. Riemenschneider, Chair
320 Armstrong Hall
http://www.math.wvu.edu

Degrees 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, including at least one semester of advanced calculus (Math 451 or equivalent).
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 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 of approved coursework are required. Note: MATH 590/690/790/69 6/597/697/797 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. For students entering with regular admission status, the program requires 24 hours of approved 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** For regular admission, applicants for the Ph.D. program must have completed a graduate degree similar to the M.S. in mathematics outlined above. Students with an exceptionally strong undergraduate background may sometimes be admitted provisionally, with 12–18 credit hours of additional coursework required.

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.
- TOEFL scores for students whose native language is not English.
- GRE scores for the general test and for the mathematics subject test are optional.

All doctoral students must demonstrate that they are prepared to undertake doctoral work and research by passing an entrance examination, given each year in April 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. For students in the CCDM area of emphasis (see next page) one of these area exams is replaced by an examination over the CCDM core curriculum.

Beyond any coursework taken to remove deficiencies while a provisional student, a minimum of 24 hours of approved coursework is 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.

In addition, doctoral students enroll for one credit hour of graduate seminar each semester they are in residence.
**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 and present an approved dissertation prospectus. A minor examination is waived if the student has obtained at least a 3.5 GPA in the corresponding courses. 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.

**Area of Emphasis:** Combinatorial computing and discrete mathematics (CCDM) Within the mathematics Ph.D. program, students may choose the CCDM area of emphasis, which requires a minimum of 33 credit hours of coursework and includes designated core courses in discrete mathematics, statistics, and computer science. Students may undertake mathematics research of an interdisciplinary nature among these three areas.

**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 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.

524. *Middle School Number and Algebra 1.* 2 Hr. PR or CONC: C&I 524. Designed only for in-service middle school and elementary mathematics teachers. Sets of numbers as examples of algebraic systems, properties of groups, rings, and fields.

525. *Middle School Number and Algebra 2.* 2 Hr. PR or CONC: C&I 525. Continuation of MATH 524. Designed only for in-service middle school and elementary mathematics teachers. Properties of polynomials and polynomial rings. Mathematics modeling with finite differences and least squares.

528. *Middle School Functions and Change 1.* 2 Hr. PR or CONC: C&I 528. Designed only for in-service middle school and elementary mathematics teachers. Function concept, operations on functions, limits, continuity, Intermediate Value Theorem, families of curves, optimization area. Classroom applications current research in learning. Applications in model curricula.
529. Middle School Functions and Change 2. 2 Hr. PR or CONC: C&I 529. Continuation of MATH 528. Designed only for in-service-middle school and elementary mathematics teachers. Function concept, operations on functions, limits continuity, Intermediate Value Theorem, families of curves, optimization, area. Classroom applications, current research in learning. Applications in model curricula.

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 quotients, 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; 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 minimums of an integral, Euler-Lagrange equation. Legendre 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.)

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

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.
621. *Computational Matrix Theory.* 3 Hr. Matrix norms singular value decomposition, QR factorization, least-square problems, conditioning and satbility, eigenvalue problems, and iterative methods for solving large systems.


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, irrationals, and combinatorial methods. Special numbers such as those of Bernoulli, Euler, and Stirling.


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)-matrices, and permanents.


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, transfinite 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.)


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.** 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, and 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 requirements for master’s program.)

740. **Seminar in Number Theory.** I, II. 1-12 Hr.

741. **Group Theory 1.** 3 Hr.

742. **Group Theory 2.** 3 Hr. PR: MATH 741.

743. **Algebraic Theory Semi-Groups 1.** 3 Hr. PR: Math 641.

744. **Algebraic Theory Semi-Groups 2.** 3 Hr. PR: MATH 743.

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.

747. **Advanced Topics in Modern Algebra.** 1-6 Hr. This course will cover selected topics of Modern Algebra as an extension of the basic material covered in the 541-641 sequence. The topic will be selected from algebraic number theory, noncommutative rings and modules, representation theory, algebraic model theory, homological algebra. (May be repeated for credit with consent.)

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 eigenvectors; the difference between singular and regular perturbations; multiple scale analysis; the method of matched asymptotic expansions; perturbations of periodic systems.

771. **Matroid Theory 1.** 3 Hr. PR: (MATH 541 or MATH 543) and (MATH 571 or MATH 573). Independent sets, circuits, bases, rank functions, closure operators and close sets, other axiom systems, geometric representations, duality and minors, linear and algebraic representability, connectivity, basics of partial ordered sets, flats and lattices, relationship between lattices and matroids.

772. **Matroid Theory 2.** 3 Hr. PR: MATH 771. Matroid representability, representability over finite fields, algebraic matroids, matroid constructions, higher connectivity of matroids, binary and ternary matroids, the splitter theorem and its applications, submodular functions, matroid intersection theorem, matroids in combinatorial optimizations.

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. **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.)

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 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.

**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.


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 assistanships to gain college teaching experience. (Grading may be S/U.)

591 A-Z. **Advanced Topics.** 3 Hr. Investigation of advanced topics not covered in regularly scheduled courses.

594. **Seminar.** 3 Hr. Seminars arranged for advanced graduate students.
691. **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.

694. **Seminar.** 1-6 Hr. PR: Consent. Seminars arranged for advanced graduate students.

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.)

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.)

**Physics**
Earl Scime
209 Hodges Hall
http://www.wvu.edu/~physics/graduatestudies/index.htm

**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.

**Master of Science**
Without thesis: Students may earn an M.S. degree without writing a thesis by completing 30 hours of physics courses (with a GPA of 3.0 or better) at the 600 or 700 level. These must include physics 611, 631, 633, 651, and 761. With thesis: Students may earn an M.S. degree by performing research under the direction of a faculty advisor. The research results must be presented in a written thesis that is defended before a faculty committee. The M.S. degree with thesis requires 24 hours of physics courses (with a GPA of 3.0 or better) at the 600 or 700 level. These must include physics 611, 631, 633, 651, and 761.
Ph.D. Candidacy Examinations
To be admitted to candidacy for the Ph.D., a student must pass both a written and an oral candidacy examination. The written examination consists of three parts: a quantum mechanics exam in May, an electromagnetism exam in August, and a classical mechanics exam in January. To be eligible to take any candidacy exam, the student must be in good standing, as explained below.
The oral part of the candidacy exam is a presentation to the five faculty on the student’s doctoral committee. The student gives a lecture on some published research that has been assigned by his or her research advisor.

Requirements for Remaining in the Graduate Program
To be a graduate student in good standing requires the following:
• Maintain a GPA of 3.0 or better in physics courses taken at WVU, excluding physics 797.
• Pass two sections of the written candidacy examination by the end of three years.
• Pass the remaining third section of the written candidacy examination by the end of four years.
• Select a Doctoral Committee of five faculty and complete the oral candidacy examination within three semesters after completing the third section of the written candidacy examination.

Doctor of Philosophy
Course requirements: The Ph.D. requires 36 hours of courses at the 600 or 700 level with a GPA of 3.0 or better.
These 12 courses must include the seven basic courses 611, 631, 633, 634, 651, 652, and 761. In addition the student must complete at least two of the following specialized courses: physics 726, 772, 773, 774, 783, 784, 791; and/or astronomy 702, 703.
Research requirements: Research is the central focus of the degree and is directed by a faculty advisor over a period of several years. When the research is completed, the student must write a dissertation and defend it before the doctoral committee of five faculty. The average completion time for the Ph.D. is five years beyond the B.S. Research specialties within the department include astrophysics, computational physics, condensed matter physics, fluid mechanics, nonlinear dynamics, and plasma physics.

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 or IELTS 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.

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

611. Introduction 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; Fourier series, 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.


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.

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.)

710. Non linear Dynamics. 3 Hr. A survey of the non linear dynamics of physics systems. Topics include bifurcation, limit cycles, fractals, strange attractors, and quasiperiodicity.


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.


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, 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. 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 cultural program. 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.)

Political Science
Joe D. Hagan, 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 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.

**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 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:

**Public Policy Option**
- Public policy core (18 hrs.)
- Policy research methods (15 hrs.)
- Economics (6 hrs.)
- Policy field (18 hrs.)
- Dissertation (24 hrs.)
- Total: 81 hrs.

**General Option**
- Public policy (15 hrs.)
- Research methods (12 hrs.)
- Elective specialty I (15 hrs.)
- Elective specialty II (15 hrs.)
- Dissertation (24 hrs.)
- Total: 81 hrs.

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, Latin American, 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, environments 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 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. seminar.)

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. seminar.)
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. seminar.)

545. *Public Administration and Policy*. II. 3 Hr. Decision-making and policy development in the administrative process. (3 hr. seminar.)

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. seminar.)


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.

603. *Advanced Quantitative Analysis*. 3 hr. A survey of advanced statistical applications in political science, covering time series analysis, maximum likelihood estimation, and structural equation modeling.

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.)


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. seminar.)

638. *Seminar: Policy Implementation*. II. 3 Hr. Research seminar focusing on how the intentions of policy-makers are transformed into programs and policies which have both intended and unintended consequences. Topics include traditional implementation studies, 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.

660. International Political Economy. 3 Hr. Advanced theoretical courses in IPE. Topics include capital financial and trade liberalization, economic development, regionalism, and the intricacies between domestic governments and international economic relations.

665. Comparative Foreign Policy. 3 Hr. Application of the comparative method of theoretically assessing the mainly domestic sources of conflict and change in foreign policy beyond the U.S. case and in cross-national and historical perspective.

666. National Security Policy. 3 Hr. Overview of security policy issues as both foreign and domestic policy. Traces the development of defense and security, arms transfers, spending tradeoffs, deterrence, game theoretic decision models, intelligence analysis, and terrorism.

667. Foreign Policy Decisionmaking. 3 Hr. This course examines the roots of foreign policy decision making. It examines how ideational, cultural, institutional and political variables constrain decision makers, and how the core psychological characteristics of decision makers shape their behavior.

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.

715. The American Presidency. 1-6 Hr. this course examines how the president interfaces with other power centers in the political system, and assesses the extend to which this institution is capable of meeting what we have come to expect of it.

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. **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.** 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 program's. 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.

**Psychology**

Michael Perone, Chair
1130-A Life Sciences Building
http://www.wvu.edu/~psychology/graduateprogram/index.htm

**Degrees Offered**

- **Master of Arts**
- **Master of Science**
- **Doctor of Philosophy**

**Programs Offered**

The doctoral degree programs in behavior analysis, clinical psychology, clinical child psychology, and life-span developmental psychology prepare students for careers in teaching, research, and/or practice. The professional master's degree in clinical psychology (master of arts) prepares students for work in community mental health centers, medical facilities, mental health and mental retardation institutions, and school systems. The master's degree in applied behavior analysis (master of arts) is designed to train students in the applications of behavior principles and concepts in situations of daily life.

**Admission**

Students are admitted only at the beginning of the fall semester. Application must be completed by the preceding December 15 for the doctoral program and March 1 for the master's program.
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;
- 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 must have a final 3.0 average in all psychology courses attempted.

**Master of Arts Requirements**

The master of arts degree is given to students who complete the professional M.A. degree track in clinical psychology and M.A. degree track in applied behavior analysis. Two years of full-time study with a minimum of 48 hours of credit are required for the master of arts degree. Students must complete a specified sequence of courses and those in the professional M.A. degree track in clinical psychology must also complete a six-month, full-time internship. There is no thesis requirement.

**Master of Science Requirements**

Students who are accepted into one of the Ph.D. programs will receive the M.S. degree upon completing the following requirements: PSYC 511 *Research Design and Data Analysis 1*, one additional three-credit research methodology course, a minimum of six credits of PSYC 698 *Thesis or Dissertation*, completion of a minimum of 48 total credits, and completion of an empirical master’s thesis.

**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.


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 Development. 3 Hr. Examination of psychological literature on child development. Topics include perception, learning, language, problem solving, social cognition, peer and family relationships, gender, moral development, friendship, aggression, and altruism.

543. Adolescent and Young Adult Development. 3 Hr. Examination of the psychological literature in adolescence and young adulthood. Topics include learning, problem solving, social cognition, 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.

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

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.) Review and discussion of methods and issues in college teaching of psychology.

607. Ethical and Legal Issues in Psychology. 3 Hr. Surveys the ethical guidelines and major legal issues confronted by psychologists.

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.)


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.)


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.


660. *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. *Clinical Child 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 Therapy*. 3 Hr. Assessment, intervention, and evaluation strategies appropriate for childhood disorders and based on behavior principles.

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.)

701. *Advanced Professional Issues in Psychology*. 1-3 Hr. (May be repeated for credit.) 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.

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.

750. Clinical Internship. 1-15 Hr. Intensive training in clinical assessment, diagnosis, consultation, and/or treatment skills that offer during an internship placement, typically at an off-campus training site.

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.

755. Seminar in Clinical Supervision. 1 Hr. (May be repeated for credit with consent.) Theoretical foundations and empirical research pertaining to clinical supervision, coupled with experiential training in conducting clinical supervision in applied settings.

762 A-Z. Seminar in Clinical Psychology. 1-3 Hr. (May be repeated for credit with consent.) Research and problems in clinical psychology.

772. Seminar in Clinical Child 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.)

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 graduates students.

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

798. 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.)

Public Administration
L. Christopher Plein, Chair
209 Knapp Hall
P.O. Box 6322
http://www.as.wvu.edu/pubadmin

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 45 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** (three credit hours): orientation to professional skills and program content (PA 600).
- **Foundation courses** (12 credit hours): *Public Management Theory and Practice* (PA 610), *Public Financial Management* (PA 620), *Research Methods* (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** (six credit hours): *Public Administration Internship* (PA 751).
- **Integrative capstone** (three 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.

Further information is available from: Division of Public Administration, P.O. Box 6322, Morgantown, WV 26506, dkoon@wvu.edu, (304) 293-2614 or www.as.wvu.edu/pubadm.

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

600. Scope and Practice. 3 Hr. Orientation to the field of public administration, ethics and professional standards and professional skills. Review of foundations, theories, scope and methods. Study of public management heritage and exploration of current trends and issues.

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. Research Methods. 3 Hr. Introduction to the foundations and processes of applied research applicable to public administration, with emphasis upon data collection and analysis, statistical modeling and research design.

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.

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 Operation.* 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. Settings chosen will be determined from current developing areas in health-care.

674. *Rural Health-care.* 1 Hr. PR or CONC: PUBA 670 or CHPR 635. Provides an overview of the issues affecting health-care 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.

691. *Advanced Topics.* 1-6 Hr. Investigation of advanced topics not covered in regularly scheduled courses.

693. *Special Topics.* I, II, S. 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.)

700. *Capstone Seminar.* 3 Hr. PR: All PUBA 600 level and PUBA 751 or Concurrent. Links MPA academic preparation to professional career through analysis of practice settings, professional literature, and internship/professional experience of student; integrates coursework, practice themes, competencies, and ethics.

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.)

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.

773. **Policy Issues in Women's Health.** 1 Hr. PR: PUBA 670 or Consent. Provides an overview of women's healthcare issues involving the interaction of medical and social systems. How to facilitate quality care will be examined from policy, administrative and advocacy standpoints.

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 policy. 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 A-Z. **Special Topics in Health Care.** 1-6 Hr. PR: PUBA 670. Focuses on those subjects of most topical concern in health care administration.

790. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Teaching practice as a tutor or assistant.

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. PR: Consent. 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.** 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 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. **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 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.)

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.

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.

597. Advanced Study. 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.)

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.)
Social Work
Virginia Majewski, Chair
111 Knapp Hall
http://socialwork.wvu.edu

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. 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. Graduate certificates are available in the areas of gerontology, women’s studies, and nonprofit management, and the division offers specializations in social work with children and families, health/behavioral health, and international social work.

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 several off-campus sites, including Charleston, Beckley, Wheeling, and Martinsburg. 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. Full-time advanced standing students (those with a qualifying B.S.W. degree) begin the program in January and complete the program in 16 months. Part-time advanced standing students begin in September and finish in just over two years.

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 42 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 sites.
- 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.

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.

Full-time regular standing M.S.W. students have a generalist field experience during the first two semesters of study. Advanced 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.

Students are required to take at least three credits of classroom coursework concurrently with the advanced 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 (42 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 4.0 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.
Application Deadlines

Each of the following deadlines refers to complete applications. Incomplete applications are held over until complete for the next deadline.

Priority Application Deadline—March 1. Applicants admitted from the priority review will be given preference for graduate assistantships in the division and for scholarships. Applications for these awards will be sent with acceptance letters and will be due on April 15.

Regular Application Deadline—April 1.

Late Application Deadline—May 1. This deadline applies to those who needed more time to complete their applications and to those who were rolled over for provisional acceptance consideration. Acceptance at this point is on a space available only basis.

The M.S.W. Admissions Committee reserves the right to alter or extend deadlines for exceptional circumstances.

Transfer Students

Applicants wishing to transfer from another CSWE accredited graduate social work program must meet all of WVU’s admissions requirements and may request transfer of up to a maximum of 18 credit hours. Syllabi and bibliographies for all requested transfer courses must be submitted along with a letter of recommendation from the M.S.W. program director from that institution in addition to other required letters. Applicants should include this request as part of the complete application packet. Contact the WVU Division of Social Work Admissions Office at (304) 293-3501, ext. 3128, for appropriate forms and information on receiving credit.

Summary of Degree Requirements for Regular M.S.W. Program

<table>
<thead>
<tr>
<th>Curriculum Area</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>Generalist Foundation Courses</td>
<td>16</td>
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<tr>
<td>SOWK 513 Research Methods</td>
<td></td>
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<tr>
<td>SOWK 520 Human Behavior in the Social Environment</td>
<td></td>
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<tr>
<td>SOWK 531 Social Welfare Policy and Services</td>
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<tr>
<td>SOWK 540 Generalist Social Work Practice</td>
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<tr>
<td>Advanced Core Courses</td>
<td>15</td>
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<tr>
<td>SOWK 621 Human Behavior, Diversity, and Social Justice</td>
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<tr>
<td>SOWK 633 Social Policy Analysis</td>
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<tr>
<td>Practice Track Advanced Courses:</td>
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<tr>
<td>Direct Practice (SOWK 641, 643, and 649)</td>
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<tr>
<td>COSA (SOWK 651, 654, and 656)</td>
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<tr>
<td>Advanced Electives</td>
<td>2</td>
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<tr>
<td>Advanced Research</td>
<td>3</td>
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<tr>
<td>Direct Practice (SOWK 618)</td>
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<tr>
<td>COSA (SOWK 616)</td>
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<tr>
<td>Advanced Field Instruction</td>
<td>12</td>
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<td>Total</td>
<td>48</td>
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Summary of Degree Requirements for Advanced Standing M.S.W. Program

| Advanced Core Courses                                | 15   |
| SOWK 621 Human Behavior, Diversity, and Social Justice |
| SOWK 633 Social Policy Analysis                      |      |
| Practice Track Advanced Courses:                    |      |
| Direct Practice (SOWK 641, 643, and 649)            |      |
| COSA (SOWK 651, 654, and 656)                       |      |
| Advanced Electives                                   | 12   |
| Advanced Research                                   | 3    |
| Direct Practice (SOWK 618)                          |      |
| COSA (SOWK 616)                                     |      |
| Advanced Field Instruction                           | 2    |
| Total                                               | 32   |
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. Human Behavior in the Social Environment. 3 Hr. PR: Admission to the M.S.W. program. Study of theoretical concepts underlying human behavior using a systems model and including the major systems in society with a primary focus on the impact of human diversity on human behavior and social interactions.

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. Generalist Social Work Practice. 3 Hr. PR: Admission to the M.S.W. program. Focuses on developing the basic framework of social work practice theory and professional values for 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.

572. Contemporary Issues in Aging. 3 Hr. Intended for students who have an interest in health and aging. The opportunity to attend a broad array of workshops on current issues and skills related to practice with older adults and their families.

581. Generalist Field Experience. 1-14 Hr. PR or CONC: SOWK 513 and SOWK 520 and SOWK 531, and SOWK 540 and Consent. Graduate foundation field instruction in selected settings under the general direction of the faculty.

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

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. Human Behavior/Diversity and Social Justice. 3 Hr. PR: SOWK 540 and SOWK 540 or advanced standing. Advanced content on human behavior in the social environment with special emphasis on vulnerable populations and social justice issues of concern to social workers.

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.

633. Social Policy Analysis. 3 Hr. (Policy course.) PR: SOWK 531 or Consent. Skill development in techniques of social policy analysis. Selection of analytical methods and issues offered in different sections.

641. Social Work with Groups. 3 Hr. PR: SOWK 621 or Consent. Theory and skills for working with a variety of groups and settings. Focus on dynamics and roles of social workers and group members.
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.

644. **Brief Therapy.** 3 Hr. Solution Focus Therapy and how it is applied to working with individuals, couples and families. Content: Assessment, stages, goal setting, conducting sessions, interventions, tailoring therapy to address problems, family preservation, abuse, neglect, substance abuse and divorce.

645. **Supervision in Social Work.** 3 Hr. (Practice course.) PR: SOWK 621 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. **Community Organization Theory and Practice.** 3 Hr. PR: SOWK 513 and SOWK 520 and SOWK 531 and SOWK 540. 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. **Non-Profit Management and the Third Sector.** 3 Hr. Understanding the role and place of the third sector in post-industrial society.

656. **Non-profit Financial Management.** 3 Hr. PR: SOWK 531 or consent. Intensive examination of the current state-of-the-art of non-profit financial management, with attention to accountability, budgeting, cost measurement, and related topics

657. **Grant Development.** 3 Hr. Course offers broad overview of external funding for social service agencies, emphasis on nonprofit sector. Students will have opportunity to find funding sources, develop grant proposals write, edit, prepare to submit a request for funding.

671. **Social Work with the Aged.** I. 3 Hr. (Field of Practice Course.) Human aging as an issue in theory, research, and practice.

672. **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.

673. **Legal Issues in Social Work.** 3 Hr. This course will explore in detail the legal and ethical obligations of social workers in practice. Review of common legal issues in social work practice and legal issues clients may face.

674. **Community Mental Health.** 3 Hr. (Field of practice course.) PR: SOWK 621 and ((SOWK 643 and SOWK 649) OR (SOWK 651 and SOWK 654)). 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.
675. Substance Abuse. The course explores issues pertaining to substance abuse and treatment by the social work professional. Introduction to terminology, pharmacological, cultural and social issues in substance abuse with socio-political and historical aspects of substance abuse.

676. Primary Prevention in Social Work. 3 Hr. (Practice 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.

677. SW Practice Children/Families. 3 Hr. CoReq: SOWK 682. Analyzes the population at risk, examines family theory, major programs, services and polices. Examines family theory, major programs, services and policies. Examines gaps in services and major styles of family intervention in social work roles.

678. Family Victimology. 3 Hr. (Practice course.) PR: SOWK 621 or Consent. The interface of social work practice in family victimology, with emphasis on victim welfare policy and service, victim compensation programs, and victim prevention. Social concern for physical and sexual abuse, domestic violence, and related topics.

679. Social Work with Couples/Families. 3 Hr. (Practice Course.) PR: SOWK 621 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.

680. Child Welfare Continuum. 3 Hr. PR: SOWK 621 or consent. Exploration of policy and service issues in child welfare practice includes family preservation and home-based services, adoption, foster and residential care, community-based practice and intervention in rural and cross-cultural contexts.

681. Social Work in Health Settings. 3 Hr. PR: SOWK 621 and ((SOWK 643 and SOWK 649) OR (SOWK 651 and SOWK 654)). 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.

682. Advanced Field Experience. 1-14 Hr. PR: (SOWK 621 and SOWK 633 and SOWK 643) or (SOWK 651 and SOWK 649) or SOWK 654 and consent. Graduate advanced field instruction in selected settings under the general direction of the faculty.

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

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

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.)

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

930. Professional Development. 1-6 Hr. Professional development courses provide skill renewal or enhancement in a professional field or content area (e.g., education, community health, geology). These tuition waived continuing education courses are graded on a satisfactory or unsatisfactory grading scale and do not apply as graduate credit toward a degree program.
Sociology and Anthropology
Melissa Latimer, Chair
307 Knapp Hall, P.O. Box 6326
http://www.as.wvu.edu/soca

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. The Division 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 must submit a university graduate application and 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 purpose outlining graduate study goals and plans (career plans, research experience, and any special circumstances) and a short sample of academic writing. Scores for the Graduate Record Examination are not essential for admission but must be provided before the beginning of classes. An on-campus interview in the department is encouraged. 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 process 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 division of Sociology and Anthropology.

Remediation
Students with deficient background in sociological theory, methods, or statistics 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 division 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 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 division 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; gender, racial, and ethnic studies; the sociology of work; criminal justice system; health care delivery; injury prevention; community and organizational development; and conflict analysis and resolution.

**Sociology and Anthropology (SOCA)**

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.* I. 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 A-Z. 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 educational, industrial, or governmental research projects; 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 that 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.

The Department of Statistics participates with computer science and mathematics to offer the combinatorial computing and discrete mathematics (CCDM) area of emphasis within the computer and information science or mathematics Ph.D. Students must be admitted to one of these degree programs. Once admitted, statistics can be chosen as a major or minor area.

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 the Graduate Programs in Statistics available from the department of Statistics (or on the Web at http://www.stat.wvu.edu).

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, 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.


521. Advanced SAS Programming. 3 Hr. PR: STAT 511 or equivalent; any computer programming language. Advanced topics in Statistical Analysis System (SAS). Students will preform statistical data analyses, data modifications, file operations, statistical report writing.

523. Statistical Computing. 3 Hr. PR: STAT 512. Monte Carlo methods; randomization, partitioning, and the bootstrap; identifying data structures, estimating functions, including density functions; statistical models of dependencies. R programming.

525. Statistical Graphics. 3 Hr. PR: STAT 512. Introduction to R graphics; traditional graphs; the grid graphics model; lattice graphics; developing new graphics functions and objects in R. Visualizing large datasets.

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.

543. Microarray Data Analysis. 3 Hr. PR: STAT 512. Statistical analyses of genomic experiments using data visualization, clustering, multiple testing, and ensemble classification methods. Data preprocessing, including background adjustment, etc. Case studies.

545. Applied Regression Analysis. I. 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.
547. Survival Analysis. 3 Hr. PR: STAT 512. Survival model methodology, including model selection for incomplete data with censored, truncated, and interval censored observations. Applications to many real life problems using R.

551. Nonparametric Statistics. II. 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.)

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

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.)

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.)

745. **Data Mining.** 3 Hr. PR: STAT 545 or equivalent. Development of predictive models for large datasets, including logistic and linear models, regression and classification trees, and neural networks. Data preparation, including imputation and filtering.

763. **Stochastic Processes.** 3 Hr. PR: STAT 561. Modeling of random phenomenon, occurring over time, space, or time and space simultaneously. Modern techniques, such as the martingale decomposition, are applied to different statistical models.


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

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**Women’s Studies**

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 394 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.wvu.edu/%7ewmst/gradcurric/mals.htm

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*West Virginia University Graduate Catalog*
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/West Virginia Alliance for Women's Studies Graduate Scholar Award. Teaching assistantships may also be available.

For more information, visit the center's Web site at http://www.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)

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

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

630. Feminist Theories. 3 Hr. Explores feminist theory through works of diverse scholars, focusing on questions of essentialism, difference, sexuality, bodies, language, power, economic and ecological justice, intersections of race, class, and gender, and global social justice struggles.

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 A-Z. Directed Study. I, II, S. 1-6 Hr. PR: Consent. 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. 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. Dissertation. 2-4 Hr. PR: Consent. Note: This is an optional course for programs that believe that this level of control and supervision is needed during the writing of their student's reports, thesis, or dissertations. (Grading may be S/U.)
Graduate Colloquium. 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.)
Perley Isaac Reed
School of Journalism
Maryanne Reed, M.S.J., Dean
Steve Urbanski, Ph.D., Director of Graduate Studies
journalism.wvu.edu

Degree Offered

Master of Science in Journalism

The Master of Science in Journalism (M.S.J.) is a program in 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 state-of-the-art electronic reporting and editing systems as well as modern broadcast news facilities. Graduate faculty, having 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 have earned terminal degrees and/or have worked professionally in their areas of expertise.

The master’s program has granted more than 250 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 nearly 4,600 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 pursue a doctoral degree, and the professional track for those who wish to enhance their professional opportunities in some area of mass communications.

This program, designed to help each student reach his/her potential as a practitioner, teacher, or scholar in mass communications, prepares a graduate not only for a first job but also for long-term productive career development through the study of mass communications and related fields. Skills acquired allow the student to excel in his/her chosen profession.

School faculty are developing more specialized curricula for persons who aspire to become integrated marketing communications (IMC) practitioners, news specialists, or public relations specialists in such fields as business, energy and the environment, science, social relations, education, government, international affairs, and sports.

Integrated Marketing Communications

The Integrated Marketing Communications (IMC) program offered by West Virginia University is the first IMC master’s degree program in the world available exclusively online. The program provides students worldwide the opportunity to earn a graduate degree in IMC. Designed to meet the needs of busy working professionals, the IMC program blends the flexibility of and online program, education in a cutting-edge discipline sought by employers, and the reputation of a respected major university.
So, what is IMC? Integrated marketing communications is the process of creating and maintaining profitable relationships with consumers and other important stakeholders by strategically controlling and influencing the communications sent to them, while encouraging meaningful dialogue with them. IMC offers a new way of looking at the entire marketing puzzle, which once was viewed in terms of pieces, such as advertising, sales promotion, direct marketing, public relations, investor relations, and internal communications.

Gaining acceptance into a top graduate program depends on a variety of factors, including undergraduate academic performance, professional work experience, GRE/GMAT scores, and the application essay. Critical qualifications of successful IMC applicants include the desire to excel in a challenging academic environment, as well as the ability to communicate effectively through persuasive writing.

Nearly 95 percent of current IMC students are employed in full-time positions. These professionals bring their experiences to the virtual classroom and enrich the program through online collaboration and discussion with other students in context with their actual experiences, observations, and career challenges. Our students represent virtually every industry and are located in most major markets in the United States. Our faculty members also live and work in cities across the country. This diversity and ability to attract talent regardless of geography is a unique feature of our program.

Our program graduates are well prepared to fill the growing need for sophisticated practitioners of IMC throughout consumer and business-to-business firms, financial service companies, publishers, government, non-profits, the arts, and the media.

For more information on the IMC program (including current course listings), visit www.imc.wvu.edu.

**Assistantships**

Assistantships available in and through the school each year pay stipends and usually provide tuition remission. Journalism graduate assistants supervise broadcast and computer laboratories, advise undergraduates, and assist professors with teaching courses, service learning, and research projects. Some journalism graduate students work in media-related positions in their own and in other WVU programs.

**Admission**

Those interested in learning about and applying to the master’s program should contact the director of graduate studies via e-mail (steve.urbanski@mail.wvu.edu). Graduate students specifically seeking information about the IMC Online Graduate Program should contact the IMC coordinator or visit http://www.imc.wvu.edu. Those wishing to pursue either the general master’s degree or the IMC Certificate may access WVU graduate information at http://www.wvu.edu/~graduate. The WVU Admissions and Records online catalog is available at http://admissions.wvu.edu/graduate. Written requests for answers may also go to WVU, P.I. Reed School of Journalism, 112 Martin Hall, P.O. Box 6010, Morgantown, WV 26506-6010. The SOJ telephone number (304) 293-3505.
Graduate Faculty
† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.

Ogden Newspapers Endowed Visiting Professor
†George Esper, Honorary Ph.D. (WVU). Reporting, Writing on deadline, Feature writing, War correspondence.

Shott Chair in Journalism Professor
†Toni Loci, Master’s Degree in the Studies of Law (Pitt. Sch. of Law). Media law, public affairs reporting and media writing.

Associate Professors
†Ralph E. Hanson, Ph.D. (Az. St. U.). Reporting, Editing, Research.
*Christine M. Martin, M.A. (U. Md.). News and feature writing, Journalism history.
†R. Ivan Pinnell, Ph.D. (U. Denver). Public relations.

Assistant Professors
Sammy Lee, Ph.D. (Penn. St.). Advertising campaigns, Direct marketing, Integrated marketing communications.
Steve Urbanski, Ph.D. (Duquesne U.). Ph.D. Teaches ethics, mass media and society and editing and design.

Emeriti Professors
Paul A. Atkins, M.A. (U. Va.).
John H. Boyer, Ph.D. (U. Mo.).
Charles F. Cremer, Ph.D. (U. Iowa).
Robert M. Ours, Ph.D. (C. William & Mary).
Guy H. Stewart, Ph.D. (U. Ill.). Dean.
William R. Summers Jr., M.A. (U. Mo.).
Pamela Yagle. M.S.J. (WVU).

Master of Science in Journalism
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 various aspects of mass communication to better understand and to cope not only with the increased complexity of their own majors but also with fields outside mass communications.

The program, created to assist each student in reaching his/her potential as a worker, teacher, or scholar in mass communications, prepares a master’s candidate not only for a first job but also for long-term and productive career development through the study of mass communications and related fields. Students who obtain the M.S.J. degree should excel in professional skills.

The M.S.J. program is intended to afford liberal arts graduates an opportunity to concentrate advanced study in mass communication; to provide intensive study for persons who have undergraduate journalism training and who wish to pool their journalistic skills with extensive knowledge in another substantive area or areas (e.g., political science, economics, science); and to 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 recipients of baccalaureate or equivalent degrees from institutions of higher learning. Applicants should have combined verbal and quantitative Graduate Record Examination (GRE) Aptitude Test scores totalling at least 1000 and should have earned at least 3.0 cumulative grade point averages (GPAs) on a 4.0 scale. Each master’s candidate should submit to the School of Journalism director of graduate studies a detailed essay explaining why the student wishes to undertake graduate study in journalism, what the student hopes to glean from the graduate journalism program, what his/her 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 non-returnable supporting material to the School of Journalism director of graduate studies. 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 graduation 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 319 and/or N-E 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 (N-E 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 one or both of these 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 Graduate Studies Committee. 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 student’s direction. 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 P/F without written permission of the graduate director.

**Assistantships and Tuition Waivers**

Approximately five assistantships are available in the School of Journalism each academic term. Graduate assistants teach laboratories and assist professors with their courses. Interns work in mass communications-related jobs on campus to obtain solid professional experience.

Students may receive stipends for the academic term and may apply for tuition remission for the entire year. Although sometimes renewed for a second or third term, assistantships and internships are granted for one academic term. Graduate assistants and interns work an average of 20 hours per week during the academic year.

Persons who wish to be considered for assistantships or internships should have their applications on file with the School of Journalism director of graduate studies before March 1 of the same year.

**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 wish to pursue a Ph.D., to teach in a community college, or to conduct research in some areas of mass communications. 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 theoretical study of an important aspect of mass communications.

Professional: The professional track is designed primarily for persons who wish to become excellent practitioners in some field of mass communications and who have little desire to teach or to become mass communications researchers. Persons in the professional track normally take communication and outside area courses that will help them to become better practitioners. The program culminates in a professional project, which helps a student to extend his/her practical and theoretical knowledge about a given aspect of mass communications and should be a nonroutine project on which the student could work as a professional.

**Time Limitation**

Students must complete all graduate degree requirements, including either a thesis or a professional project, within seven years of starting 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 hours of acceptable graduate credit, including a thesis for six hours.
- As part of the 30 hours, a minimum of 18 hours, including the thesis, must be School of Journalism courses.
- Included in the 30 hours, students may take nine hours in a minor outside the School of Journalism.

**Professional:** a minimum of 30 hours of acceptable graduate credit, including a professional project for six hours.
- As part of the 30 hours, a minimum of 18 hours, including the professional project, must be 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.); and

Each M.S.J. candidate must take these courses in the following sequence over a three-term period:
- **Term 1:** JRL 600 and JRL 604 (fall)
- **Term 2:** JRL 620 (spring)
- **Term 3:** Various electives

In both programs 60 percent of the graduate credits submitted for the degree must be in courses numbered 500-799.

Every graduate student must complete coursework with a minimum 3.0 grade point average. The thesis or professional project will be graded as an S or U (satisfactory or unsatisfactory).

Except for thesis, professional project, and internship courses, no student may take a course on a P/F or S/U grade basis without prior approval of the director of graduate studies.

**Examination**

The master’s degree candidate will pass an oral examination on the thesis or professional project. In addition, the faculty will critique and expect revisions of a thesis or professional project while evaluating the candidate’s general writing skill.

The kinds of courses taken in the M.S.J. program largely depend upon each student’s background and interests. The program is intended to accommodate students’ various academic and professional specializations.

A student typically will focus all outside courses upon one area (e.g., biology, political science, history) although he/she may decide, after consultation with an advisor, to enroll in courses that fit into two or more outside areas. Master’s candidates select courses outside the School of Journalism in consultation with their advisors. These choices are contingent upon space availability and prerequisite requirements in the offering departments.

Each student must complete a thesis or a professional project involving original work in his/her area of interest. The master’s candidate should have a thesis or professional project proposal written by the end of the academic term in which the first 12 hours of coursework are completed.

Each student is responsible for developing ideas for the thesis or professional project. Through consultations with journalism faculty, the student can determine faculty interests and areas of expertise; he/she then refines a preliminary proposal with a significant, feasible idea in mind.

Normally students will enroll for six credit hours of theses/professional project courses. The director of graduate studies/Graduate Studies Committee must approve any deviations from this norm in writing and in advance.

In addition to this six-hour limit, no graduate student will be permitted to enroll in more than six hours of research and/or colloquium courses without written approval of the Graduate Studies Committee.

**Advisory Committee**

The student, with approval of the Graduate Studies Committee, selects a journalism faculty member who would be best able to chair his/her 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 Graduate Studies Committee members. With the chairperson, the student further refines the idea to a “preliminary proposal” stage, in which concepts 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 his/her Advisory Committee, subject to their willingness to serve. The Advisory Committee must consist of no fewer than four members,
one from outside the School of Journalism; two persons must be members of the WVU graduate faculty; others may be associate members. The fourth member of all these committees must be affiliated with the graduate program at an accredited university.

**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 these groups are required of all students (including those in the teaching research track).

Working under the Advisory Committee’s guidance, each student prepares a complete thesis or project proposal, extended from the preliminary proposal. Guidance for designing a proposal is available from the director of graduate studies.

The student then has a consultative Advisory Committee meeting, during which he/she discusses final revisions of and refinements to the proposal. Notices of a public meeting (to which students are invited) must be in all School of Journalism faculty members’ mailboxes and posted outside the dean’s office at least two weeks before a meeting. One copy of a thesis or project proposal must be on reserve in the Paul A. Atkins Reading Room (301 Martin Hall).

**Thesis Approval**

After a consultation, the committee votes to accept or to reject a proposal. The student whose proposal is approved works closely with a committee to complete his/her thesis or project. A master’s candidate must inform his/her committee and consult its members for advice (as needed and as desired by them) while the thesis or project develops.

After each advisory committee member is satisfied with the work, a public oral examination is scheduled. All School of Journalism faculty must have two weeks’ notice or a notice via their mailboxes; an announcement must also appear outside the dean’s office (113 Martin Hall). One copy of the final thesis or project must be on reserve in 301 Martin Hall. Students also should make certain that they file their shuttle sheets with the director of graduate studies in journalism two weeks before their oral defense dates.

Only committee members may vote on acceptance or rejection of a thesis. Although someone may cast a recorded dissenting vote, a majority vote is sufficient to approve a thesis. Furthermore, at least three signatures (two of which must belong to graduate faculty members) must appear on the approval sheet. If one committee member is outvoted and believes he/she cannot sign the approval sheet, he/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.

Master’s candidates should carefully follow Kate Turabian or another approved stylebook during preparation of a thesis or professional project.

Each Advisory Committee chairperson will ultimately decide whether the candidate has properly made the requested final corrections (after the oral examination); that chairperson also will check the style and form of the final word-processed version. Every graduate student is responsible for delivering either four copies of a final thesis or two copies of a professional project to the School of Journalism office; he/she also must file a thesis/project electronically before the academic term’s deadline.

**Maintenance of Scholarship**

A journalism graduate student must maintain satisfactory progress toward his/her M.S.J. The candidate’s graduate record begins with the first course credited toward the master’s and includes all subsequent courses. Every graduate student must maintain at least a 3.0 grade point average and complete all requirements within seven years. Anyone who fails to meet this standard will be dropped from the program.

Each person working toward the M.S.J. must register for at least one hour during every regular (fall and spring) term. This enrollment may be in coursework or in Journalism 697 (Research).
International Students

Believing that mutual benefit is derived when scholars from other countries study in the P.I. Reed School of Journalism, the faculty welcomes international students. At the same time the faculty recognizes that journalism, more than any other field, requires language skill. To profit from journalism study, international students must have a ready understanding of English. They should expect to follow rapid speech in interviews, press conferences, public addresses, and classroom lectures as well as to deal with abstract ideas communicated in English. International students must maintain the same 3.0 grade point average required of other graduate students.

Recognizing possible language difficulty, the School of Journalism, therefore, offers international students a transition academic term. If they are not fluent in English and cannot earn a Journalism Qualifying Exam competitive score to demonstrate comprehensive knowledge of English fundamentals (grammar, punctuation, syntax, and spelling), students will be offered one academic term of undergraduate study (not for graduate credit), which will enable them to sharpen their language skills. Such a transition time will permit international students to adapt to their American system of journalism and to their new cultural environment.

Advertising (ADV)

539. Seminar in Advertising Management Problems. 2 Hr. PR: Major or minor in advertising. Application of the study of advertising research, law, and theory in the preparation of a national advertising campaign. Aspects of campaign. Aspects of the campaign to cover marketing, research, creative, media, sales promotion, and presentation

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

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 A-Z. 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. 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.)

Integrated Marketing Comm (IMC)

610. Introduction to IMC. 3 Hr. PR: Admissions to the program. Overview of advertising, Public relations, direct marketing, communications, promotions and online communications.

611. Research Methods. 3 Hr. PR: IMC 610. The study of qualitative and quantitative methods common to research for IMC. Processes used for structuring focus groups, sampling, measurement, analytical procedures and data will be studied.

612. Audience Behavior. 3 Hr. PR: IMC 610 and IMC 611. Consumer decision-making, attitude development and change, segmentation, psychographics, demographics, satisfaction and cognitive dissonance.

613. IMC Brand Management. 3 Hr. PR: IMC 610 and IMC 611. This class looks at creating and communicating a brand’s image. The kinds of information and research needed to create a successful brand image for a product or service will be explored.

614. IMC Media Analysis. 3 Hr. PR: IMC 610 and IMC 611. This class will be dedicated to the understanding of media planning including media selection, market analysis, media data and plan development.

615. IMC Creative Strategy. 3 Hr. PR: IMC 610 and IMC 611 Creative strategies from an IMC perspective, including advertising, public relations, direct marketing and web-base, communications.

616. Direct Marketing Communication. 3 Hr. PR: IMC 610 and IMC 611. Examines the concepts, strategies and applications involved in direct marketing communications as well as the use of database management, creative executions and communicating via the Internet.

617. IMC Sales Promotion Communications. 3 Hr. PR: IMC 610 and IMC 611. Sales promotion and its role as an IMC communications vehicle will be looked at. The effect of promotion techniques on both consumer-oriented and business-to-business audiences will be broken down and analyzed.

618. IMC Public Relations. 3 Hr. PR: IMC 610 and IMC 611. Public relations tools for marketing communications: brochures, newsletter, press kits, web pages and event promotions.

619. IMC New Media. 3 Hr. PR: IMC 610 and IMC 611. The integration of new media into an existing IMC campaign will be studied. Examines the use of new media for interactive communications, relationship marketing and customer service.

620. IMC Measurement and Analysis. 3 Hr. PR: IMC 610 and IMC 611. This class will focus on how the IMC process uses consumer based testing, budgeting and the evaluation of campaign results.
621. IMC Seminar. 3 Hr. PR: IMC 610 and IMC 611. This class will look at IMC campaigns and issues facing IMC such as legal or ethical studies as well as new trends and politics facing the industry.

625. Advanced Creative Strategies. 3 Hr. PR: IMC 610 and IMC 615. Emphasizes creative aspects of executing an IMC strategy for clients. Requires application of strategy-building skills to create visual launch strategy. Discusses how to develop and execute coherent visual identity built around a comprehensive IMC strategy.

626. Advanced Direct Marketing. 3 Hr. PR: IMC 610 and IMC 616. A rigorous, “real-world” course in which students apply direct marketing and IMC knowledge acquired in previous courses to solve a direct marketing problem for a real client.

628. Advanced Public Relations. 3 Hr. PR: IMC 610 and IMC 618. Provides practical knowledge and experience in public relations. Readings, discussion, and assignments help students develop and produce public relations tools such as press releases, PSAs, speeches, and special events for a real world client.

636. Campaigns. 3 Hr. PR: IMC 610 and IMC 611. This is the capstone course where the students tie together the skills developed in prior courses and learn how to integrate them into a campaign maximizing the impact of marketing communications message.

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

**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 A-Z. 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.** 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.

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

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.)
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 75 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 training in prosthodontics 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 Division 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, and two one-year graduate practice residencies.

Graduates of both North American and international dental schools are considered for admission to the dental specialty programs in orthodontics and prosthodontics. Graduate assistantships are available in the second year of the endodontic program and the third year of the orthodontic and prosthodontic programs. Stipends are provided for the residency programs.

Information concerning admission requirements and courses of study may be obtained from the Office of Academic and Postdoctoral Affairs, WVU School of Dentistry, P.O. Box 9402, Health Sciences Center, Morgantown, WV 26506-9402. Telephone (304) 293-3549, fax (304) 293-4915, e-mail: kdavis@hsc.wvu.edu.
Faculty
† Indicates regular membership in graduate faculty.
* Indicates associate membership in graduate faculty.

Professors
† 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

Dental Hygiene
Amy D. Funk, B.S.D.H., M.S.D.H., Interim Director
e-mail: afunk@hsc.wvu.edu
1189 Health Sciences North
http://www.hsc.wvu.edu/sod/

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 Office of Academic and Post-doctoral Affairs, School of Dentistry. Applications should be filed by July 1 for fall admission and by October 15 for spring enrollment.

Admission Requirements
The program's admission requirements are as follows:
• 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.
• Have 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 the Graduate Record Examination (GRE) with an acceptable score.
• Submission of all information requested in the graduate application to the Office of Academic and Postdoctoral Affairs.

Degree Requirements
For the master of science degree, the following requirements must be met:
• Completion of a minimum of 36 semester credit hours: 25 required credit hours and 11 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
In order to earn a master’s degree in dental hygiene students must also meet the following:
• 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 from the students transcript. Credit hours for courses with a grade lower than C do not count toward degree requirements.

M.S. Curriculum

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EDP 610</td>
<td>Test and Measurement</td>
<td>3</td>
</tr>
<tr>
<td>EDP 613</td>
<td>Statistics</td>
<td>3</td>
</tr>
<tr>
<td>DTHY 678</td>
<td>Teaching Methods</td>
<td>2</td>
</tr>
<tr>
<td>DTHY 679</td>
<td>Clinic Instruction and Evaluation</td>
<td>2</td>
</tr>
<tr>
<td>DTHY 680</td>
<td>Critical Issues in Health Care</td>
<td>3</td>
</tr>
<tr>
<td>DTHY 681</td>
<td>Expanded Functions</td>
<td>3</td>
</tr>
<tr>
<td>DENT 691B</td>
<td>Computer Applications in Dentistry</td>
<td>2</td>
</tr>
<tr>
<td>DTHY 697</td>
<td>Research (Thesis)</td>
<td>6</td>
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<td>Research Methods</td>
<td>1</td>
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<td><strong>Total</strong></td>
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<td>25</td>
</tr>
</tbody>
</table>

Elective area(s) of dental hygiene specialization ..................................................... 11

Dental Hygiene (DTHY)

678. Dental Hygiene Teaching Methods. II. 2 Hr. PR: Consent. Concepts and principles of administration, curriculum, and classroom teaching unique to dental auxiliary education. Emphasis on overall role of the dental hygiene educator.

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.

682. **Enhancing Class Administration.** 2 Hr. The use of “office productivity” software to enhance classroom and clinic administration. Course targeted toward students destined for careers in dental hygiene or dental education.

685. **Research Methods for the Dental Hygienist.** 3 Hr. PR: EDP 613. Methods and techniques of research in dental hygiene. Major emphasis on planning and evaluating health programs, conducting oral health surveys, designing experiments and critically analyzing research results.

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.)

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.

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 that writing of their student’s 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 courses.

**Endodontics**

C. Russell Jackson, D.D.S., M.S., Chair
1067 Health Sciences North
http://www.hsc.wvu.edu/sod

**Degree Offered**

**Master of Science**

The School of Dentistry and its Department 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 Academic and Postdoctoral Affairs. Applicants will be processed in the School of Dentistry. Applicants approved for admission to the program will be notified soon after interviews are completed.
Admission Requirements
The program's admission requirements are as follows:
• Must have passed the National Dental Board Examination-Part 1 and Part 2.
• Must have earned a D.M.D. or D.D.S. degree.
• Must be a graduate of an accredited U.S. or Canadian Dental School.
• Must possess West Virginia state dental license.
• Must display 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.
• Must apply to the program through the Postdoctoral Application Support Service (PASS, www.adea.org/pass) and have all application materials in PASS by September 1. Please see the How To Apply section for more detailed information.

Degree 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 full-time advanced study and clinical training at the School of Dentistry.
• An approved master’s thesis based on original research completed during the course of study in an area related to endodontics.
• Must satisfactorily pass a final oral examination.
• Must complete all didactic and clinical work in the required curriculum.
• Must have demonstrated satisfactory clinical competency in endodontics.
• Completion of a minimum of 63 credit hours, including 35 hours of endodontic courses, a minimum of 11 hours of selected basic sciences subjects, six hours teaching practicum and a thesis (11 hours).
• Achievement of a 3.0 GPA or an overall competence in the student’s field. A minimum grade of B must be earned 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.

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.)

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, re plantation, 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.

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.)

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.
Pharmacology and Toxicology (PCOL)
760. Pharmacology and Therapeutics. (For dental and graduate students.) I. 5 Hr. PR: Second year dental students or graduate students with consent. Lecture and demonstrations relevant to explaining how drugs function in the human body. Team teaching by basic science faculty and clinical dental faculty.

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
1073 Health Sciences North
http://www.hsc.wvu.edu/sod

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 Office of Academic and Postdoctoral Affairs. Applications 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:
• Must have passed the National Dental Board Examination - Part I.
• Must have earned a D.M.D./D.D.S. degree, or its equivalent.
• Must be proficient in the English language.
• Must provide the most recent TOEFL score (if you are a foreign applicant).
• Must submit undergraduate transcripts.
• Must display 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.
• Must apply to the program through the Postdoctoral Application Support Service (PASS, www.adea.org/pass) and have all application materials in PASS by September 1. Each applicant must also have a MATCH number from National Matching Services (www.natmatch.com). Please see the How To Apply section for more detailed information.

Degree Requirements
For the master of science degree the following requirements must be met:
• Fulfillment of University requirements for graduate study.
• Thirty-four months (three academic years and two summer sessions) of consecutive full-time advanced study and clinical training at the School of Dentistry.
• An approved master’s thesis based on original research completed during the course of study in an area related to orthodontics.
• Must satisfactorily pass the Mock ABO clinical examination which includes a written and an oral examination.
• Must pass the written component of the ABO examination.
• Must complete all didactic and clinical work in the required curriculum.
• Must have demonstrated satisfactory clinical competency in this field.
• Completion of a minimum of 77 credit hours, including 49 hours of orthodontic courses and a minimum of 13 hours of selected basic science subjects, two hours of teaching practicum, and a research/thesis (13 hours).
• Achievement of a 3.0 GPA or an overall competence in the student’s field. A minimum grade of B must be earned 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.

**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.


621. *Orthodontic Mechanics.* I, II, S. 1-4 Hr. Seminar and laboratory course on basic orthodontic mechanical properties.


625 A-Z. *Orthodontic Seminar.* I, II, S. 1-8 Hr. PR: Consent. Discussions including all branches of dental science, with special emphasis on the orthodontic interest. Assigned topics and articles in the literature discussed.


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.)

716. *Craniocranial Growth and Maturation.* 1 Hr. PR: Consent. The current concepts of craniofacial growth and maturation are presented and integrated for application to clinical problems.

**Prosthodontics**

Mark W. Richards, D.D.S., M.Ed., F.A.C.P., Director

1199B Health Sciences North

http://www.hsc.wvu.edu/sod

**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 Academic and Postdoctoral Affairs. Applications will be processed in the School of Dentistry. Applicants approved for admission to the program will be notified soon after interviews have been completed.
Admission Requirements
The program’s admission requirements are as follows:
• Must have passed National Dental Board Examination – Part I.
• Must have earned a D.M.D./D.D.S. degree, or its equivalent.
• May be considered for admission if graduated from non-ADA accredited (international) dental school.
• Must be proficient in the English language.
• Must provide the most recent TOEFL score (if you are a foreign applicant).
• Must display 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.
• Must apply to the program through the Postdoctoral Application Support Service (PASS, www.adea.org/pass) and have all application materials in PASS by October 1. Please see the How To Apply section for more detailed information.

Degree Requirements
For the master of science degree, the following requirements must be met:
• Fulfillment of University requirements for graduate study.
• Thirty-three months (three academic years and two summer sessions) of consecutive full-time advanced study and clinical training at the School of Dentistry.
• An approved master’s thesis based on original research completed during the course of study in an area related to prosthodontics.
• Must satisfactorily pass a final oral examination.
• Must complete all didactic and clinical work in the required curriculum.
• Must have demonstrated satisfactory clinical competency in this field.
• 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.
• Achievement of a 3.0 GPA or an overall competence in the student’s field. A minimum grade of “B” must be earned 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, temporomandibular dysfunction, maxillofacial prosthetics 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

James Brick, M.D., Interim Dean
Thomas M. Saba, Ph.D., Associate Vice President, Health Sciences/Associate Dean for Research and Graduate Education
Kevin A. Halbritter, M.D., Associate Dean, Hospital Services
James P. Griffith, M.D., Assistant Dean, Student Services, Charleston Division
Norman D. Ferrari, M.D., Associate Dean, Student Services and Academic Progress
Timothy Palencik, Associate Dean, Finance and Administration
Fred L. Minnear, Ph.D., Assistant Dean, Graduate Studies
Mary Beth Mandich, Ph.D., Associate Dean for Professional and Undergraduate Programs
James M. Shumway, Ph.D., Associate Dean, Medical Education
James M. Stevenson, M.D., Associate Dean, Development and Continuing Medical Education
G. Anne Cather, M.D., Associate Dean, Student Services and Professional Development
C.H. Mitch Jacques, M.D., Dean, Eastern Division
Rosemarie Cannarella, M.D., Assistant Dean for Student Services, Eastern Division
Clark Hansbarger, Associate Vice President, Dean, Charleston Division
Barry Linger, Ed.D., Assistant Dean for Clinical Education, Eastern Division
Konrad C. Nau, M.D., Associate Dean, Eastern Division
Jeffrey Neely, M.D., Associate Dean, Clinical Services
Kathleen C. Bors, M.D., Assistant Dean, Student Services, Charleston Division
Maria Kolar, M.D., Associate Dean, VA Affairs
James O’Donnell, Ph.D., Assistant Dean, Research
Jamal Mustafa, Ph.D., Assistant Dean, Research
Leslie Miele, Chief Administrative Officer

http://www.hsc.wvu.edu/som

Degrees Offered

M.D., Doctor of Medicine
M.D./Ph.D., Joint Doctor of Medicine and Doctor of Philosophy
Ph.D. in Biochemistry and Molecular Biology
Ph.D. in Cancer Cell Biology
Ph.D. in Cellular and Integrative Physiology
Ph.D. in Exercise Physiology
Ph.D. in Immunology and Microbial Pathogenesis
Ph.D. in Neuroscience
Ph.D., Pharmaceutical and Pharmacological Sciences
Ph.D., Public Health Sciences
M.H.S. in Pathologists’ Assistant
M.S., Exercise Physiology
M.S. in School Health Education
M.O.T., Master of Occupational Therapy
D.P.T., Doctor of Physical Therapy
M.P.H., Master of Public Health

Introduction

The West Virginia University School of Medicine shares outstanding facilities in the Health Sciences Center with the other health-related professional schools of the University. The Ruby Memorial Hospital offers sophisticated medical technology, including magnetic resonance imaging, lithotripsy, and laser surgery. 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 offer students the opportunity to investigate rehabilitative and physical medicine. The Clark K. Sleeth Family Medicine Center opened new facilities in 1999. The Department of Human Performance and Applied Exercise Sciences incorporates exercise physiology, physical therapy, and occupational therapy.
Additionally, the Department of Community Medicine has graduate programs in public health (M.P.H.), and school health education (M.S.). These programs complement all of the other existing programs in the other health professions schools (dentistry, nursing, and pharmacy). The biomedical sciences graduate programs reside in the School of Medicine, as well as the School of Pharmacy, and offer graduate training in seven programs: biochemistry and molecular biology, cancer cell biology, cellular and integrative physiology, exercise physiology, immunology and microbial pathogenesis, neuroscience, and pharmaceutical and pharmacological sciences. Students enter the biomedical sciences graduate programs undifferentiated. They take a common core curriculum the first year and self-select into their specialty areas in year two. The Ph.D. program in public health sciences also resides in the School of Medicine. Students enter a common core curriculum in the first year and self-select into one of two tracks—social and behavioral sciences and population epidemiology and biostatistics.

Departments
Anesthesiology
Behavioral Medicine and Psychiatry
Biochemistry
Community Medicine
Emergency Medicine
Family Medicine
Human Performance and Applied Exercise Science
Medicine
Microbiology, Immunology, and Cell Biology
Neurobiology and Anatomy
Neurology
Neurosurgery
Obstetrics and Gynecology
Ophthalmology
Orthopedic Surgery
Otolaryngology
Pathology
Pediatrics
Physiology and Pharmacology
Radiology
Surgery

Committees
Academic Standards
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Admissions Committee/Graduate Biomedical Sciences
Admissions Committee/Medical Technology
Admissions Committee/Pathologists' Assistant
Admissions Committee/Occupational Therapy
Admissions Committee/Physical Therapy
Continuing Medical Education
Curriculum Committee
Distinguished Teacher Committee
Executive Faculty
Faculty Promotion and Tenure
Graduate Medical Education
Research Funding Development Grant Committee
Bridge Funding Grant Committee
Student Leadership
Van Liere Research Convocation and Faculty Research Day
Women in Health and Science

Chairs
David Wilks, M.D.
James M. Stevenson, M.D.
James O'Donnell, Ph.D. (Interim)
Alan Ducatman, M.D.
Todd Crocco, M.D.
James G. Arboogast, M.D.
Mary Beth Mandich, Ph.D.
James E. Brick, M.D.
John B. Barnett, Ph.D.
Richard D. Dey, Ph.D.
John F. Brick, M.D.
Julian E. Bailes, M.D.
Michael Vernon, M.D.
Judie Charlton, M.D. (Interim)
Sanford E. Emery, M.D.
Stephen J. Wetmore, M.D.
Barbara Ducatman, M.D.
Giovanni Piedimonte, M.D.
Robert L. Goodman, Ph.D.
Mathias P. Frick, M.D.
Richard Vaughan, M.D. (Interim)
Michelle Nuss, M.D.
Bruce Freeman, M.D.
Albert Berrebi, Ph.D.
Mary Ellen Koenn, M.S.
Cheryl Germain, M.H.S.
Diana Colaianni, M.S., O.T.R.L.
Carol Waggy, P.T., Ph.D.
James Heilsley, M.D.
Chris Martin, M.D.
David Deci, M.D.
Fred Butcher, Ph.D.
Gregory Konat, Ph.D.
Norman Ferrari, M.D.
James O'Donnell, Ph.D.
Jeffrey Coben, M.D.
James O'Donnell, Ph.D.
G. Anne Cather, M.D.
Paul Gordon, Ph.D.
Linda Vona-Davis, Ph.D.
Graduate Faculty
† Indicates regular membership in the graduate faculty.
* Indicates associate membership in the graduate faculty.

Biochemistry

Professors

*Diana S. Beattie, Ph.D. (U. Pitt.). Dean, Oman Medical College Mitochondrial biogenesis, Mitochondrial metabolism, Heme biosynthesis, Interrelationship of heme and protein synthesis.
†Marilyn I. Evans, Ph.D. (U. Wash.). Emeritus. Regulation of genes by estrogen.
†Steven Frisch, Ph.D. (U. Ca., Berkley). Signal transduction connecting cell adhesion with apoptosis; tumor suppressor gene mechanisms and drug discovery.
*Charles L. Harris, Ph.D. (U. Ill.). Structure and function of transfer RNA and aminoacyl-tRNA synthetases, and tRNA Modification.
†Qiang Ma, Ph.D. (Rutgers U.). Regulation of gene expression by oxidative chemicals.
†Vazhaikkurichi M. Rajendran, Ph.D. (U Madras, India). Regulation of fluid and electrolyte transport proteins during pathophysiological conditions.
†Lisa M. Salati, Ph.D. (U. Minn.). Regulation of gene expression by fatty acids.
†Knox Van Dyke, Ph.D. (St. Louis U.). Chemiluminescence in human cells, Effects of anti-inflammatory drugs on chemiluminescence. Role of inflammation in diabetes and blindness.

Associate Professors

†Peter H. Mathers, Ph.D. (Ca. Inst. of Tech.). Molecular biology of developing visual and auditory systems.
†Andrew K. Shiemke, Ph.D. (Oregon Grad. Inst.). Biological oxidation of methane and cyanide; Metalloproteins and bioinorganic chemistry.
†William F. Wonderlin, Ph.D. (Johns Hopkins U.). Biochemistry and physiology of ion channels; intracellular ion channels.

Assistant Professors

†Elena Pugacheva, Ph.D. (Engelhard Inst. of Mol. Bio., Russia). Regulation of cell motility and adhesion.
†Visvanathan Ramamurthy, Ph.D. (Weslyan U.). Molecular and biochemical basis behind inherited blinding diseases.
†Maxim Sokolov, Ph.D. (Weizmann Inst. of Science, Israel). G protein mediated signaling in retinal photoreceptors.
†Sepideh Zareparsi, Ph.D. (Oregon Health Science U.). Genetic basis of age-related eye diseases.

Community Medicine

Professors

James Helmkamp, Ph.D. (U. of Pitt.). Descriptive epidemiology of occupational and recreational injuries.

School of Medicine
Peter Shaffron, Ed.D. (WVU). Injury prevention, Driver behavior, impact of physical fitness on the older driver.

**Associate Professors**
Michael Hendryx, Ph.D.

**Assistant Professors**
Rachel Abraham, M.D. (U. of Bangalore, India). Bridging the gap between medicine and public health.
Robert Bossarte, Ph.D.
Mary Carter, Ph.D. (U. of Mass.). Health outcomes among nursing home residents.
Lan Guo, Ph.D. (WVU). Bioinformatics and information integration.
Thaddeus Herzog, Ph.D. (Harvard). Assistant Professor. Smoking Cessation for adults and adolescents. Stage models of health behavior change.
Chuanfang Jin, M.D. (ShanXi Med. U., China). Medical and psychological effects of industrial solvents.
Christopher Martin, M.D., M.Sc. (U. of Edmonton, Canada). Residency director, Occupational medicine physician training program. Environmental medicine, Toxicology of metals.
Priscalah Mujuru, Dr. PH (U. of Pitt.). International health education, Prevention of injury and occupational health diseases among young workers.
Nancy O’Hara Tompkins, Ph.D. (U. of Md.). Youth physical activity, Obesity prevention.
Kimberly Williams, Ph.D. (McMaster U., Canada). Effects of yoga therapy on low back pain.
Bei Wu, Ph.D. (U. of Mass.). Minority aging, Dementia and caregiving.
Joel Halverson, Ph.D. (WVU). Medical geography, geographic information systems.

**Instructors**
Stephanie Frisbee, M.S.C.
Candice Hamilton, M.P.H.
Toni Morris, M.S. (WVU). First aid instruction, Relationship of acting techniques to effective classroom instruction.

**Sr. Lecturers**
Janet Hunt, M.P.H. (U. of Tenn.). Community development, Health communication.

**Human Performance and Applied Exercise Science**
**Division of Exercise Physiology**

**Professors**
Stephen E. Alway, Ph.D. (McMaster U.). Division Chair, Director of Graduate Studies. Nutritional and gene therapy approaches for muscle wasting, apoptosis, aging and sarcopenia.
Matthew Boegehold, Ph.D. (U. of Az.). Regulation of the microcirculation; Microvascular alterations in hypertension.

**Associate Professors**
Randall W. Bryner, Ed.D. (WVU). Vice Chair, Director of Undergraduate Education. Reproductive physiology, diabetes and obesity, uncoupling protein and metabolism.
Robert Brock, Ph.D. (U. Western Ontario). Diabetic microvascular dysfunction in the liver.


Laurie Gutmann, M.D. (WVU). Neurological disease.


**Assistant Professors**

Daniel Bonner, M.S. (WVU). Cardiac rehabilitation.

Paula Briggs, M.S. (WVU). Aquatic therapy and rehabilitation.


Ming Pei, Ph.D. (Beijing Medical U.). Tissue engineering, cartilage and injury, sports injuries.

Lori A. Sherlock, M.S. (WVU). Aquatic therapy, diabetes.


S. Sendhil Velan, Ph.D. (U. of Madras), Obesity, diabetes, magnetic resonance spectroscopy.

David L. Williamson IV, Ph.D. (Ball St. U.). Muscle protein synthesis, AMPK activation by aging and obesity.

**Instructor**


**Occupational Therapy**

**Associate Professors**

Robert Chetlin, Ph.D. (WVU). CSCS. HFI.

Anne F. Cronin, O.T.R./L., Ph.D. (U. of Fla., Webster U., U. of Mo.). FAOTA.


**Assistant Professors**

Donna J. Colaianni, M.S. (U. Ind.). Certified hand therapist.


Steve Wheeler, Ph.D. (U. Va.). Associate division chair.

**Physical Therapy**

**Professors**

MaryBeth Mandich, P.T., Ph.D. (WVU). Chair, Pediatric and neuroscience physical therapy.

John J. Petronis, P.T., M.S. (WVU). Orthopedics physical therapy.


**Associate Professors**


Corrie Mancinelli, P.T., Ph.D. (WVU). Anatomy and orthopedic physical therapy.

Anne Swisher, P.T., Ph.D., C.C.S. (WVU). Graduate and distance education coordinator, cardiopulmonary physical therapy, Exercise physiology.

Ralph Utzman, P.T., M.P.H., Ph.D. (VCU). Academic coordinator of clinical education, Junior level, Basic principles of physical therapy, Organization/management.

**Assistant Professors**


Dina Jones, P.T., Ph.D. (Pitt).

Carol Waggy, P.T., Ph.D. (WVU). Anatomy and hand physical therapy.

**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.

Professors

*Kenneth Landreth, Ph.D. (U. Wash.). Immunology, Developmental immunobiology, Lymphopoiesis.
*Robert S. Pore, Ph.D. (U. Ca.). Mycology, Pathobiology of prototheca sp. and the mycoses, Biotechnology projects include microbial bioconcentration and biopolymer production.
*Rosana Schafer, Ph.D. (Temple). Immunology. Immune response to infection by intracellular pathogens.

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.
*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

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David Weissman, M.D. (Nwstrn. U.). Immunology, Pulmonary immune responses, Effect of airway disease and smoking on immune function of the lung.

Neurobiology and Anatomy

Professors

James L. Culberson, Ph.D. (Tulane U.). Comparative vertebrate neuroanatomy of mammalian somato-sensory systems.
Aina Puce, Ph.D. (U. of Melbourne, Australia).
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.
Robert Wysolmerski, Ph.D. (St. Louis U.). Endothelial cell function.

Associate Professors

Ariel Agmon, Ph.D. (Stanford). Electrophysiology and morphology of developing cortex.

Assistant Professors

Benjamin Ramsden, Ph.D. (Swinburne U Australia). Neurobiology of vision.
Tim Nurkiewicz, Ph.D. (WVU). Cardiovascular effects of inhaled irritants.
Zoe Goecckler, M.D. (St. Louis U.). Endothelial cell function.

Pharmacology and Toxicology

Professors

Matthew Boegehold, Ph.D. (U. Az.) Regulation of the microcirculation, Microvascular alterations in hypertension.
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.
Lisa M. Salati, Ph.D. (U. Minn.). Regulation of RNA processing by nutritional factors.
David J. Smith, Ph.D. (WVU). Alterations induced by analgesics and anesthetics in monoaminergic and opiate neuronal transmission, Pain reactions.

Associate Professors

Grazyna D. Szklarz, Ph.D. (Clarkson U.). Structure and function of cytochrome P450.
William F. Wonderlin, Ph.D. (Johns Hopkins U.). Ion channel pharmacology, Physiological development of ion channels.

Physiology and Pharmacology

Professors

Matthew Boegehold, Ph.D. (U. Az.). Physiology and pathophysiology of the micro-circulation.
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).
Robert L. Goodman, Ph.D. (Pitt.). Neuroendocrine control of gonadotropin secretions.
Pingnian He, Ph.D., M.D. (U. Ca., China Med.). Cardiovascular physiology, Microcirculation.
Michael D. Johnson, Ph.D. (Mich.). Neural and hormonal control of renal function and blood pressure.
Michael G. Mawhinney, Ph.D. (WVU). Etiology of prostatic neoplasms. (Primary appointment in surgery.)
Jamal S. Mustafa, Ph.D. (Lucknow U. India). Assessment of visual functions. (Primary appointment in ophthalmology.)
Bernard Schreurs, Ph.D. (U. Iowa). Learning, Memory, Synaptic plasticity, Functional imaging. (Primary appointment with Blanchette Rockefeller Neurosciences Institute.)
George Spirou, Ph.D. (U. of Fla.). Sound localization, Axonal guidance, Development of synaptic connections. (Primary appointment in otolaryngology.)

Associate Professors

David G. Frazer, Ph.D. (Penn. St. and WVU). Pulmonary function testing, Inhalation exposure. (Primary appointment with NIOSH.)
Stanley Hileman, Ph.D. (U. Ky.). Neurobiology of food intake and reproduction.
Robert Mercer, Ph.D. (U.N.C. — Chapel Hill). Physiology and patho-physiology of the lungs. (Primary appointment with NIOSH.)

School of Medicine
Judy M. Muller-Delp, Ph.D. (U. Missouri). Effects of aging on the cardiovascular system.
Eisuke Murono, Ph.D. (Rutgers U.). The examination of the potential effects of occupational chemicals. (Primary appointment with NIOSH.)
Anna A. Shevdova, Ph.D., D.Sc. (Moscow U.). Mechanism of chronic allergic skin and lung disease. (Primary appointment with NIOSH.)
Stanley Yokota, Ph.D. (U. of Ca.). Renal physiology, microcirculatory physiology, transport, and osmoregulation.

**Assistant Professors**

Timothy R. Nurkiewicz, Ph.D. (WVU). Microvascular control.
Han-Gang Yu, Ph.D. (St. U. N.Y.). Cardiovascular, Ionic mechanism of cardiac pacemaker activity.

**Research Assistant Professors**

Bunyen Teng, Ph.D. (Ohio St.). Cardiovascular system.

**Instructor Researcher**

Mohammed Nayeem, Ph.D. (Osmania U. India). Cardiovascular research.

**Lecturer**


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**Center on Aging/Education Unit**

http://www.ruralaging.org

The WVU HSC Center on Aging 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 HSC Center on Aging promotes and coordinates interdisciplinary teaching, research, public education and community outreach services in aging at WVU through the activities of its constituent units.

The HSC Center on Aging, as a unit within the Department of Community Medicine, 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 six elective hours selected on the basis of appropriateness to the individual student’s goals from an approved pool of aging-related courses.

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, Extension Services, and also Community Medicine.

Further information, assistance in academic program planning in multidisciplinary gerontology, and registration forms may be obtained from the West Virginia University HSC Center on Aging, P.O. Box 9127, Morgantown, WV 26506-9127. Telephone (304) 293-6771.

**Gerontology**

512/PUBH 681. *Public Policy of Aging*. 3 Hr. Policy analysis of public programs for senior citizens—Older Americans Act, Medicare-Medicaid and Social Security. Discussion of the future of these programs and societal response. Emphasis on senior programs in West Virginia. (Equivalent to GERO 412.)


681/PUBH 581. *Rural Gerontology*. 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.
Independent Study. 3 hr. Faculty supervised study of topics not available through regular course offerings.

Fundamentals of Gerontology. 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.

Survey Methods. This course will provide students the scientific knowledge and practical skills used in survey research, with particular focus on question construction and development, questionnaire design, sampling and survey modes, interviewing techniques, and survey data analysis.

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) 293-6771.

Biomedical Sciences Graduate Programs
Fred L. Minnear, Ph.D., Assistant Dean for Graduate Studies, Director, M.D./Ph.D. Scholars Program
fminnear@hsc.wvu.edu
Albert Berrebi, Ph.D., Chair, Biomedical Sciences Admission Committee
aberrebi@hsc.wvu.edu
Claire Noel, Assistant Graduate Director, WVU Health Sciences
cnoel@hsc.wvu.edu
Penny Phillips, Staff Assistant, M.D./Ph.D. Scholars Program
pphillips@hsc.wvu.edu
http://www.hsc.wvu.edu/som/resoff/gradprograms/phd.asp

Overview
The WVU Health Sciences Center offers biomedical research training leading to the Ph.D. and M.S. degrees and the joint M.D./Ph.D. degree. Our Ph.D. and M.S. students matriculate into a common, integrated core curriculum including research laboratory rotations. This integrated first year allows students to build competence in key areas of contemporary science, gain exposure to our seven training programs, and network scientifically and socially. In the second semester, students customize their coursework by selecting from an array of program-specific electives. By April of year 1, students have acquired the necessary didactic and research knowledge to make an informed selection of a research advisor and one of our seven graduate training programs. M.D./Ph.D. scholars take the first two years of medical school, do research for three to four years in one of our seven (Ph.D.) training programs in the biomedical sciences or the Ph.D. training program in public health sciences under the guidance of a graduate faculty advisor, then complete the last two years of medical school.

Our seven graduate training programs are: biochemistry and molecular biology; cancer cell biology; cellular and integrative physiology; exercise physiology; immunology and microbial pathogenesis; neuroscience; and pharmaceutical and pharmacological sciences. The public health sciences program has two tracks — social and behavioral sciences and population epidemiology and biostatistics.

Successful completion of the Ph.D. degree requires a 3.0 GPA, A’s, B’s, or S’s in research and passage of the qualifying examination, which includes the defense of the research proposal and dissertation defense. A minimum of one first-author manuscript, based on the Ph.D. dissertation research, must be published or in press in a peer-reviewed journal before the formal defense of the dissertation.

The goal of our Ph.D. training programs is to train highly qualified students for academic and scientific careers as research investigators. The program provides the instructional and research background needed to enable doctoral candidates to complete an original Ph.D. project that advances the field and is acceptable for publication in peer-reviewed journals. This doctoral training serves as a foundation for further career development, which usually includes postdoctoral research training.
Admissions
Ph.D. Students
Applicants to the Ph.D. graduate programs in the biomedical sciences in the Schools of Medicine and Pharmacy apply directly (online application at http://www.hsc.wvu.edu/som/resoff/gradprograms/Ph.D.asp) to the Office of Research and Graduate Education. In addition, official transcripts and an official application for admission must be sent to the WVU Office of Admissions and Records, P.O. Box 6009, Morgantown, WV 26506-6009.

Applicants must have a bachelor’s or equivalent academic degree and excellent GPA and GRE scores. Three letters of recommendation and a personal statement are required. Students are invited in groups of 10–15 for paid, two-day visit/interviews from January through March. Students are admitted as a class by a common graduate admissions committee comprised of the graduate directors of each of our seven Ph.D.-degree granting programs, a senior Ph.D. student from the Graduate Student Organization (GSO), and the assistant dean for Graduate Studies.

Applicants should demonstrate a strong background in the biological sciences, inorganic and organic chemistry, physics, and mathematics through calculus. Courses in biochemistry, cell biology, molecular genetics, and physical chemistry, and experience in research are recommended. Students with demonstrated abilities but lacking some recommended courses should correct these deficiencies in the summer preceding or after enrollment. The average GPA for our students is 3.5 and the average GRE total is 1150 for verbal and quantitative with a 4.0 in the analytical essay.

M.D./Ph.D. Students
Formal application requires successful application to the School of Medicine through the American Medical College Application Service (AMCAS), followed by a separate application to the director of the M.D./Ph.D. scholars program. M.D./Ph.D. candidates interview with two current M.D./Ph.D. scholars, the director of the scholars program, and selected graduate faculty.

Financial Aid
All Ph.D. and M.D./Ph.D. students matriculated in the biomedical sciences graduate programs in the WVU Health Sciences Center receive full financial support during their training, provided that they remain in good academic and professional standing, have a 3.0 GPA, and perform with excellence in research. Stipend levels are considered for adjustment approximately every two years. Such support currently includes a $23,000 annual stipend, full tuition coverage, and student health insurance (hospitalization and disability).

Ph.D. Undifferentiated First-Year
Advantages of an undifferentiated first-year:
- Students acquire a fundamental yet in-depth exposure to relevant contemporary science.
- Students have one year to select a specific training program and research advisor.
- Larger number of available graduate faculty to select from for a research advisor.
- Students develop important scientific and social connections.
- Enhances future collaborations among research laboratories.

In Year 1, students:
- Take an integrated core curriculum that focuses on contemporary science and scientific integrity.
- Take specialized areas of science that align with the research strengths of the graduate faculty.
- Rotate through three active research laboratories supported by federal grants.

First semester: Cellular Structure and Function and Fundamentals of Integrated Systems are the two major courses. Journal clubs are incorporated and complement the didactic information, emphasizing discussions of scientific articles led by students and facilitated by the faculty. Biostatistics for the Basic Sciences provides an introductory background to statistics. Students take Discussions on Scientific Integrity that meets weekly, is led by individual faculty, and incorporates small and large group discussions of ethical and moral issues presented as scientific case studies.
Second semester: Molecular Biology, which also incorporates a journal club, is required of all students. In addition, students help design their own curriculum. Each of the seven graduate programs offers a module taught primarily from the current literature with an emphasis on discussions among students and faculty. Each student, with assistance from the graduate directors, selects two or three of these modules.

By April of Year 1, students are provided the necessary didactic and research experiences to make an informed selection of a research advisor and one of the seven graduate training programs.

In the First Summer, students take Scientific Writing. Students attend weekly lectures and complete assignments in two separate writing skills, a scientific journal article, and an NIH pre-doctoral fellowship grant.

**M.D./Ph.D. Scholars Program**

The WVU School of Medicine’s M.D./Ph.D. Scholars Program prepares students for academic careers that combine the practice and teaching of clinical medicine with laboratory investigation of disease mechanisms. The goal is to train independent investigators who can function in the future as physician-scientists. This joint training program requires at least seven years to complete.

**Medical School, Years One and Two**

Students enter the program in July before beginning medical school with an orientation to the various areas of research. Students choose one six-week research rotation before medical school starts in August. In years one and two, trainees take the integrated medical school basic science curriculum. All M.D./Ph.D. trainees participate in monthly research forums. At these forums, students present their research, learn from physician-scientist role models, and discuss academic career opportunities. During the summer of year one, trainees complete a rotation in one additional research laboratory to facilitate their final selection of a specific graduate program and research advisor by April of year two.

**Ph.D. Training**

After successful completion of years one and two of the medical curriculum and a passing USMLE Step 1 Examination, students enter the research portion of their Ph.D. training. Research opportunities are numerous and include cell and molecular biology, integrative physiology, immunology, exercise physiology, cardiovascular sciences, receptor biochemistry, bacterial pathogenesis, lung cell biology and environmental exposures, inflammation, molecular genetics, pharmacological sciences, neuroendocrine and reproductive biology, developmental biology, tumor invasion and angiogenesis, cancer cell biology, neurodegenerative disorders and stroke, functional brain imaging and cognitive behavior, learning and memory, as well as population-based outcomes and epidemiology studies relevant to public health. M.D./Ph.D. students can select to conduct research in one of the seven biomedical sciences degree-granting programs or the training program in public health sciences. Before transitioning back to the clinical clerkships, students brush up on their clinical skills by shadowing physicians, conducting physicals, and presenting case studies at the monthly M.D./Ph.D. forums.

**Medical School, Years Three and Four**

After the writing and successful defense of the doctoral dissertation, students complete years three and four of medical school in Morgantown.
**Biochemistry and Molecular Biology**

Dr. Lisa Salati, Graduate Program Director  
lsalati@hsc.wvu.edu  
http://www.hsc.wvu.edu/som/bmp

**Degrees Offered**

- Master of Science  
- Doctor of Philosophy  
- Joint Doctor of Medicine and Doctor of Philosophy

The disciplines of biochemistry and molecular biology seek to understand biology by exploring the functions of the molecular components of cells. A major goal of this program is to foster your ability for independent thought. To this end, our faculty cultivates an open, collegial relationship with one another and with our students. Close collaboration between scientists, the sharing of ideas, and open inquiry are critical components of our training plan. Our goal is to develop your independence as a scientist.

The hallmarks of graduate training in biochemistry and molecular biology are the emphasis placed on the use of the scientific literature in advanced coursework and on protecting time for laboratory research. In addition, you will have time for professional development through seminar presentation, attendance at national meetings, teaching opportunities, and seminar programs both within the department and throughout the Health Sciences Center.

Faculty research in the program can provide the student with training in multiple basic sciences areas:

- Regulation of gene expression  
- RNA processing  
- Cell survival mechanisms  
- Intermediary metabolism  
- Regulation of signal transduction by nutrients and metabolites  
- Drug-receptor interactions  
- Nutritional biochemistry  
- Oxidant-induced cellular stress  
- Structure/function relationships of proteins  
- Molecular basis of sensory mechanotransduction in hair cells  
- Molecular genetics of visual and auditory development  
- G protein-mediated signaling in retina photoreceptors  
- Genetic basis of age-related macular degeneration

These research areas provide fundamental knowledge toward both the normal health state and the amelioration of multiple diseases:

- Atherosclerosis  
- Blindness  
- Cancer  
- Deafness  
- Diabetes  
- Metabolic Disorders

**Doctor of Philosophy**

Upon successful completion of the undifferentiated first year, as outlined earlier, students choose a dissertation research advisor, at which time emphasis is placed on research. During the second year, specialized courses in biochemistry are offered as students continue their research projects. During subsequent years, students emphasize independent dissertation research, and a few formal courses may be taken.

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 graduate program in biochemistry and molecular biology offers a 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.

Cancer Cell Biology
Dr. Scott Weed, Graduate Program Director
sweed@hsc.wvu.edu

Degrees Offered
Doctor of Philosophy
Joint Doctor of Medicine and Doctor of Philosophy

Research is focused on the molecular basis of cancer etiology and progression. Three general areas of research interest are cellular signaling, tumor microenvironment, and therapeutics.

Cellular signaling focuses on protein and lipid-based signals within a cancer cell and the influence of these signals on tumor growth, motility, and invasion. Tumor micro-environment addresses the mechanism by which tumor cells receive and send signals to other tumor cells; regulation of angiogenesis, stromal cell-tumor cell interactions, and tumor immunology are also of interest. Therapeutics addresses the mechanism by which novel cancer therapeutics block tumor cell growth and metastasis, as well as strategies for development and delivery of standard and novel chemotherapeutics.

The doctor of philosophy degree in cancer cell biology is designed to immerse students into a research-intensive environment that utilizes many cutting edge techniques that are employed in state of the art cancer research. Research is conducted in the traditional mentor-student model, with the majority of mentors funded by the NIH, ACS, DoD and other organizations. The cancer cell biology curriculum is formulated in alignment with the recently formed national Cancer Biology Training Consortium (cancertraining.org), of which the WVU Mary Babb Randolph Cancer Center is a charter member. In addition to the fundamental areas above, students have the opportunity to learn and/or utilize techniques employed in bioinformatics, nanotechnology and clinical trial design. While the cancer cell biology program places a firm emphasis on basic science research, the program also accommodates translational-based research projects in alignment with an ongoing expansion in the Mary Babb Randolph Cancer Center. In addition to research and didactic work, students also participate in their own weekly seminar series, journal club and research meetings. Students completing the cancer cell biology program are well prepared to continue their work in competitive postdoctoral fellowship positions within academia or industry, as well as in more non-traditional career paths.

Cellular and Integrative Physiology
Dr. Bernard Schreurs, Graduate Program Director
bschreurs@hsc.wvu.edu
http://www.hsc.wvu.edu/som/resoff/gradprograms/cellularAndIntegPhysio.asp

Degrees Offered
Master of Science
Doctor of Philosophy
Joint Doctor of Medicine and Doctor of Philosophy

Research interests encompass the physiological and pharmacological sciences and cell biology. Current research areas include:

Cardiovascular function: physiology and pathophysiology of the microcirculation; vascular cell signaling; microvascular structure and function; endothelial permeability and tissue edema; role of caveolin in angiogenesis and pro-apoptotic function; blood flow regulation to the heart; cardiac pacemaker channels.

Endocrine control: neurobiology of food intake and reproduction; neural control of reproduction; insulin resistance and the metabolic syndrome.
Muscle function: mechanism of repetitive use injuries
Neural systems: mapping human brain regions of sound; audition; neural mechanisms of selective attention; membrane physiology; learning and memory; alzheimer’s disease.
Respiratory function: pulmonary cell physiology; pulmonary inflammation; occupational lung diseases; asthma; inhalation toxicology.

These research areas incorporate biochemical, immunological, electrophysiological, cellular, and molecular techniques. This interdisciplinary approach creates a variety of career opportunities for the graduating student.

The doctor of philosophy program in cellular and integrative physiology is designed to produce scientists of high quality, capable of conducting independent research, and being effective teachers. Students are exposed to all aspects of cellular and integrative physiology 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.

Qualifying Examination
After successful completion of the second academic year, the students take a two-part qualifying examination. The exam consists of an oral examination covering the major areas of physiology, followed by a written and oral research defense of the student’s research proposal. Upon successful completion of the qualifying examination, the student is admitted to candidacy for the degree of doctor of philosophy.

Our graduates obtain excellent postdoctoral research training opportunities in prestigious laboratories and develop productive and satisfying careers in academics, industry, and government. Graduates have become departmental chairs, industrial department heads, university vice presidents, and entrepreneurs.

A number of adjunct faculty from NIOSH (National Institute of Occupational Safety and Health), a CDC facility on the campus, actively participate in the didactic and research training of our Ph.D. students.

Exercise Physiology
Dr. Stephen E. Alway, Graduate Program Director
salway@hsc.wvu.edu
http://www.hsc.wvu.edu/som/resoff/gradprograms/exercisePhysio_main.asp

Degrees Offered
Master of Science
Doctor of Philosophy
Joint Doctor of Medicine and Doctor of Philosophy

The graduate program in exercise physiology fosters a high degree of collaboration among faculty with interests in clinical medicine and basic research. Current research areas include: cardiovascular health, muscle adaptation and injury, diabetes and endocrinology, coronary blood flow and dysfunction and muscle signaling in strength training and aging.

Our Ph.D. training program is intended to give exceptional students training in basic medical and scientific areas to prepare them for careers as effective and knowledgeable researchers and teachers in the broad field of exercise physiology/kinesiology. Our rigorous training develops the attitudes, habits, and skills that are signature characteristics of competitive, independent scientists.

Ph.D. students are expected to:
• Take an array of courses in exercise physiology, physiology, biochemistry, molecular biology, and pharmacology.
• Conduct independent research, analyze and interpret the data, and defend the findings and conclusions.
• Learn the process of writing and submitting grants.
• Present and discuss their research findings at national and international scientific meetings.
• Develop and improve teaching skills.
• Submit their dissertation research for publication prior to graduation.

The Division of Exercise Physiology actively engages in patient care, including rehabilitation, disease prevention, and risk-factor management, with an emphasis on cardiovascular disease, obesity, and diabetes.

**Doctor of Philosophy**

The Division of Exercise Physiology offers a program leading to the doctor of philosophy degree (Ph.D.) in the School of Medicine. The program is intended to give exceptional students knowledge in basic medical and scientific areas to prepare them for careers as effective and knowledgeable researchers and teachers in the broad field of exercise physiology/kinesiology. These goals are achieved by several means. Formal coursework in the sub-disciplines of exercise physiology, physiology, biochemistry, molecular biology, pharmacology, and neuroscience provides the student with the opportunity to develop a solid foundation in basic subject matter of medical sciences that can be applied to aspects of exercise and disease. The student’s knowledge base is further strengthened by participation in elective courses offered within the division, selected courses offered by other departments within the School of Medicine, and by departments in other colleges and schools of WVU. Research training and experience are provided under the guidance and supervision of the graduate faculty. The aim is to promote attitudes, habits, skills, and abilities that will enable the student to grow and develop as an independent scientist.

Graduate work involves a program of study and research individually designed to utilize the abilities and strengths of the faculty (e.g., cardiovascular disease, heart disease, aging, and diabetes/obesity) and accommodates the needs of the student within an area of specific interest. The exact content of a program of study for a particular student usually will differ from one student to another. Nevertheless, there are common goals, expectations, policies, and procedures that will be universal for all graduate students. Likewise, there are activities and responsibilities that will be common among all faculty advisors in the Division of Exercise Physiology.

**Master of Science**

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 clinical internship or a research thesis.

**Immunology and Microbial Pathogenesis**

Dr. John Barnett, Graduate Program Director
jbarnett@hsc.wvu.edu
http://www.hsc.wvu.edu/som/resoff/gradprograms/ImmunAndMicrobialPath_main.asp

**Degrees Offered**

- **Master of Science**
- **Doctor of Philosophy**
- **Joint Doctor of Medicine and Doctor of Philosophy**

Faculty members and students explore diverse areas of inquiry related to the medical implications of microbes and the human body’s response to them.

**Current Research Areas:**

- Immunology
- Effects of man-made pesticides and herbicides on the immune system
- Biochemistry of inflammatory cytokines
- Immune response in bacterial and viral diseases
- Regulation of signal transduction in immune responses
- Molecular aspects of cell signaling as it relates to cancer chemotherapy and cell growth
- Peptide and DNA vaccines for contraception
- Microbiology
• Physiology of pathogenic microbes
• Microbial genetics
• Mechanisms of bacterial pathogenesis
• Chemotaxis and motility
• Interactions between microbes and their hosts
• Molecular mimicry and structure-function relationship of bacterial virulence factors
• Microbial biofilms

The major purpose of graduate education in the program is research training. The basic philosophy of the program is that the students acquire a strong foundation in the basic concepts of immunology and microbial pathogenesis, 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, microbial pathogenesis, 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.

Program Requirements
Every student must take the required courses in the first year common core curriculum. Once students acquire a strong foundation in the core biomedical concepts, we offer flexibility in choosing advanced coursework in specific areas of interest. 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 this graduate program are required to participate in teaching at least one semester a year for two years (MICB 790 Teaching Practicum).

Doctor of Philosophy
After completion of the first-year, integrated core curriculum, the doctoral student takes additional coursework as determined by the student’s Graduate Research Advisory Committee. A minimum of six 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 is required. MICB 796 Seminar is a required course each semester that the student is in residence. 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 immunology and microbial pathogenesis graduate program has informal journal clubs in immunology and microbiology. These are designed to help students develop skills in reading, interpreting, and discussing current research articles. All students are expected to participate in one or more journal clubs.

For a description of faculty research interests, guidelines for graduate study in the graduate program of immunology and microbial pathogenesis or additional information, write to the Chairperson, 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/.

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 thesis representing original research and a final oral examination is required.
Neuroscience
Dr. Albert Berrebi, Graduate Program Director
aberrebi@hsc.wvu.edu
http://www.hsc.wvu.edu/som/resoff/gradprograms/neurosci_main.asp

Degrees Offered
  Doctor of Philosophy
  Joint Doctor of Medicine and Doctor of Philosophy

The neuroscience graduate program is an interdepartmental program 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 neuroscience, 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 sub-disciplines of neuroscience, including structural, cellular, systems, molecular, developmental, cognitive and behavioral biology. After completion of core courses, students conduct an original research project culminating in a doctoral (Ph.D.) dissertation.

Current Research Areas:
  Sensory neuroscience: biochemistry of hair cell transduction; optical imaging and single-unit electrophysiology of primate sensory cortex; mechanisms of auditory and visual system development; inhibitory neural circuits in the brain stem and cortex; synaptic development of thalamocortical circuits; molecular genetic control of retinal development and neural patterning; cell biology of G-protein-mediated signal transduction in vertebrate photoreceptors
  Cognitive neuroscience: sound recognition, spatial hearing and sensory integration using fMRI; neural basis of vision in health and disease; advanced imaging studies of visual signal processing and cognition
  Experimental Neuropathology: blood flow changes during stroke or after brain trauma
  Homeostasis: airway innervation and asthma; structural and functional changes in the hypothalamus of seasonal breeders; neurobiological pathways controlling food intake and obesity; plasticity in the amygdala; pharmacogenetics of cytochrome P450 2D6; ethanol neurotoxicity behavioral neuroscience.

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; 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.

Ph.D. Candidacy
  To be admitted to candidacy for the Ph.D. degree, the student must pass a qualifying examination and present a 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.

Pharmaceutical and Pharmacological Sciences

Dr. Peter Gannett, Graduate Program Director
pgannett@hsc.wvu.edu
http://www.hsc.wvu.edu/sop/graduate_programs/phd_specializations.html

Degrees Offered

Master of Science
Doctor of Philosophy
Joint Doctor of Medicine and Doctor of Philosophy

The pharmaceutical and pharmacological sciences graduate program has two pathways administratively under the direction of the School of Pharmacy’s associate dean for research and graduate programs. The graduate faculty consists of mentors in scientific disciplines from Health Sciences Center departments and NIOSH. The Health Outcomes Research Pathway is housed in the Pharmaceutical System and Policy Department of the School of Pharmacy. The Pharmaceutical and Pharmacological Sciences Pathway administrative center is in the Department of Basic Pharmaceutical Sciences. Application for admission into the Health Outcomes Research Pathway is made through the Department of Pharmaceutical Systems and Policy. Admission into the Pharmaceutical and Pharmacological Sciences Pathway occurs during the first year of the Health Sciences Center undifferentiated program.

For a complete description of the Health Outcomes Research Pathway, see http://www.hsc.wvu.edu/sop/psp/programs/phd.html.

Pharmaceutical and Pharmacological Sciences Pathway

For the pharmaceutical and pharmacological graduate program research interests are complementary to a focus on drug discovery and development. Key areas of research interest and expertise are in:

- Drug discovery science: in silico drug design; medicinal chemistry; bioanalytical chemistry
- Drug metabolism: pharmacokinetics; pharmacogenomics; enzyme structure-activity relationships; toxicology mechanisms
- Drug delivery: formulation; drug transport mechanisms; nanopharmaceutics; polymer-based drug delivery
- Molecular therapeutics: drug target identification and validation; nucleic acid-based therapeutics; protein-based therapeutics; phosphodiesterase inhibitors
- Pharmacology: cardiovascular pharmacology; pulmonary pharmacology; neuropharmacology, blood brain barrier
- Toxicology: drug-induced adverse effects; free radical toxicology and carcinogenesis; pulmonary toxicology; drug interactions
- Translational research: pre-clinical and clinical testing; cancer nanotechnology; pharmaceutical technology and processes

The Computational Chemistry Molecular Modeling (CCMM) Laboratory is a focal point for drug discovery at WVU.

Health Outcomes Research Pathway

The Ph.D. pathway in health outcomes research is a degree that focuses on the scientific design, data collection, and analysis of the end results of medical care. It focuses on quality, cost-effectiveness, and the effect of treatment on quality of life in patients. Outcomes research evaluates the effectiveness of health interventions through changes in outcomes such as improvements in patient functional status, satisfaction with care, and mortality. Apart from traditional experimental and quasi-experimental designs, outcomes research methodology embraces epidemiological research designs (such as retrospective or prospective, longitudinal or cross-sectional, case-control or cohort study designs), econometric modeling (decision
analysis) or pharmacoeconomic methods (cost-benefit and cost-effectiveness analyses), and survey research methods (such as quality of life measurements and satisfaction with care).

**Goals of the Health Outcomes Research Pathway**

To prepare highly qualified graduate students for careers in academia, industry, government, and institutional settings.

To advance research in health outcomes research and pharmacoeconomics, pharmaceutical care provision, and health promotion and disease prevention.

To participate in scholarly research by collaborating on projects with faculty and students within the University and with researchers, administrators, and marketers outside the University.

To provide consultative services to pharmacists, the pharmaceutical industry, government health agencies, and other interested constituents in the areas of faculty and graduate student expertise.

**Requirements for Health Outcomes Research Pathway**

The doctor of philosophy degree in health outcomes research requires a minimum of 72 semester credit hours (including those transferred hours from the student’s master’s work). The 72 hours include a minimum of 60 credits of coursework plus 12 hours of dissertation research. The department’s course requirements for the doctoral program include: (a) core courses, (b) elective courses in major and minor areas, (c) one hour of department graduate seminar each semester of the program duration, and (d) dissertation research hours. For a doctoral student to be classified as a Ph.D. candidate, he/she must: (1) have completed all graduate course requirements stipulated in the plan of study, (2) have a minimum of 3.00 GPA, (3) have passed both the written and oral qualifying examinations, and (4) fulfill both teaching and scholarly activities expected of a good-standing graduate student.

After satisfactory completion of oral and written qualifying examinations, the student also needs to complete and present a dissertation research proposal in order to demonstrate his/her ability to conduct independent research. Students with a bachelor degree and those without a research master’s degree who are admitted to the program are required to complete an M.S. en route to a Ph.D. Individuals with previous research experience may request to opt out of completing an M.S. by successfully completing a pre-qualifying exam administered by department faculty.

**Requirements for Admission to the Health Outcomes Research Pathway**

Students must have either a professional degree in pharmacy (Pharm.D.), medicine (M.D.), or a master’s degree in pharmacy administration. Students with a master’s degree in related fields such as epidemiology, public health, health care administration, etc. are also encouraged to apply. Students with a master’s degree in related fields such as marketing, management, economics, psychology, or sociology with a demonstrated interest or experience in health care may also apply.

Outstanding students with a B.S. in pharmacy or pharmaceutical sciences may be considered for direct admission into the doctoral program.

College transcript with a minimum of a B average (3.0 on a 4.0 scale)

GRE or GMAT scores (International applicants must also take the TOEFL examination and score at least 550 on the paper exam or 213 on the computer-based exam) evaluating potential for graduate school.

Supportive letters of recommendation (at least three); satisfactory personal or telephone interview (whenever possible); statement (one page) of personal goals describing background, academic/research interests, and career objectives; a resume or curriculum vitae listing educational and employment history.

Application deadline is March 1 of each year.

**Application Process for Health Outcomes Research Pathway**

When applying to the Ph.D. pathway in the Department of Pharmaceutical Systems and Policy at West Virginia University School of Pharmacy you will need to send two separate packets of materials, one to WVU Admissions and one to WVU School of Pharmacy. Please read instructions on the forms carefully before completing them. All materials must be received by the deadline (March 1) for an application to be reviewed.
First Packet — To be Mailed to WVU Admissions and Records
1. WVU Application (international application for foreign students) for admission to the graduate school (Mailed or completed online at http://www.arc.wvu.edu/admissions/applications.html).
2. A check or money order for the mandatory application fee payable to West Virginia University.
3. One copy of official transcripts (original or certified; minimum of a B average or a 3.0 GPA on a 4.0 scale) in a sealed envelope from each college you have attended. Applicants who have studies in the United States must have the institutions send official transcripts directly to WVU.
4. Original or certified copies of all degrees/diplomas/certificates received in the original language of issue.
5. If necessary, official English translations of the applicant’s transcripts and diplomas or certificates.
6. Official GRE Scores and TOEFL scores (minimum of 550 on the paper-based exam and 213 on the computer-based exam) for international students for whom English is not their native language. GRE and TOEFL scores should be sent directly by Educational Testing Service to WVU. If Test of Spoken English (TSE) scores are available, then they may also be submitted.

Send the first packet directly to: Office of Graduate Admissions and Records, West Virginia University, P.O. Box 6009, Morgantown, West Virginia 26506-6009, U.S.A.

Second Packet — To be Mailed to WVU School of Pharmacy
1. Copy of the WVU Application for Admission to the graduate school
2. One certified copy of official transcripts (minimum of a B average or a 3.0 GPA on a 4.0 scale) from each college you have attended.
3. Certified copies of all degrees/diplomas/certificates received in the original language of issue.
4. If necessary, copies of official English translations of the applicant’s transcripts and diplomas or certificates.
5. Copies of official GRE Scores and TOEFL scores (minimum of 550 on the paper-based exam and 213 on the computer-based exam) for international students for whom English is not their native language. If copy of Test of Spoken English (TSE) scores is available they may also be submitted.
6. Statement of personal goals describing your background, academic interests, and career objectives.
7. A resume or curriculum vitae listing educational and employment history.
8. Three letters of recommendation from persons who are in a position to evaluate your potential for graduate school. At least one recommendation must be from a person at the last school you attended for full-time study, unless you have been out of school for five years or longer. Your references should return their recommendations directly to the Department of Pharmaceutical Systems and Policy in sealed envelopes with their signatures over the seals.
9. A checklist listing all materials included in the envelope and names and addresses of references. Send the second packet directly to: Debbie Anderson, Dean’s Office, WVU School of Pharmacy, P.O. Box 9500, Medical Center Drive, Robert C. Byrd Health Sciences Center (North)Morgantown, West Virginia 26506, Telephone: 304-293-5211, e-mail address: danderson@hsc.wvu.edu. Application via the World Wide Web is also possible. Please be aware that the two packets of information, as described above, are still required. The online graduate program application is available at: http://www.arc.wvu.edu/admissions/applications.html. If you have difficulty accessing the above site or submitting an online application, contact Debbie Anderson at danderson@hsc.wvu.edu or call 304-293-5211 (fax: 304-293-5483).
Community Medicine

Educational Programs in Public Health

Alan M. Ducatman, M.D., MSc, Professor and Chair, Community Medicine
Ian R. H. Rockett, Ph.D., M.P.H., Professor and Associate Chair, Community Medicine and
Director of Educational Programs
Robert Pack, Ph.D., M.P.H., Associate Professor, Community Medicine, Director of the
Ph.D. Program in Public Health Sciences
Ruth E. Kershner, Ed.D., R.N., Associate Professor, Community Medicine, Coordinator of
M.S. in School Health Education
Leah A. Adkins, Educational Programs Senior Program Coordinator

Graduate Education Opportunities

Public Health

Degrees Offered

- Master of Public Health
- Ph.D. in Public Health Sciences

School Health Education

Degree Offered

- Master of Science

Master of Public Health (M.P.H.)

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 ex-
ample, environmental regulations, water quality control, immunization programs, and health
education initiatives.

The M.P.H. program seeks students with a strong, genuine commitment to a career in
public health. An M.P.H. degree is appropriate for physicians, nurses, nutritionists, and other
health care professionals with a strong interest in preventive medicine and community health.
We welcome applications from both mid-career professionals and students who have recently
completed a 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 of public health through a generalist M.P.H. degree (both
on and off-campus) as well as tracks focused on epidemiology and biostatics, social and
behavioral theory, environmental health, and health policy and management all of which are
offered by the Department of Community Medicine. 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. This 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, basic/clinical scientific research and
research in rural health care delivery, the provision of continuing professional education, and
participation in the provision of direct and supportive health care.

The specific M.P.H. program educational mission includes the following goals:

- Educate students and residents to become competent professionals with integrity and
  compassion and 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 medical residents, and also the populations they will serve.
• Maintain the importance of teaching students and residents, and enhance recognition and rewards for teaching performance.
• Create an environment which 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 M.P.H. 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 4.0 scale.
4. Submit scores for the General Test of the Graduate Record Examination (GRE). See Web site for acceptance of other test scores.
5. Complete an official M.P.H. Program Application.
6. Complete the TOEFL (Test of English as a Foreign Language) for all international applicants, and for all applicants whose first language is not English. A minimum of 550 on the TOEFL is required.
7. Possess the ability to use computers in public health applications. It is the responsibility of students accepted into the M.P.H. program to become skilled in computer applications.

Performance Standards
GPA and grade requirements are as follows:
1. Students are required to maintain a GPA of at least 3.0 on all work taken as a graduate student while enrolled in community medicine graduate programs. A student must have 3.0 GPA or better in order to graduate from the program.
2. Students admitted with a 2.75 to 2.99 GPA must have attained a 3.0 GPA or above at the end of their first semester or they will be dismissed.
3. Students admitted with a 3.0 GPA must have a minimum 3.0 GPA every semester. If their GPA falls below 3.0 one semester, they will be placed on probation. If the GPA falls below 2.75 they will be suspended.
4. Two grades of C or below while enrolled as a graduate student will result in probation. Three grades of C or below while enrolled as a graduate student will result in suspension.
5. A grade lower than C will not be counted towards satisfying degree requirements grade lower than a C must be repeated for all required graduate program courses.
6. A grade of F in any course taken to satisfy degree requirements in a community medicine graduate program will result in automatic program dismissal.
7. Students may refer to the WVU Student Handbook for more information: http://www.arc.wvu.edu/rights.html and on the CMED Web site: http://www.hsc.wvu.edu/som/cmed/.
Course of Study for On-Campus M.P.H., including Tracks and Course of Study for Off-Campus M.P.H.
On-Campus M.P.H. Program
1. The M.P.H. on-campus degree requires 42 credit hours.
2. Upon matriculation, students will be asked to provisionally select a track. There are five curriculum tracks: biostatistic and epidemiology, environmental health, health policy and management, social and behavioral science (with an option of two concentrations: women's health; and wellness and health promotion) and the generalist track.
3. Students are required to formally select a track after nine credit hours have been completed. If necessary, new advisors will be assigned.
4. Six core three-credit hour courses are required in addition to an eight-credit hour practicum and a one-credit hour seminar.
5. Students are required to take nine credit hours (three courses) of track-specific courses. (Exception: Generalist requires 15 credit hours of electives)
6. Six credit hours of other electives can be selected from a list of suggested courses for the track or from the general list of electives approved by the M.P.H. program.

Off-Campus, Web-Based M.P.H. Program
1. The M.P.H. off campus degree requires 42 hours.
2. Six core three-credit hour courses are required in addition to an eight-credit hour practicum, and a one-credit hour seminar.
3. Fifteen hours of elective coursework are required. (Note: This can all be completed without coming to campus.)

Since unforeseen circumstances and program implementation might necessitate a change in our curriculum, we encourage prospective and current students to visit the educational programs Web site at: http://www.hsc.wvu.edu/som/cmed/ for current requirements.

Information on Department of Community Medicine specializations/certificates (an M.P.H. certificate program in gerontology and a combined M.D./M.P.H. program) is available at http://www.hsc.wvu.edu/som/cmed/.

For more information about the M.P.H. program contact: Leah Adkins, Educational Programs Senior Program Coordinator or Ian Rockett, Ph.D., M.P.H., Professor and Associate Chair, Director of Educational Programs at P.O. Box 9190, WVU School of Medicine, Morgantown WV 26506, phone (304) 293-2502, fax (304) 293-3755, e-mail: ladkins@hsc.wvu.edu.

Doctor of Philosophy (Ph.D.) in Public Health Sciences
The Ph.D. program in public health sciences is a degree for scientist-practitioners in the area of prevention of premature mortality, morbidity, and disability resulting from communicable disease, chronic disease, and injury. This program will feature a common first-year core curriculum that includes intensive training in public health research methods, epidemiology and biostatistics. The program offers two specialist tracks in distinct areas of public health: social and behavioral sciences, and population epidemiology and biostatistics.

The social and behavioral sciences track will feature public health-specific coursework in social and behavioral theory, qualitative and quantitative public health research methods, social and behavioral risk factor measurement, multivariate statistics, public health needs assessment, intervention design, graduate electives in topical areas, and advanced research.

The population epidemiology and biostatistics track will feature coursework in epidemiology, biostatistics, research design, multivariate data analysis, medical demography, chronic disease epidemiology, secondary data analysis, categorical data analysis, topical graduate electives, and advanced research.

Detailed curricula are available at the Ph.D. program Web site: http://www.hsc.wvu.edu/som/cmed/degree_programs/phd.asp.

Goals of the Ph.D. Program
The Ph.D. in public health sciences emphasizes both evidence-based primary prevention of disease and injury, and health promotion research and practice. Program goals are to:

- Train the next generation of public health leaders and produce a self-renewing cadre of teachers, researchers, and practitioners who will help shape and sustain the best public health practices.
- Identify and address public health disparities.
• Improve health and health care in our state, and simultaneously improve the economic competitiveness of the WVU Health Sciences Center, emulating what similar training programs have done in other states.
• Feature trans-disciplinary teaching and research so that trainees of the program will be able to compete for the highest level public health jobs, grants, and research opportunities.
• Create a pool of epidemiologic, behavioral science, demographic, and environmental health talent for developing highly technical enterprises in West Virginia that seek to influence health behavior at the community and policy level.

Coursework Summary
The 116-hour program features a common undifferentiated curriculum for the first year. During this time students can select one of the two tracks in which to matriculate. The first year will feature a seminar series for faculty to introduce their research to students. Students will be matched with a mentor at the end of the summer of the first year.

Key components of the proposed core-integrated first year are a series of courses in epidemiology, scientific integrity and ethics, and research and statistical methodology. Over two semesters and the summer, the first year curriculum is 29 credit hours in duration. Additional years are of similar length.

The program features a common undifferentiated curriculum for the first year. During this time students can elect one of the two tracks in which to matriculate. The first year will feature a seminar series for faculty to introduce their research to students. At the conclusion of the first year’s summer semester students will be matched with a mentor. As in any public health doctoral program, key components of the proposed core-integrated first year are a series of courses in epidemiology, scientific integrity and ethics, and research and statistical methodology. In the second year of coursework students will engage in required courses and electives in their topical track area of expertise. The second year features advanced methods and theory with additional research study opportunities. In the third and fourth years, students will begin and complete the dissertation proposal process.

Qualifying Examination Summary
At the conclusion of the second year of coursework, the students will be required to pass a comprehensive qualifying examination after which they may prepare their dissertation proposal. Also, at the conclusion of the second year, students will transition to a funded research lab/group of one of the public health graduate faculty.

The comprehensive exam will be based on both core and content material. A panel of three of the graduate faculty will review and grade the examination. Each will also be reviewed by the educational programs and departmental chairs. Students will only be allowed to take the comprehensive exam twice. If a student fails the exam twice they will be dismissed from the program.

Doctoral Dissertation Proposal
Upon successful completion of the qualifying exam, the student may set a date for the doctoral dissertation proposal defense. The proposal will take the form of a PHS 398 grant proposal including: specific aims, introduction, succinct yet detailed literature review, complete sections on applicant capability, materials and research methodology, references, human subjects, and supporting documents. The proposal must be defended by the student in a forum that includes the student’s complete Doctoral Dissertation Committee.

Dissertation Summary
The program will culminate in a dissertation research project on an important public health topic. The dissertation will take the form of a traditional research dissertation or, at the student’s option, a series of three publishable papers or monographs on a related, important public health topic. The papers must be cleared for submission by the committee and submitted before the dissertation defense. We emphasize peer-reviewed research publications as desired outcomes because of their positive impact on skills and the professional placement options for our graduates. This is consistent with a trend in public health Ph.D. programs around the country.
The dissertation will be defended in public in a forum that has been announced at the school and university level. The Dissertation Committee comprises five members, all of whom must sign the approval form for the dissertation to be complete. The dissertation must be completed following WVU policy regulating electronic submission of theses and dissertations.

**Program Delivery**

Virtually all courses in the program will be taught using the face-to-face, on-campus, small, or large group format. Only two or three courses will be delivered by Web-based technology.

**Admission to the Program**

Admission to the doctoral program will be limited to a few highly qualified and motivated candidates. We will admit an initial class of approximately six full-time students per year until we graduate the first Ph.D. class. Competitive stipend support will be offered to these students.

An above average undergraduate GPA will be required for applicants to be eligible for program admission. The Graduate Record Examination (GRE) or equivalent graduate-level standardized test will be used to screen applicants. For such tests, the scores must be less than five years old. In addition to official transcripts and GRE scores, each applicant will be screened based on: 1) a commitment to national and international public health research, training, and service as demonstrated in a statement of purpose (two to three pages single-spaced); 2) curriculum vitae/resume; 3) official educational programs and WVU application materials; and 4) three letters of recommendation (two must be academic references). A test of English as a Foreign Language (TOEFL) score of at least 550 will be required for students who obtained their bachelor’s and master’s degrees in a country where English is not the first language. Short-listed applicants will be interviewed based on academic merit, considering all of the above criteria. The interview may be conducted in person, via telephone, or in video conference.

Detailed admissions procedures, including online application materials can be found the Ph.D. program’s Web site: [http://www.hsc.wvu.edu/som/cmed/degree_programs/phd.asp](http://www.hsc.wvu.edu/som/cmed/degree_programs/phd.asp).

**Performance Standards**

To be admitted to any Ph.D. track, students must demonstrate the ability to maintain at least a 3.0 GPA in the first core year of study and thereafter. Credit hours for courses in which a grade of lower than C is obtained will not count toward satisfying degree requirements. Students who fail to maintain a 3.0 GPA will be placed on probation and must bring their GPA up to 3.0 during the following semester. Students who then fail to attain a 3.0 will be dismissed from the program. Student research will be graded by the faculty mentor each semester. Research grades will be satisfactory or unsatisfactory (S/U).

For more information about the Ph.D. program contact: Robert Pack, Ph.D., M.P.H., Associate Professor, Director of the Ph.D. Program in Public Health Sciences, P.O. Box 9190, WVU School of Medicine, Morgantown WV 26506, Phone (304) 293-1091, Fax (304) 293-6685. E-mail: rpack@hsc.wvu.edu, WVU School of Medicine, Department of Community Medicine, Phone (304) 293-2502.

**Master of Science (M.S.) in School Health Education**

The Department of Community Medicine offers the M.S. degree in School Health Education. This program is open only to applicants holding a professional teaching certificate/licensure. A copy of your teaching certificate is required for admission.

**Goal of the M.S. Program**

The goal of the school health M.S. degree program is to provide teachers with the knowledge and skills necessary to instill in school-age students the information necessary to make healthy decisions regarding well-being. Experiential instruction, coupled with critical thinking skills, enables students to be informed health consumers. The program will provide an optimal experience to equip students to be models and mentors for their own students.
Admission Requirements
Applicants to the M.S. 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 of university and a minimum grade point average of 2.75, on a 4.0 scale.
4. Complete an M.S. (School Health Education) program application with a copy of an official teaching certificate.

Performance Standards
GPA and grade requirements are as follows:
1. Students are required to maintain a GPA of at least 3.0 on all work taken as a graduate student while enrolled in community medicine graduate programs. A student must have 3.0 GPA or better in order to graduate from the program.
2. Students admitted with a 2.75 to 2.99 GPA must have attained a 3.0 GPA or above at the end of their first semester or they will be dismissed.
3. Students admitted with a 3.0 GPA must have a minimum 3.0 GPA every semester. If their GPA falls below 3.0 one semester, they will be placed on probation. If the GPA falls below 2.75 they will be suspended.
4. Two grades of C or below while enrolled as a graduate student will result in probation. Three grades of C or below while enrolled as a graduate student will result in suspension.
5. A grade lower than C will not be counted towards satisfying degree requirements. A grade lower than a C must be repeated for all required graduate program courses.
6. A grade of F in any course taken to satisfy degree requirements in a community medicine graduate program will result in automatic program dismissal.
7. Students may refer to the WVU Student Handbook for more information: http://www.arc.wvu.edu/rights.html and on the CMED Web site: http://www.hsc.wvu.edu/som/cmed/.

Course of Study
The program requires 36 credit hours of coursework. Students may transfer nine credit hours that are pre-approved upon admission.

Students will take two courses per semester with three one-week intensive summer sessions. This program can be completed in two calendar years on a part-time basis.

Since unforeseen circumstances might necessitate a curriculum change, prospective and current students are encouraged to visit the educational programs Web site at: http://www.hsc.wvu.edu/som/cmed/ for current requirements.

For more information about the M.S. program please contact: Ruth E. Kershner, Ed.D., R.N., Associate Professor, Coordinator of the M.S. Program in School Health Education, P.O. Box 9190, WVU School of Medicine, Morgantown WV 26506, Phone (304) 293-7440, Fax (304) 293-6685. E-mail: rkershner@hsc.wvu.edu or WVU School of Medicine, Department of Community Medicine, Phone (304) 293-2502.

Community Health Promotion (CHPR)
365. Men’s Health. 3 Hr. Optimal health is a theme for men across the lifespan. This course will address men’s health specific to race, ethnicity and orientation, to provide skills to be an informed consumer of health information.

436. Introduction to Worksite Wellness. 3 Hr. An Introduction to the field of health promotion in a worksite setting. Persons with interest in exploring the possibility of employment in health promotion in a worksite setting will find this course helpful.

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.
604. **Advanced School Health.** 3 Hr. PR: Admission to the school health master’s program. Courses addresses the teacher’s role in organizing and implementing comprehensive school health programs at the elementary and secondary levels. Additional attention is paid to providing instruction specific to the health educator skills and standards.

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.

613. **Certified Health Education Specialist.** 1 Hr. This course addresses competencies of a certified health education specialist (CHES), and prepares students for the national credentialing exam.

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.

640. **School Health Program Design.** 3 Hr. PR: Admission to school health master’s program. Course provides a practical application experience for students to design a health education course curriculum, demonstrate classroom teaching, and self-evaluate their own teaching.

642. **Grant Writing for Public Health Research.** 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.)

655. **Intro to Health Promotion.** 3 Hr. The course provides an overview of the health promotion/health education profession. Course material will assist health education/health promotion professionals-in-training to identify and pursue career goals.

671. **Community Health.** 3 Hr. This course provides health educators with an introduction to community health focusing on organization, resources, programming, and special populations.

680. **School Health Concepts.** 3 Hr. Addresses content areas for health education, the National Health Education Standards, the CDC Adolescent Risk Factors, and Healthy People 2010 Objectives as applicable to: emotional health, injury prevention, disease and nutrition, and physical activity.

690. **Teaching Practicum.** I, II, S. 1-3 Hr. PR: Consent. Supervised practice in college teaching of community health promotion. 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. **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 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. **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 coursework 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.
**Community Medicine (CMED)**

612. *Community Medicine*. 3 Hr. PR: Consent. Medical students only. The role of the physician in the prevention of disease and in the examination of health status in a community, with reference to demographic, economic, sociologic, environmental, and occupational factors. The organization of public health and medical care.

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.


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.)

701. *Law and the Workplace*. 1 Hr. PR: MD degree, graduate standing, or consent. Philosophy, content, and procedures of current judicial bodies relevant to the practice of medicine in the industrial society, developed through a series of lectures followed by extensive discussion involving students from different curricular backgrounds. (1 hr. sem.)

712. *Medical Aspects of Environmental Health*. 1 Hr. PR: MD degree or Consent. A review of issues illustrating the responsibilities and professional interaction of physicians in identifying, managing, and preventing casualties from environmental causes in air, water, soil, food, pesticides, and related subjects. (1 hr. lec.)

722. *Epidemiology and Biostatistics*. 2 Hr. PR: Consent; Medical students only. Epidemiological and statistical analysis of biologic phenomena as related to medicine. Emphasis on descriptive statistics, analytical epidemiology, statistical inference, measures of association, and evaluation of medical literature.

750. *Statistics Biomedical Sciences*. 1 Hr. This introductory biostatistics course for biomedical graduate students covers variables and descriptive statistics as well as parametric and non-parametric statistics.

788. *Critical Review of Literature*. 1 Hr. PR: MD or Consent. A review of current literature in occupational and environmental medicine, focused on analysis of validity and procedures followed; scrutiny of research reports, their design, methodology, data handling, documentation, and discussion of the data base.

790. *Teaching Practicum*. 1-3 Hr. PR: Consent. Supervised practice in college teaching of anatomy. (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. PR: Consent. Directed study, reading, 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. A one-credit hour seminar is designed to assist students in identifying their career objectives and exploring opportunities to achieve their career objectives.

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. *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 but who wish to meet residence requirements, use University 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.)

**Public Health (PUBH)**

501. *Advanced Professional Writing.* 3 Hr. A review of English syntax and usage in professional writing; constructing and developing ideas; research and writing based on careful reading of author’s instructions, using the *APA style Manual*, using library resources, and academic honesty.

536. *Worksite Wellness.* 3 Hr. Overviews the field of health promotion in a worksite setting, offering a comprehensive introduction. Persons with interest in exploring the possibility of employment in health promotion in a worksite setting will find this course helpful.

580. *Prevention through Resilience.* 3 Hr. The principles of Resilience, resiliency theories and current research, resilience and stress and the mind-body implications, recognizing and eliciting resilience and resilient outlooks and behaviors in ourselves and clients, professional and public health implication.

581. *Rural Gerontology.* 3 Hr. This course is designed to provide students with a broad understanding of current research information regarding health and social aspects of rural elderly in the United States. The course consists of lecture and class discussions.

586. *Public Mental Health.* 3 Hr. This course will teach the students the principles, concepts, and methods of general epidemiology, and how to apply them to the study of the distribution and causes of mental disorders in populations.

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.

605. *International Public Health.* 4 Hr. This course identifies and explores major global issues in public health including infectious diseases, malnutrition, famine, and water sanitation. Approaches for devising solutions to these problems in developing countries will be explored.

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 M.P.H. and C.H.P.R. 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.

619. *Issues in Men’s Health.* 3 Hr. Men are markedly at risk for specific health problems and complications. This course will provide skills for students to research and develop educational programs to improve health and well-being of men.

620. *Women and Violence.* 3 Hr. this course examines the issue of violence in the lives across the lifespan and from a socio-cultural perspective. Implications for health concerns and educational interventions will be addressed.
621. *Issues in Women’s Health*. 3 Hr. This course examines a broad array of health issues and causes of illness that shape and define women’s access and understanding of health concerns across the lifespan, which includes examination of cultural diversity.

623. *Public Health Disaster Response*. 3 Hr. This course addresses the basics of how public health practitioners respond to disasters, develop response protocols and reform as skillful leaders in the 21st century.

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.

628. *Aging Women and Culture Issues*. 3 Hr. This course will use a multi-disciplinary approach to examine the impact of gender, race/ethnicity, and culture on aging and the aging population.

629. *Survey Methods*. 3 Hr. This course presents scientific knowledge and practical skills used in survey research. Focus is on question construction and development, questionnaire design, sampling and survey modes, interviewing techniques, and survey data analysis.

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.

645. *Fundamentals of Gerontology*. 3 Hr. This course introduces students to a broad spectrum of topics and issues related to aging by drawing upon several core disciplines and their contributions to the corpus of gerontological knowledge and research.

646. *Public Policy of Aging*. 3 Hr. Analysis of major policy and public programs for older adults, including Medicaid, Medicare, Social Security and the Older Americans Act. A major emphasis is placed on programs in West Virginia.

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. Examines mortality and morbidity trends, disease and injury models, data sources classification, measures of frequency and association, research design, causal assessment, data interpretation, and screening from an epidemiological perspective.

661. *Advanced Epidemiology*. 3 Hr. PR: PUBH 611 and PUBH 660 CON. Causality and threats to validity in epidemiologic research are presented, focusing on assessment and control of bias, including selection bias, information bias and confounding. Assessment and control of effect modification (interaction) are included.

665. *Work Site Evaluation*. 2 Hr. Students are introduced to health and safety hazards associated with industrial operations through in-plan inspections, interaction with plant medicinal and safety staff and in class discussions.

678. *Adolescent Health*. 3 Hr. An introduction to adolescent health, medicine, and risk behavior intervention. Topics include epidemiology of risk and health outcomes, theories of risk and methods for intervention, assessment and research on risk behavior change in adolescence.

679. *Public Health Seminar*. 1 Hr. Students are given opportunities to synthesize information about latest developments within the field of public health through dialogue.

680. *Health-Based Leadership*. 3 Hr. PR: CHPR 635 or equivalent. Gain personal understanding, knowledge, and growth in the human dimensions of leadership: developing rapport, trust, teamwork, and mentoring; managing tone and facilitating “problem” situations; evaluating systems and leading system change; articulating vision, mission and strategy.

688. **MPH Practicum Report.** 3 Hr. PR: PUBH 611 and PUBH 630 and PUBH 650 and PUBH 660 and PUBH 687 and PUBH 689 and (PUBH 691E or CHPR 634). Provides students with the opportunity to report the results of their practicum projects to others via a professional paper and presentation.

689. Practicum. 3 Hr. PR: PUBH 611 and PUBH 630 and PUBH 650 and PUBH 660 and PUBH 687 and CHPR 612 and (PUBH 691E or CHPR 634). Implementation of the practicum proposal; a planned, supervised, and evaluated public health-oriented experience encompassing 300 hours of activity reflecting public health practice and theory. Students are required to take 3 credit hours of the practicum but may spread credits among semesters.

691 A-Z. **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.** 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.

701. **Qualitative Research Methods.** 3 Hr. Application of qualitative research methods to public health issues. Students will learn about theory of public health qualitative research methodology, hypothesis generation, data collection, preparation, analysis, reporting and conclusion.

702. **Public Health Program Evaluation.** 3 Hr. Application of scientific public health program evaluation methods. Students will learn about theory and methods of program evaluation, identification of stakeholders, data collection, preparation, analysis, reporting and conclusion.

703. **Social and Behavioral Measurement.** 3 Hr. Theory and development of effective tools for measuring social and behavioral public health phenomena. Students will learn how to find, construct and analyze effective social and behavioral measurement instruments.

704. **Mortality and Survival.** 3 Hr. PR: PUBH 660 or equivalent, and basic proficiency in Excel. Life table and other population-based techniques and approaches to studying international and sociodemographic patterns and differentials in mortality, morbidity, and disability.

705. **Injury Control Res. Methods.** 3 Hr. PR: PUBH 660 or equivalent and PUBH 611 or equivalent. Evidence-based approach to increasing the knowledge and methodological skills necessary for basic injury (unintentional and intentional) control research.

706. **Current Research Issues.** 1 Hr. The purpose of this course is to utilize research-based discussions to stimulate a unique information gathering environment of current research and investigation.

707. **Applied Multivariable Stats.** 3 Hr. Basic theory and application of survival analysis, multivariate analysis of variance (MANOVA) and exploratory factor analysis.

766. **Medical Toxicology.** 2 Hr. This course introduces healthcare providers to the clinical aspects of toxicology, including the evaluation and treatment of individuals and populations with potential toxic exposures.

790. **Teaching Practicum.** 1-3 Hr. PR: Consent. Supervised practice in college teaching of public health. 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.)

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

**Division of Exercise Physiology**
Stephen E. Alway, Ph.D., Professor and Chair and Director of Graduate Studies
http://www.hsc.wvu.edu/som/ep
Randall W. Bryner, Ed.D., Associate Professor, Vice Chair and Director of Undergraduate Education
http://www.hsc.wvu.edu/som/ep

**Degrees Offered**
- Bachelor of Science
- Master of Science
- Doctor of Philosophy
- Joint Doctor of Medicine and Doctor of Philosophy

**Introduction**
The WVU exercise physiology program was established in the Health Sciences Center’s School of Medicine in July 1993. The program offers a four-year curriculum leading to a bachelor of science degree in exercise physiology. The bachelor of science in exercise physiology is a preparatory program for graduate or professional school. Graduates continue their education in areas such as exercise physiology, physical therapy, or medicine. The program is designed to provide students a background in basic science and exercise physiology as well as courses in nutrition, athletic training, first aid and emergency care, and business.

**The Profession**
Exercise physiologists are trained to evaluate people in the areas of cardiovascular fitness, muscular strength and endurance, flexibility, neuromuscular integration, and body composition. They are also trained to provide exercise programs based on the results of these evaluations that are designed to increase the functional capacity of the participants.

Exercise physiologists work with athletes, patients, and healthy participants in the areas of disease prevention in wellness programs, or rehabilitation in hospital settings. The bachelor of science program is a preparatory program for graduate school. Graduates of this program continue their studies in exercise physiology, physical therapy, medicine, or other health-related careers. Graduates of the master of science or doctoral program find employment in corporate wellness, hospital rehabilitation, higher education, or other research settings. Additionally, they may be employed in a wide variety of private, community, state, and national agencies. Exercise physiology is an evolving field that is becoming increasingly important with the integration of preventive medicine into the health care system. Employment opportunities are expanding and increasing with experience and level of education.

**Bachelor of Science**

**Admission**
Students must meet the minimum requirements for WVU for admission to the program. All coursework completed prior to transfer to the exercise physiology program requires at least a 2.75 cumulative grade point average and a grade of C or better in all required courses.
Program Requirements

Students must complete the University requirements for the General Education Curriculum. Students must complete the following courses or course equivalents in theory and foundation to meet the exercise physiology program requirements.

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHPR 172 First Aid and Emergency Care</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 241 Developmental Psychology</td>
<td>3</td>
</tr>
<tr>
<td>ATTR 121 Sport Injury Control and Management</td>
<td>3</td>
</tr>
<tr>
<td>ATTR 219 Gross Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 240 Medical Terminology</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 293A Introduction to Exercise Physiology I</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 293B Introduction to Exercise Physiology II</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 364 Kinesiology</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 365 Exercise Physiology I</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 368 Laboratory Techniques and Methods I</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 491 Professional Field Experience</td>
<td>6</td>
</tr>
<tr>
<td>EXPH 369 Strength and Conditioning Methods</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 370 Writing for Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 475 Industry Organization in Exercise Physiology</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 496 Senior Thesis</td>
<td>3</td>
</tr>
<tr>
<td>MATH 126 College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 128 Plane Trigonometry*</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 101 Introductory Physics</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 102 Introductory Physics</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 115 Fundamentals of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 116 Fundamentals of Chemistry</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 231 Organic Brief Course (or both of the following)</td>
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<tr>
<td>CHEM 233 and 235 Organic Chemistry I</td>
<td>4</td>
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<tr>
<td>CHEM 234 and 236 Organic Chemistry II</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 101 and 103 General Biology and Lab**</td>
<td>4</td>
</tr>
<tr>
<td>BIOL 102 and 104 General Biology and Lab**</td>
<td>4</td>
</tr>
<tr>
<td>PSIO 241 Elementary Physiology</td>
<td>4</td>
</tr>
<tr>
<td>HN&amp;F 171 Introduction to Human Nutrition</td>
<td>3</td>
</tr>
<tr>
<td>STAT 211 Elementary Statistical Inference</td>
<td>3</td>
</tr>
</tbody>
</table>

Suggested Electives: BIOL 219 The Living Cell (4 hrs.) and BIOC 339 (3 hrs.)
MATH 129, 155, or 150 may be substituted for MATH 126 and 128.
BIOC 115 and 117 may be substituted for of BIOL 101–104.

Students must have a grade of C or better in all required courses. Students must have a minimum of 128 hours to graduate. Students must maintain a cumulative GPA of 2.5 or better to remain in the program.

Students may choose the general curriculum tract or health professionals tract. Students who intend on applying to medicine, dentistry, pharmacy, or graduate school should take the health professionals tract. Students applying to physical therapy can choose either the general or health professional track.

Exercise Physiology Curriculum Plan

<table>
<thead>
<tr>
<th>Freshman Year</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
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<tbody>
<tr>
<td>First Semester</td>
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<td>Second Semester</td>
<td></td>
</tr>
<tr>
<td>ENGL 101</td>
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<td>MATH 128 Trig.</td>
<td>3</td>
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<tr>
<td>MATH 126 Algebra</td>
<td>3</td>
<td>BIOL 102 and 104</td>
<td>4</td>
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<tr>
<td>BIOL 101 and 103</td>
<td>4</td>
<td>GEC Objectives</td>
<td>3</td>
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<tr>
<td>EXPH 293 Intro. to EXPH I</td>
<td>1</td>
<td>ATTR 121 Athletic Training</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 101 Intro. to Psychology</td>
<td>3</td>
<td>EXPH 293A Intro. to EXPH II</td>
<td>1</td>
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<tr>
<td>UNIVERSITIY</td>
<td>1</td>
<td>ATTR 219 Anatomy</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>Total</td>
<td>17</td>
</tr>
</tbody>
</table>

West Virginia University Graduate Catalog
### Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 115</td>
<td>4</td>
<td>CHEM 116</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 101</td>
<td>4</td>
<td>PHYS 102</td>
<td>4</td>
</tr>
<tr>
<td>GEC Objective</td>
<td>3</td>
<td>PSIO 241</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 102</td>
<td>3</td>
<td>EXPH 240</td>
<td>1</td>
</tr>
<tr>
<td>EXPH 364 Kinesiology</td>
<td>3</td>
<td>GEC Objectives</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td><strong>Total</strong></td>
<td>16</td>
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</table>

### Junior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHPR 172</td>
<td>2</td>
<td>CHEM 231</td>
<td>4</td>
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<tr>
<td>EXPH 365</td>
<td>3</td>
<td>EXPH 296</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 241</td>
<td>3</td>
<td>HN&amp;F 171</td>
<td>3</td>
</tr>
<tr>
<td>GEC Objective</td>
<td>3</td>
<td>Elective(s)</td>
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</tr>
<tr>
<td>EXPH 375</td>
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### Senior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
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<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPH 491</td>
<td>3</td>
<td>EXPH 491</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 496</td>
<td>3</td>
<td>EXPH 475</td>
<td>3</td>
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<tr>
<td>STAT 211</td>
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<td>GEC Objectives</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td>6</td>
<td>Electives</td>
<td>6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>15</td>
<td><strong>Total</strong></td>
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</table>

### Health Professions Emphasis Curriculum Plan

#### Freshman Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 101</td>
<td>3</td>
<td>MATH 128</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 115</td>
<td>4</td>
<td>BIOL 117</td>
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</tr>
<tr>
<td>MATH 126</td>
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<td>GEC Objectives</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 115</td>
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<td>CHEM 116</td>
<td>4</td>
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<td>EXPH 293</td>
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<td>EXPH 293A</td>
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<tr>
<td>PSYC 101</td>
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<td>ATTR 219</td>
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</tr>
<tr>
<td>UNIV 101</td>
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<td><strong>Total</strong></td>
<td>18</td>
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</table>

#### Sophomore Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 233 &amp; 235</td>
<td>4</td>
<td>CHEM 234 &amp; 236</td>
<td>4</td>
</tr>
<tr>
<td>ATTR 121</td>
<td>3</td>
<td>PHYS 102</td>
<td>4</td>
</tr>
<tr>
<td>ENGL 102</td>
<td>3</td>
<td>PSIO 241</td>
<td>4</td>
</tr>
<tr>
<td>EXPH 364</td>
<td>3</td>
<td>CHPR 172</td>
<td>2</td>
</tr>
<tr>
<td>PHYS 101</td>
<td>4</td>
<td>EXPH 240</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td><strong>Total</strong></td>
<td>18</td>
</tr>
</tbody>
</table>

#### Junior Year

<table>
<thead>
<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPH 365</td>
<td>3</td>
<td>EXPH 460</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 368</td>
<td>3</td>
<td>EXPH 369</td>
<td>3</td>
</tr>
<tr>
<td>PSYC 241</td>
<td>3</td>
<td>HN&amp;F 171</td>
<td>3</td>
</tr>
<tr>
<td>BIOC 339</td>
<td>4</td>
<td>EXPH 370</td>
<td>3</td>
</tr>
<tr>
<td>Elective Science</td>
<td>4</td>
<td>STAT 211</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>17</td>
<td><strong>Total</strong></td>
<td>18</td>
</tr>
</tbody>
</table>
Master of Science
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 clinical internship or a thesis.

Admission
Fifteen students are accepted once a year (by March 1) 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 3.0 (based on A=4.0 grade points). Three letters of reference and GRE scores 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 February 15.

Program Requirements
A minimum of 36 semester hours of credit is required for graduation. The following courses or course equivalents are required.

Course | Hrs.
--- | ---
EXPH 691G Anatomy | 3
SS 615 Research Methodology in Physical Education | 3
PSIO 441 Mechanisms of Body Function | 4
PHAR 449 Drugs and Medicines | 3
HN&F 610 Nutrition and Fitness | 3
EXPH 470 Research Methods | 3
EXPH 567 Exercise Physiology 2 | 3
EXPH 668 Diabetes and Exercise | 3
EXPH 670 Laboratory Techniques and Methods 2 | 3
EXPH 671 Stress Testing | 3
EXPH 672 Professional Field Placement 2 | 6
EXPH 673 Exercise Prescription | 3

or if the student chooses the thesis option, the following courses are required:

EXPH 697 Research | 3
EXPH 798 Dissertation/Thesis | 3

Doctor of Philosophy
Exercise physiology is one of the seven biomedical sciences graduate programs that awards the doctor of philosophy degree (Ph.D.) The program is intended to give exceptional students knowledge in basic medical and scientific areas to prepare them for careers as effective and knowledgeable researchers and teachers in the broad field of exercise physiology/kinesiology. In the Division of Exercise Physiology these goals are achieved by several means. Formal
coursework in the sub-disciplines of exercise physiology, physiology, biochemistry, molecular biology, and pharmacology provides the student with the opportunity to develop a solid foundation in basic subject matter of medical sciences that can be applied to aspects of exercise and disease. The student’s knowledge base will be further strengthened by participation in elective courses offered within the division, selected courses offered by other departments within the School of Medicine, and by departments in other colleges and schools of West Virginia University.

The faculty in the Division of Exercise Physiology view the Ph.D. primarily as a research degree. Research training and experience are provided under the guidance and supervision of the graduate faculty. The aim of this effort is to promote attitudes, habits, skills, and abilities that will enable the student to grow and develop as an independent scientist.

Graduate work involves a program of study and research individually designed to utilize the abilities and strengths of the faculty (e.g., cardiovascular system, heart disease, neuromuscular system, aging, and diabetes/obesity) and accommodates the needs of the student within an area of specific interest. The exact content of a program of study for a particular student usually will differ from one student to another. Nevertheless, there are common goals, expectations, policies, and procedures that will be universal for all graduate students. Likewise, there are activities and responsibilities that will be common among all faculty advisors in the Division of Exercise Physiology.

**Program Features**

1. **Admission and Performance Standards**

   Program requirements typically restrict the admission of first time applicants to the fall semester.

   The general application procedures to the Ph.D. program in exercise physiology follows guidelines for admission to the common Ph.D. graduate programs in the Schools of Medicine and Pharmacy. Students applying to the Ph.D. program normally have a minimum graduate grade point average of 3.0. In addition, applicants must submit three 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 1000 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 Biomedical Sciences 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). Typically students who are admitted to the Ph.D. program without a master’s degree and are interested in exercise physiology will take several clinically focused courses in exercise physiology in their second year of enrollment.

   Normally, students are enrolled for four 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 or better 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 of Exercise Physiology 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.

<table>
<thead>
<tr>
<th>Basic Science Recommendations</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biology</td>
<td>4–8</td>
</tr>
<tr>
<td>General Chemistry or Organic Chemistry</td>
<td>4–8</td>
</tr>
<tr>
<td>Physics is recommended but not required</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Required Doctoral Coursework (or equivalent)</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCMD 793 Cellular Structure and Function</td>
<td>5</td>
</tr>
<tr>
<td>CCMD 712 Biostatistics for the Basic Sciences</td>
<td>1</td>
</tr>
<tr>
<td>CCMD 789 Scientific Ethics and Certification</td>
<td>1</td>
</tr>
<tr>
<td>CCMD 799 Graduate Colloquium</td>
<td>1</td>
</tr>
<tr>
<td>CCMD 797 Laboratory Rotations</td>
<td>3</td>
</tr>
<tr>
<td>CCMD 793 A Fundamentals of Integrated Systems</td>
<td>4</td>
</tr>
<tr>
<td>CCMD 793 H Molecular Biology</td>
<td>4</td>
</tr>
<tr>
<td>CCMD 793 J Introduction to Biomedical Research</td>
<td>1</td>
</tr>
<tr>
<td>CCMD 793 G Cardiovascular and Respiratory Biology</td>
<td>2</td>
</tr>
<tr>
<td>CCMD 793 E Muscle Structure and Function</td>
<td>2</td>
</tr>
<tr>
<td>EXPH 791 A Advanced Study Exercise Physiology I</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 791 B Advanced Study Exercise Physiology II</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 791 C Advanced Study of Exercise Physiology III: Neural regulation of muscle structure and function</td>
<td>3</td>
</tr>
<tr>
<td>EXPH 797 (Must be completed prior to dissertation.)</td>
<td>12–24</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>
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</table>

*Specific courses to be determined by doctoral committee.

**Recommended—One of the Following Courses**

<table>
<thead>
<tr>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CCMD 793F Immunology II</td>
</tr>
<tr>
<td>CCMD 793D Neuroscience II</td>
</tr>
<tr>
<td>CCMD 793C Respiratory System Biology</td>
</tr>
</tbody>
</table>

**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 three manuscripts published or submitted to a journal for peer review 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. This will consist of a written and an oral component to determine that 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 their research/science preparation during his/her master’s degree was considered to be insufficient to prepare the student for work at the doctoral level. After passing the Qualifying Examination, students 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.

**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

The student will complete a written research proposal in a grant form (NIH R21, R03, AHA). The grant proposal must include all of the elements of a grant including pilot data. The student's Dissertation Committee will evaluate the project and must have unanimous approval of the written document for passing the written component of the qualifying examination. The written examination in the grant format will contain 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 experimental procedures that will be used to accomplish the specific aims of the project. This section should clearly present the rationale for the chosen experimental design and procedures, and 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 2: Oral Examination of Research Proposal

Normally the oral examination is set within two to four weeks following the acceptance of the Part 1 written examination. However, the oral exam component of Part 2 can only be scheduled if the members of the Dissertation Committee judge the written submission for Part 1 to be acceptable (or acceptable pending minor revisions). If Part 2 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 2)

• The Examination Committee will consist of all members of the Dissertation Committee. The dissertation chair will provide each committee member copies of the student’s responses for Part 1 and Part 2. 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 2, and to obtain the member’s vote (pass/no pass). If all committee members are satisfied with written component of Part 2, pending non-fatal revisions, the oral examination will be scheduled.

• The dissertation chair will notify the student whether the oral defense of Part 2 can be scheduled. If Part 2 (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/advertisement of this oral examination. Notification and scheduling of the oral examination (Part 2) 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:
  a. The date, location, and time of the oral presentation and defense.
  b. The name of the student and each of the members of the student’s Dissertation Committee (identify the committee chair in the advertisement).
  c. The title of the student’s research proposal that will be presented and defended during Part 2.

• 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 Graduate Handbook for Exercise Physiology for an example of this notification).

In the oral examination for Part 2, 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.

Failure of to successfully complete the comprehensive examination after two attempts is grounds for dismissal. 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.

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 requirements). 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 substitute 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.

Qualifications For Advancement to Ph.D. Candidacy
The student must demonstrate:
• A wide base of knowledge in exercise physiology
• An ability to think independently
• Integration of existing knowledge into a practical research question, by identifying what is known, what is not known, etc.
• Critical evaluation of literature
• Problem-solving skills
• Acceptable written and oral communication skills including the ability to “think on one’s feet.”

Submission of Part 1—Written Research Proposal to a Funding Agency
Part 1 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 1 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 ideas for the dissertation project.

The student should wait until successfully negotiating Part 1 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 the committee chair, and Dissertation Committee. It is acceptable and appropriate for the student to obtain feedback from all members of the Dissertation Committee or other faculty following successful completion of Part 1 and revise his/her grant (Part 1) appropriately before submitting it to a funding agency.

The submission of the grant proposal (Part 1) 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 and submit all manuscripts containing these data of peer review journals. 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, 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).

673. *Exercise Prescription*. 3 Hr. This course will provide graduate students an understanding of the exercise prescription process and the exercise management of patients with chronic diseases.

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

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


786. *Musculoskeletal Biology*. 3 Hr. Introduction to current research approaches in musculoskeletal biology of exercise physiology. This course will stress critical thinking, and refine skills related to research design and evaluation of research methods used in exercise physiology.

*School of Medicine*

791 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.

791Y. 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.

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

794. Seminar. I, II, S. 1-6 Hr. Special 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 student body of his/her program. (Graded S/U).

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. 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 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 approximately 50 to 55 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, M.D. 20824-1220. AOTA's phone number is (301) 652-AOTA. The OT program at WVU was initially awarded accreditation in 1998, and awarded re-accreditation in 2003. The next scheduled onsite visit for accreditation will be 2013.

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 or at http://www.nbcot.org. 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. Note: A felony conviction may impact a graduate's ability to take the NBCOT examination and/or obtaining a state license. For further information on NBCOT's Character Review Program, interested parties can obtain information from that Board or their Web site.

**Prerequisite Courses**

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<td>STAT 211*</td>
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*Note: Check for prerequisites for PHYS 101, PSIO 241, and/or STAT 211 by contacting either the Division of Occupational Therapy, or the department under which those courses are housed.

Fulfillment of WVU's General Education Curriculum (GEC) not covered by the above. 
(see the **WVU Undergraduate Catalog**) ................................................................. 12

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, and/or the Division of Occupational Therapy (304) 293-8828. 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 50 to 55 hours of college credit which includes the pre-requisites listed previously. 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 is normally required (a higher GPA may be necessary given the competitive nature of the program).
- Minimum of 60 hours of volunteer experience with a licensed occupational therapist. Students should contact the Division of Occupational Therapy to determine the type of experience required. Students should keep a record of dates/hours, locations, and name of supervising occupational therapist.
- Two recommendations are also required, one from an occupational therapist who supervised the volunteer/work experience and the other from a professor who has recently taught the applicant. These recommendation forms are included in the application packet.
• Completion of all prerequisite courses by the end of the semester of application (normally, second semester of sophomore year) is normally required.

**Distance Learning**

The Division of Occupational Therapy also offers an extended (distance) learning track for occupational therapy assistants (COTAs) who wish to become occupational therapists. The requirements for this track are similar to those of the traditional track, with the exception that rather than volunteer work, applicants need to have completed the equivalent of one year’s professional employment as an occupational therapy assistant. Occupational therapy assistants (COTAs) interested in this track should contact the Division of Occupational Therapy at (304) 293-8828 for general information.

**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. Students in the program are required to participate in the School of Medicine’s laptop computer purchase lease-to-own program, which provides each student with a state-of-the-art computer that contains course- and-program relevant software.

**Occupational Therapy Curriculum Plan**

**Junior Year**

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**Senior Year**

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**Graduate Year**

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**Program Timeframe**

Students must complete all didactic coursework and Level II Fieldworks within a period of five years after commencing the occupational therapy program. Furthermore, all Level II Fieldwork must be completed within 18 months following completion of academic coursework while remaining within the five-year time frame.

**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 Semester—First Year*
OTH 301 Professional Foundations
OTH 302 Survey of Clinical Problem Solving
OTH 303 Functional Movement Across the Lifespan
OTH 304 Physical Impairment and Function 1
OTH 306 Kinesiologic Foundations for Intervention
OTH 335 Therapeutic Activity

*Spring Semester—First Year*
OTH 365 Physiology of Human Occupation
OTH 307 Neurobiologic Foundations
OTH 308 Evaluation Procedures
OTH 321 Developmental Life Tasks
OTH 360 Research Methods in OT
OTH 480 Current Topics in Occupational Therapy

*Fall Semester—Second Year*
OTH 384 Level I Fieldwork 1
OTH 401 Physical Impairment and Function 2
OTH 403 Occupational Therapy in Pediatrics 1
OTH 417 Occupational Therapy in Geriatrics
OTH 430 OT in Mental Health
OTH 440 Vision and Perception
OTH 497 Senior Research

*Spring Semester—Second Year*
OTH 386 Level I Fieldwork 3
OTH 405 Prosthetics and Orthotics
OTH 408 Physical Impairment and Function 3
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 Semester—Beginning Third Year
OTH 540 Level II Fieldwork 1

Fall Semester—Third Year
OTH 480 Current Topics in Occupational Therapy
OTH 500 Health Care Issues in OT
OTH 503 OT in Pediatrics
OTH 520 OT in the Work Environment
OTH 551 OT in Prevention and Wellness
OTH 570 Advanced Theory in OT
OTH 697 Supervised Research in OT

Spring Semester—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.

300. Essentials of Clinical Anatomy. 4 Hr. PR: OTH student status. A study of human gross anatomy, micro anatomy and embryology with major emphasis on the musculoskeletal system.

301. Professional Foundations. 3 Hr. PR: OTH student status. Introduction to fundamentals of professional behavior for the occupational therapist. Includes units on history, paradigms, communication, documentation, ethics, interdisciplinary teamwork, licensure requirements, and medical terminology.


303. Functional Movement Across the Lifespan. 2 Hr. PR: OTH student status. Including acquisition of developmental patterns, motor control, motor skill acquisition. This course also provides an overview of the effects of normative processes of aging on neuromotor patterns in occupational performance.

304. Occupational Science. 4 Hr. PR: OTH student status. An introduction to signs and symptoms and medical management of orthopedic and physical dysfunction/disabilities encountered by the occupational therapist. Emphasis is upon the effects of physical dysfunction/disabilities on human occupation.


307. Neurobiologic Foundations. 4 Hr. PR: OTH student status. Basic and clinical applications or neuroanatomy and neurology. Includes lectures on neurophysiological basis of physical and occupational therapy practice.


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.

360. Research Methods in Occupational Therapy. 3 Hr. PR: OTH student status. An introduction to principles of research methodology and data analysis in the realm of occupational science/occupational therapy. Includes a focus on scientific methodology, research design, data collection, data analysis, and ethical considerations.

384. Level I Fieldwork 1. 2 Hr. CPR training and clinical instruction in the occupational therapy process, OT documentation, basic measurement skills, experiences with people with disabilities, and participation in professional activities. (Grading will be P/F.)
385. **Level I Fieldwork 2.** 2 Hr. PR: OTH student status. Students will be provided with fieldwork experience in the occupational therapy process, and ADL preceptual, and mental health assessments. Students will be placed in a variety of settings where mental health issues may be observed. (Grading will be P/F.)

386. **Level I Fieldwork 3.** 2 Hr. PR: OTH student status. Students will be provided with fieldwork experiences in occupational therapy processes. (Grading will be P/F.)

401. **Occupational Science 2.** 4 Hr. PR: OTH student status. An introduction to signs and symptoms and management and effect of neurological dysfunction and disabilities on human occupation encountered by the occupational therapist. Includes theories of treatment and basic treatment technologies.

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.

414. **Developmental Disabilities.** 2 Hr. PR: OTH student status. Overview of occupational therapy approaches toward developmental disabilities, including focus on etiology, pathology, and progression of conditions specific to various developmental disabilities.

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.

417. **Occupational Therapy in Geriatrics.** 3 Hr. PR: OTH student status. Overview of normative aging using an occupational therapy frame of reference. Common problems of seniors are discussed.

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.

430. **Occupational Therapy in Mental Health.** 3 Hr. PR: OTH student status. Clinical and functional science lectures pertaining to OT practice in mental health environments. Course includes introduction to occupational therapy clinical and functional assessment, and management protocols.

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.

435. **Therapeutic Activity.** 3 Hr. PR: OTH student status. Students will develop skills in performance component analysis, performance context analysis, and occupational performance analysis.

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.

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

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

497. **Research.** I, II, S. 1-6 Hr. Independent research projects.

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 occupational therapist. (1 hr. lec., 4 hr. lab.)

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 2 Fieldwork 1. 1-6 Hr. PR: OTH student status. Students are placed full-time for 6-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 6 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.

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

640. Level II Fieldwork 2. 6 Hr. PR: OTH student status. Students are placed in one 12-week, or two 6-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.)

**Division of Physical Therapy**

MaryBeth Mandich, PT, Ph.D., Chair

http://www.hsc.wvu.edu/som/pt

**Degree Offered**

*Doctor of Physical Therapy (D.P.T.)*

**Nature of Program**

The WVU Division of Physical Therapy 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 body recognized by the Council on Postsecondary Accreditation. The program became an entry-level doctoral degree program in Fall 2005. 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 three years 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. A doctor of physical therapy (D.P.T.) degree 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 that 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.

Demand for physical therapy services is expected to continue over the next ten years. The demand for physical therapists in all practice settings is affected by such factors as an aging population and increased emphasis on a healthy, active lifestyle. The professional organization represents therapists on health care issues and is working hard to assure that physical therapy will continue 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.

Physical therapists work in hospitals, 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. 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, must have a bachelor’s degree, and have completed or be enrolled in the pre-requisite coursework detailed below. These courses are available at most colleges.

The following requirements must be met to apply to the WVU Physical Therapy Program:

- Applicant must have a minimum cumulative GPA of 3.0. Applicant must have a minimum prerequisite science GPA of 3.0 which includes two general biology courses, two chemistry courses, two physics courses, statistics, anatomy, and human physiology.
- Applicants must have a minimum of 60 hours of clinical volunteer or work experience obtained from two different physical therapy settings. Though these hours may be obtained during high school and college, some volunteer hours obtained during the junior or senior college years is strongly recommended.
- Applicants must submit two letters of recommendation from physical therapists with whom the student has worked or volunteered. Forms for the recommendation letters will be provided in the application packet. These letters must be from licensed physical therapists; the Admissions Committee will not consider letters from non-physical therapists.
- Applicant must submit one letter of recommendation from a professor from their undergraduate major. The form for the recommendation will be provided in the application packet.
• Applicant must take the Graduate Record Examination (GRE). While no minimum score is required, a combined verbal/quantitative score of at least 1,000 and a writing score of at least 4.0 will be considered competitive.
• Applicant must have a minimum grade of C in each pre-requisite course.
• Applicant must have completed or be enrolled in the required courses listed below:

<table>
<thead>
<tr>
<th>Pre-requisite Courses</th>
<th>WVU Course Number</th>
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</thead>
<tbody>
<tr>
<td>Biology with lab</td>
<td>BIOL 101/103; 102/104</td>
</tr>
<tr>
<td>Chemistry with lab</td>
<td>CHEM 115, 116</td>
</tr>
<tr>
<td>Physics with lab</td>
<td>PHYS 101, 102</td>
</tr>
<tr>
<td>General Psychology</td>
<td>PSYC 101</td>
</tr>
<tr>
<td>Developmental Psychology</td>
<td>PSYC 241</td>
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<tr>
<td>Anatomy</td>
<td>STAT 211 or ECON 225</td>
</tr>
<tr>
<td>Introductory Statistics</td>
<td>ATTR 219</td>
</tr>
<tr>
<td>Physiology</td>
<td>PSIO 241 or PSIO 441 (recommended)</td>
</tr>
</tbody>
</table>

3 hrs. Human Anatomy
The anatomy courses included in the DPT curriculum are extremely rigorous. Students should seek out the highest level anatomy course(s) available. The minimum prerequisite is a 3 credit hour course in Human Anatomy; ideally with a laboratory. Courses in comparative or animal anatomy will not be accepted. Many colleges and universities offer a two-semester Anatomy and Physiology sequence. Because these courses often vary with respect to the balance between anatomy and physiology content, all combined Anatomy and Physiology courses must be reviewed prior to being accepted for the Human Anatomy prerequisite.

3 hrs. Human Physiology
A two semester, one-year sequence of combined anatomy and physiology may be substituted for the human physiology course requirement.

It is recommended that prerequisite courses in human anatomy and human physiology be completed within two years prior to admission.

WVU maintains an online Course Equivalency System (CES) (http://www.arc.wvu.edu/tes/index.php) that lists course equivalencies at many institutions in the state/region.

Applicants who complete any of their prerequisites outside of WVU should check the CES to see if each prerequisite course transfers directly to WVU as the required WVU course. If your undergraduate institution is not listed in the CES, or if you have taken prerequisite courses that transfer in as open credit or not equivalent, you must submit a photocopy of the catalog description of the courses in question. Upon receiving your application, the Admissions Committee may request that you submit a copy of the course syllabus for further review.

**Baccalaureate Preparation**

Applicants must have earned a baccalaureate degree, or plan on completing a baccalaureate degree by May of the year of entering the program. Students may apply with a number of different baccalaureate degrees; however, they must complete the pre-requisites for the physical therapy program as described no later than the Spring semester of the year of application.

Students who want careers in health care may find that physical therapy fulfills their goals. A recommended baccalaureate preparation is in the field of exercise physiology. At WVU, exercise physiology majors will be able to obtain all of the pre-requisites listed above during their course of study. Another common baccalaureate major may be biology. As discussed above, these are merely suggestions and students can apply from any institution of higher education with any degree background, as long as they meet the aforementioned pre-requisites.
**Additional Information and Updates**

For updates, be sure to periodically check the WVU Division of Physical Therapy Web site (http://www.hsc.wvu.edu/som/pt). You may also contact the program manager for the physical therapy program, Brenda Wolfe, at bwolfe@hsc.wvu.edu.

**Applications**

Application packets are available from the Health Sciences Center Admissions and Records office beginning December 1. (P.O. Box 9815, Morgantown WV 26506-9815; (304) 293-3521.) The deadline for submission of application materials is typically January 31. The official deadline will be posted on the Web site and printed in the admissions packets.

**Physical Therapy (PT)**

Course information for the doctor of physical therapy degree can be found on the following Web site: http://www.hsc.wvu.edu/som/pt.

**Physical Therapy Curriculum**

Note: This is subject to change without notice.

### Summer

<table>
<thead>
<tr>
<th>Pre-First Year (II)</th>
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<tr>
<td>PT 705 <strong>Intro. to Evid. Based PT</strong></td>
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<td>PT 706 <strong>Advanced Clinical Anatomy</strong></td>
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### First Professional Year

<table>
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<tr>
<th>First Semester</th>
<th>Hrs.</th>
<th>Second Semester</th>
<th>Hrs.</th>
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<tr>
<td>PT 711 <strong>Professional Roles 1</strong></td>
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<td>PT 724 <strong>Exercise Foundations</strong></td>
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<td>PT 713 <strong>Fun. Mvmt. Across Lifespan</strong></td>
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<td>PT 720 <strong>Clinical Education</strong></td>
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<td>PT 723 <strong>Developmental Life Tasks</strong></td>
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<td>PT 715 <strong>Evidence Based PT 1</strong></td>
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<td>PT 725 <strong>Evidence Based PT 2</strong></td>
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<td>PT 716 <strong>Kinesiologic Foundations</strong></td>
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<td>PT 727 <strong>Neurobiologic Foundations</strong></td>
<td>4</td>
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<td>PT 718 <strong>Evaluation Procedures</strong></td>
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<td>PT 732 <strong>Physical Ther. Agents 1</strong></td>
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<td>PT 733 <strong>Cardiopulmonary PT</strong></td>
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<td>PT 742 <strong>Phys.Therapeutic Agents</strong></td>
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<td>PT 734 <strong>Clinical Sciences 2</strong></td>
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<td>PT 738 <strong>PT Procedures 2</strong></td>
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### Second Professional Year

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<td>PT 741 <strong>Professional Roles 2</strong></td>
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<td>PT 754 <strong>Clinical Sciences 4</strong></td>
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<td>PT 743 <strong>Geriatric Physical Therapy</strong></td>
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<td>PT 755 <strong>Evidence Based PT 4</strong></td>
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<td>PT 745 <strong>Evidence Based PT 3</strong></td>
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<td>PT 756 <strong>Orthopedic PT 2</strong></td>
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<tr>
<td>PT 746 <strong>Orthopedic PT 1</strong></td>
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<td>PT 757 <strong>Neurologic PT 1</strong></td>
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<tr>
<td>PT 744 <strong>Clinical Sciences 3</strong></td>
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<td>PT 797 <strong>PT Research 1</strong></td>
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<td><strong>Total</strong></td>
<td>6</td>
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</tbody>
</table>
Pathologists’ Assistant
Cheryl Germain, M.H.S., P.A. (ASCP), Program Director
cgermain@hsc.wvu.edu
Kenneth B. Fallon, M.D., Assistant Professor and Medical Director
http://www.hsc.wvu.edu/som/pa/

Degree Offered
Master of Health Science

The Profession
A pathologists’ assistant is a healthcare professional who is qualified through academic and practical training to provide services in anatomic pathology under the direction of a qualified pathologist. Pathologists’ assistants serve as “physician-extenders”—much in the same manner as physicians’ assistants. The addition of pathologists’ assistants to the pathology team can reduce cost, increase revenue, and improve access to health care.

In practice, pathologists’ assistants (PA) are responsible for the processing of the surgical pathology specimen from receipt to dissection and description to submission of tissue to histology. In autopsy practice, the PA is involved in reviewing the medical record of the decedent, evisceration, dissection, and selection of tissue for submission to histology as well as formulation of a preliminary anatomic diagnosis and autopsy report under the direction of a pathologist. Many PAs are involved in laboratory management, teaching at the University level, training of residents and medical students, forensic investigation, or research.

Nature of Program
The graduate program in pathologists’ assistant began in January 2008 and is administered by the School of Medicine. Students are admitted into the master of health science program after earning a baccalaureate degree from a regionally accredited college or university. Students with a cumulative grade point average of 3.25 or higher in the B.S. degree in medical technology program may be provisionally admitted directly into the pathologists’ assistant program at the end of their junior year.

This program will be a 24-month master’s level program that prepares graduates as allied health professionals for careers as pathologists’ assistants.

During the second year, the student receives both didactic instruction and practical experience. Students receive practical experience at one of the programs affiliated medical laboratories including, West Virginia University Department of Pathology Ruby Hospital and Medical Examiner’s Office, Morgantown, WV; Allegheny General Hospital, Allegheny General Hospital Suburban Campus, The Western Pennsylvania Hospital, The Western Pennsylvania Hospital Forbes Regional Campus, and Magee-Women’s Hospital, Pittsburgh, PA; Alle-Kiski Medical Center, Natrona Heights, PA; Canonsburg General Hospital, Canonsburg, PA; and Thomas Memorial Hospital, Charleston, WV.

The WVU Pathologists’ Assistant program is seeking accreditation from the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), 8410 W. Bryn Mawr Avenue, Suite 670, Chicago, IL 60631-3415, (773) 714-8880. Once the program is accredited, graduates will be eligible for certification by the Board of Registry of the American Society for Clinical Pathology (ASCP).
Admission to the Pathologists' Assistant Program

All students seeking admission to the master of health science, pathologists' assistant program must meet the following admissions requirements:

- Hold an earned baccalaureate degree from a regionally accredited institution of higher education.
- Successfully completed the specific coursework in mathematics and sciences.
- Achieve a minimum GPA (cumulative and pre-requisite courses) of 3.0 on a 4.0 scale.
- Submit two letters of recommendation.
- Complete an interview with the Admissions Committee.
- Submit an admissions packet including the application form, personal statement, essential functions form, and official transcripts from all colleges and universities attended.

**Requirement**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Prep</td>
<td>Baccalaureate Degree*</td>
</tr>
<tr>
<td>Pre-requisite Courses</td>
<td><strong>8 Hr. Biology with laboratory</strong></td>
</tr>
<tr>
<td></td>
<td><strong>8 Hr. College Chemistry with lab</strong></td>
</tr>
<tr>
<td></td>
<td><strong>4 Hr. CHEM 231, Organic Chemistry: Brief Course or 4 Hr.</strong></td>
</tr>
<tr>
<td></td>
<td>Biochemistry with laboratory or equivalent</td>
</tr>
<tr>
<td></td>
<td><strong>4 Hr. Microbiology with laboratory</strong></td>
</tr>
<tr>
<td></td>
<td><strong>3 Hr. College algebra</strong></td>
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<tr>
<td>Grade Point Average</td>
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<td></td>
<td>3.0 in the pre-requisite courses</td>
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<td>Essential Functions</td>
<td>Review essential functions and submit the signed form</td>
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<tr>
<td>Recommendations**</td>
<td>Two letters of recommendation</td>
</tr>
<tr>
<td>Interview**</td>
<td>A personal interview with the Pathology Assistant Program Admission Committee</td>
</tr>
</tbody>
</table>

* Students must have a baccalaureate degree prior to beginning the professional sequence. However, the program has established the following admissions classifications.

Direct Admit. A limited number of students completing the bachelor of science in medical technology program who have a cumulative GPA of 3.25 may apply to the master of science, pathologists' assistant program at the end of their junior year. These students will be admitted into the program after completing the B.S. in medical technology degree.

** Direct admit students are not required to submit recommendations nor complete an interview.

Early Decision. A student may apply at the end of the third year in college (90 semester hours), if they have met all pre-requisites with the exception of the baccalaureate degree. Students may be accepted contingent upon satisfactory completion of the bachelor's degree.

Regular Decision. A student applies in the admission cycle during their senior year. Typically, application will be submitted in January of the senior year. Admission is contingent upon satisfactory completion of the baccalaureate degree.

**Performance Standards**

Students are required to maintain a semester GPA of 3.0 to progress in the first and second year of the professional program.

**Application Procedure**

Each year the pathologists' assistant program selects a limited number of students from the applications received for admission. Application packets for admission to the program are available after June 1 from the Office of the Assistant Director of Admissions and Records, WVU Health Sciences Center, P.O. Box 9815, Morgantown, WV 26506-9815 or from the WVU Office of Admissions and Records Web site: http://www.arc.wvu.edu/admissions/applications.html#hscapp. The application fee is $25 for residents and $40 for non-residents. Each applicant must arrange for transcripts to be sent directly from all undergraduate institutions attended to the Admissions and Records office.

When the application is complete, the file is sent to the Pathologists' Assistant Admissions Committee. A complete admissions packet contains: completed application form and personal statement, official transcripts, two references and the essential functions form. Please note that the admissions office does not handle reference letters. Each application requires two
letters of reference (one from a professor and one from a laboratory professional with whom you have worked.) Letters of reference should be mailed to: Cheryl Germain, Program Director, WVU Pathologists’ Assistant Program, P.O. Box 9203, Morgantown, WV 26506-9203.

An interview will be granted to qualified applicants after a review of the application packets.

Pathologists’ Assistant Program Essential Functions

In accordance with Section 304 of the 1973 Vocational Rehabilitation Act, the West Virginia University pathologists’ assistant program has adopted minimum technical standards for assessment of all applicants to the pathologists’ assistant program. Because the master’s degree in health science/pathologists’ assistant signifies that the holder has obtained minimum competencies in all areas of the anatomic pathology laboratories, it follows that graduates must have the knowledge and skills to function in a wide variety of laboratory situations and to perform a wide variety of procedures.

Candidates for the master’s degree in health science/pathologists’ assistant must have somatic sensation (sense of touch) and the functional use of the senses of vision and hearing. Candidates’ diagnostic skills will also be lessened without the functional use of the sense of equilibrium, smell, and taste. Additionally they must have sufficient motor function to permit them to carry out the activities described in the sections that follow. They must be able to consistently, quickly, and accurately integrate all information received by whatever sense(s) employed, and they must have the intellectual ability to learn, integrate, analyze, and synthesize data.

A candidate for the master’s degree in health science/pathologists’ assistant must have abilities and skills which include observation, communication, motor, conceptual, integrative, quantitative, behavioral, and social. Technological compensation can be made for some handicaps in certain of these areas but a candidate should be able to perform in a reasonably independent manner. The use of a trained intermediary means that a candidate’s judgment must be mediated by someone else’s power of selection and observation.

1. Observation: the candidate must be able to observe demonstrations, procedures and instruments in the basic sciences and clinical courses. Observation necessitates the functional use of the sense of vision and somatic sensation. It is enhanced by the functional use of the sense of smell.

2. Communication: a candidate should be able to speak, hear, and observe people in order to elicit information and perceive nonverbal communications. A candidate must be able to communicate effectively and efficiently in oral and written form with members of the health care team.

3. Motor: candidates should have sufficient motor function to perform laboratory procedures. This action requires the coordination of both gross and fine muscular movements, equilibrium, and functional use of the senses of touch and vision.

4. Intellectual — conceptual, integrative, and quantitative abilities: these abilities include measurement, calculation, reasoning, analysis, and synthesis. Problem solving requires all of these intellectual abilities. In addition, the candidate should be able to comprehend three-dimensional relationships and to understand spatial relationships of structures.

5. Behavioral and Social Attributes: a candidate must possess the emotional health required for full utilization of his/her judgment, the prompt completion of all responsibilities, and the development of mature, sensitive relationships with patients and co-workers. Candidates must be able to tolerate physically taxing workloads and to function effectively under stress. They must be able to adapt to changing environments, to display flexibility and to learn to function in the face of uncertainties. Compassion, integrity, concern for others, interpersonal skills, interest, and motivation are all personal qualities that should be assessed during admissions and education process.

In its evaluation of applicants to the West Virginia University pathologists’ assistant program, the Admissions Committee will approach each applicant with the following questions in mind. When an applicant does not meet a non-academic standard as defined above, and when this would in the professional judgment of the committee, not satisfy the pathologists’ assistant objectives for the student in performing laboratory procedures, education, and research, such opinion will be documented by the Admissions Committee.

The questions are not designed to disqualify an applicant but rather to give the Admissions Committee more complete information about an applicant’s ability to meet these nonacademic standards:
1. Is the candidate able to observe demonstrations and perform procedures in the basic sciences and clinical courses?
2. Is the candidate able to analyze, synthesize, solve problems, and make judgments about results obtained on patient specimens?
3. Does the candidate have sufficient use of the senses of vision, hearing, and somatic sensation necessary to perform the indicated laboratory procedures?
4. Can the candidate reasonably be expected to communicate the results of laboratory tests to other members of the health care team with accuracy, clarity, and efficiency?
5. Can the candidate reasonably be expected to learn and perform laboratory tests and operate instruments?
6. Can the candidate reasonably be expected to display good judgment in the analysis of procedure results?
7. Can the candidate reasonably be expected to accept criticism and respond by appropriate modification of behavior?
8. Can the candidate reasonably be expected to possess the perseverance, diligence, and consistency to complete the pathologists’ assistant program and to become a practicing pathologists’ assistant?

**Curriculum**

**Spring**

<table>
<thead>
<tr>
<th>Year One</th>
<th>Hrs.</th>
<th>Year Two</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>PATH 603 Human Anat. for PAs</td>
<td>5</td>
<td>PATH 627 Path Asst. Practicum I</td>
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<tr>
<td>PATH 625 Anatomical Path Tech.</td>
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<td>PATH 630 Pathology Review I</td>
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<td>FIDP 493B Adv. Forensic Photo</td>
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<td>PATH 728 General Pathology</td>
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<th>Hrs.</th>
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<td>PATH 628 Path Asst. Practicum II</td>
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<td>PATH 751 Mech. of Disease</td>
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<td>PATH 520 Molecular Diag.</td>
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**Graduation Requirements**

Students are required to maintain a GPA of at least 3.0 on all work taken as a graduate student while enrolled in the pathologists’ assistant program. A minimum 3.0 GPA is required to graduate from the program.

**Forensic Identification Program (FIDP)**

435. Advanced Forensic Photography. 3 Hr. A more in-depth photography course for students who wish to pursue forensic photography as a possible employment option upon graduation.

**Medical Technology (MTEC)**

465. Clinical Laboratory Management. 2 Hr. Laboratory organization and principles of laboratory management.

**Pathology (PATH)**

520. Seminars in Molecular Diagnostics. 1 Hr. This course provides an overview of molecular diagnostic theory and procedures.
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.

603. **Human Anatomy for Pathologist's Assistant.** 5 Hr. This course will cover gross and microscopic human anatomy including embryology and microanatomy.

610. **Pathology Assistant Education Methods.** 1 Hr. Techniques in educational methodology for pathologist's assistants.

620. **Clinical Pathology Seminar.** 1 Hr. This course presents a review of clinical pathology, including pertinent forensic toxicology and diagnostic radiology.

625. **Anatomical Pathology Techniques.** 4 Hr. This course will cover standard techniques in surgical and autopsy dissection, preparation of reports, basic forensic, investigation techniques, basic histological and immunological staining techniques.

627. **Pathology Assistant Practicum 1.** 9 Hr. Rotations in surgical and autopsy pathology to include forensics and pediatrics.

628. **Pathology Assistant Practicum 2.** 9 Hr. Rotations in surgical and autopsy pathology to include forensics and pediatrics.

629. **Pathologists' Assistant Practicum 3.** 7 Hr. PR: PATH 628. This course is a continuation of PATH 628 and advanced procedures and application of advanced techniques in surgical and autopsy pathology.

630. **Pathology Review 1.** 2 Hr. This course includes an intense review of clinical and anatomical pathology theory and techniques, and presentation of scientific journal articles and clinical cases.

631. **Pathology Review 2.** 2 Hr. PR: PATH 630. This course is a continuation of PATH 630 and includes an intense review of clinical and anatomical pathology theory and techniques, and presentation of journal articles and clinical cases.

728. **General Pathology.** II. 5 Hr. PR: Consent. A study of the pathophysiological changes associated with human disease and a study of disease of major organ systems.

738. **Oral Pathology 1.** 3 Hr.

751. **Mechanisms of Human Disease.** 12 Hr. (For medical and selected graduate students in the medical sciences, with instructor consent.) Integrated study of disease using structure-function relationships. Includes participation in pathology departmental activities (postmortem exams and other diagnostic procedures), student presentations of clinical materials, case study discussions, and lectures.

753. **Oral Pathology 2.** (For dental students.) I. 2 Hr. PR: PATH 738 or Consent. Continuation of PATH 738.

755. **Clinico-Pathologic Correlation Conference.** (For dental students.) II. 1 Hr. PR: PATH 738 and PATH 753 or Consent. Histopathologic correlation with clinical case histories and presenting signs and symptoms presented in a case-based learning format.

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.

790. **Teaching Practicum.** I, II. S. 1-3 Hr. PR: (PATH 301 and PATH 302) or (PATH 728 and PATH 738 and PATH 753.) Supervised practice in college teaching of 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 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.** I, II. 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. 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. 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.)

**Medicine**

http://www.hsc.wvu.edu/som/students

**Degree Offered**

*Doctor of Medicine*

*Joint Doctor of Medicine and Doctor of Philosophy*

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 students who show exceptional interest and scholarly promise. All admission requirements of the School of Medicine and the specific graduate program apply. An M.D./M.P.H. program is available for those interested in public health issues.

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 this 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.

The following courses are required for consideration of an application to medical school:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>6</td>
</tr>
<tr>
<td>Biological sciences (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>Inorganic chemistry (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>Organic chemistry (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>Physics (with lab)</td>
<td>8</td>
</tr>
<tr>
<td>Social or behavioral sciences</td>
<td>6</td>
</tr>
</tbody>
</table>

Grading may be S/U.
Biochemistry and Cellular and Molecular 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. All required classes must be completed prior to January 1 of the year of admission.

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. Repeating courses to raise the grade is discouraged. Applicants who have been subject to suspension from WVU or other medical schools can be admitted only in very exceptional cases and at the discretion of the Admissions Committee.

Pre-Admission Tests
The score of the Medical College Admissions Test (MCAT) is one of the factors used by the Admissions Committee in considering an applicant for admission. It is recommended that students take the MCAT during the spring of their junior year in college. The MCAT must be taken by September of the year of application. MCATS taken in January of the year of admission will not be considered. The dates for beginning and closure of application acceptances are available through AMCAS and on our Web site.

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 online American Medical College Application Service (AMCAS) forms. They are online at http://www.aamc.org.

Application for admission in August should be made at the end of the previous school year. The last date for filing an application is November 1. 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, or verifiable interests in rural and primary care. 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. An early decision program is available for those residents and non-residents with strong grades and MCATs who wish only to apply and attend WVU.

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. Acceptances are made on a rolling basis.

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 considered 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, and recommendations are 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.
A criminal background check is required and must be successfully passed prior to matriculation. Certain convictions negate an offer to attend medical school at WVU.

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 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 four 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 (USMLE), 3) successful completion of a clinical physical examination competency test, and 4) 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 WVU 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 upon 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 unsatisfactory (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.

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. Students are limited 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 (clinical knowledge and clinical skills) 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 non-disciplinary matters are governed by the concept of academic due process. 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. 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 Office of Student Services, and on the Student Services Web site.

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 WVU will change as needs dictate.

Community Service
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.

Medical Education Program of Study
The medical education curriculum was restructured in 1998 and again in 2007. 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 including physical diagnosis and clinical integration running concurrently for the first year.
## Medicine III Clerkships

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Clerkship</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<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>
</tr>
<tr>
<td>8</td>
<td>Pediatrics</td>
</tr>
<tr>
<td>8</td>
<td>Family Medicine including one month Rural Rotation</td>
</tr>
<tr>
<td>48</td>
<td>Total</td>
</tr>
</tbody>
</table>

## Medicine IV Rotations

<table>
<thead>
<tr>
<th>Weeks</th>
<th>Rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Two-Month Rural</td>
</tr>
<tr>
<td>4</td>
<td>Subinternship</td>
</tr>
<tr>
<td>4</td>
<td>Critical Care/Anesthesia</td>
</tr>
<tr>
<td>18</td>
<td>Electives</td>
</tr>
<tr>
<td>34</td>
<td>Total</td>
</tr>
</tbody>
</table>
### Medicine I (38 wks.)

<table>
<thead>
<tr>
<th>Hrs. -wk.</th>
<th>Fall (16 wks.)</th>
<th>Winter (15 wks.)</th>
<th>Spring (7 wks.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>CCMD 730 Human Function</td>
<td>NBAN 703 Human Structure</td>
<td>CCMD 775 Neurobiology</td>
</tr>
<tr>
<td>4-12</td>
<td>Problem-Based Learning</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.5 hrs./wk.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13-24</td>
<td>CCMD 745 Physical Diagnosis and Clinical Integration 1</td>
<td>CCMD 746 Physical Diagnosis and Clinical Integration 1</td>
<td></td>
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</tbody>
</table>

### Medicine II (34 wks.)

<table>
<thead>
<tr>
<th>Hrs. -wk.</th>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>MICB 701 Immunity, Infection, and Disease</td>
<td>PATH 751 Mechanisms of Disease</td>
<td>PCOL 761 Medical Pharmacology</td>
</tr>
<tr>
<td></td>
<td>Integrated: Microbiology, Immunology,</td>
<td>Pathology</td>
<td>Pharmacology and Toxicology</td>
</tr>
<tr>
<td>6-10</td>
<td>(18 hrs./wk.)</td>
<td>(18 hrs./wk.)</td>
<td>(18 hrs./wk.)</td>
</tr>
<tr>
<td>11-20</td>
<td>CCMD 740 Behavioral Science &amp; Psychopathology (16 wks.)</td>
<td>CCMD 725 Ethics (8 wks.)</td>
<td></td>
</tr>
<tr>
<td>21-25</td>
<td>CCMD 721 Physical Diagnosis and Clinical Integration 2</td>
<td>CCMD 722 Physical Diagnosis and Clinical Integration 2</td>
<td></td>
</tr>
</tbody>
</table>
First Year
Medical students' first year: 38 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, *Introduction to Behavioral Science, and Physical Diagnosis and Clinical Integration* (large group alternating every other week with small groups). While *Introduction to Behavioral Science and Physical Diagnosis and Clinical Integration* run throughout the year, the basic science component changes each block. The first block (16 weeks) contains a multidisciplinary run course: human function (physiology, biochemistry, and genetics.). Second block (15 weeks) consists of human structure (gross anatomy, embryology, and microanatomy: large group, and laboratory). Third block (seven weeks) consists of multidisciplinary neuroscience (ten hours large group, laboratory and small group). A weekly problem-based learning group (PBL) is maintained throughout the first year.

Second Year
Medical students' second year: 34-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 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).

Clinical Years
The last two years of study take place in the clinics, hospitals, and community settings where students have the opportunity to help diagnose and treat patients under supervision of the 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. One month is spent in rural primary care. 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 smaller number of students will also complete their clinical work on the Eastern Division 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. Courses selected are subject to approval of an associate dean in the Office of Student Services. Four months of the senior year are committed to required clerkships at the home campus which include one month in internal medicine, family general medicine, surgery, or pediatric sub-internship; one month of acute care; and two months of rural primary care. The remaining 4.5 months of the senior year are elective at approved teaching sites. A catalog is available online that lists the approved electives and selection guidelines at http://education.hsc.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.
School of Nursing

Georgia L. Narsavage, Ph.D., R.N., F.A.A.N., Dean
Mary Jane Smith, Ph.D., R.N., Associate Dean for Graduate Academic Affairs
Elisabeth Shelton, D.N.Sc., R.N., Associate Dean for Undergraduate Academic Affairs
Cynthia Armstrong Persily, Ph.D., R.N., F.A.A.N., Associate Dean for Academic Affairs, Southern Region; Chair, Charleston Division
Stuart Wells, M.A., 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 Nursing Practice
Doctor of Philosophy

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 health care needs and emerging national and state changes in technology and health care delivery, and is enhanced by a supportive and open environment. The faculty’s educational effort is directed at providing high quality student-centered programs of instruction at all levels which prepare superb professional nurses to meet basic health care needs; advanced practice nurses to address complex health needs; and doctorally educated nurses to advance nursing knowledge through research; to assist in the formulation of policies to improve health care; and to serve as faculty in higher degree programs. Unique characteristics of the state mandate that the health care needs of rural populations and vulnerable groups be a major focus of education, research, and service, including faculty practice.

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. A B.S./B.A. to B.S.N. program is available for the college graduate seeking a B.S.N.

The master of science in nursing (M.S.N.) prepares graduates for advanced practice roles in rural primary health care. These roles include family nurse practitioner, pediatric nurse practitioner, and neonatal nurse practitioner. Additional advanced practice programs are under development.

Post-graduate nurse practitioner certification programs in these specialties are available for those who already have an M.S.N. The R.N. to M.S.N. program also has these specialties available.

The doctor of nursing practice (D.N.P.) prepares advanced practice nurses who will practice at the highest level of professional nursing and will advance the application of nursing knowledge for the purpose of improving health care for diverse populations.

The doctor of philosophy in nursing (Ph.D.) prepares nurse scholars/educators for roles in teaching, service, and research in nursing. The program prepares graduates who will contribute unique nursing expertise to the collaborative development of knowledge to improve health and quality of life.

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, these 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 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 for 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 scholarships administered by the University’s 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

Visit the School of Nursing Web site at http://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 at P.O. Box 9600, Morgantown, WV 26506-9600.

Faculty

* = Regular graduate faculty
# = Associate graduate faculty

Aila Accad, M.S.N., R.N. (WVU). Adjunct Instructor.
*Laurie Badzek, M.S., J.D., LLM, RN (WVU). Professor.
Deborah Baptist, B.S.N., R.N. Lecturer.
Emily Brinker Barnes, M.S.N., M.C.P. (Hahnemann U.). Clinical Instructor.
Elaine J. Blizman, R.N., C.N.M., M.S.N. (Case), Senior Lecturer.
Murrita C. Bolinger (U. of Va.), Adjunct Instructor.
Diana Boyle, M.S.N. (WVU). Adjunct Assistant Professor.
Lucinda M. Brown, M.S.N., C.N.M. (U. of Ky.) Adjunct Instructor.
K. Joy Buck, Ph.D., R.N. (U. Va.), Associate Professor.
*Peggy Burkhardt, Ph.D., R.N., F.N.P. (U. of Tx.). Associate Professor, Charleston Division.
Karen Campbell, M.S.N. (Vanderbilt U.). Adjunct Instructor.
Roger Carpenter, M.A., M.S.N. (Cleveland St. U.). Senior Lecturer.
Lena Antimonova Cerbone, M.S.N., C.N.M. (Yale SoN). Clinical Adjunct Instructor.
*Ilana Chertok, Ph.D., R.N., IBCLC (Ben-Gurion U. of the Negev). Associate Professor.
Ann Cleveland, Ed.D., R.N. (WVU). Assistant Professor Emerita.
Sandra Cotton, M.S., C.R.N.P. (U. of Md.). Director of Faculty Practice Plan. Clinical Assistant Professor.
Theresa Cowan, M.S.N., R.N.C.S. (WVU), Coordinator, GSC/WVU Joint Program. Assistant Professor.
Susan Coyle, M.S.N., R.N. (U. of Md.). Senior Lecturer.
Malene Davis, M.S.N., M.B.A. (WVU). Adjunct Assistant Professor.
Pamela Deiriggi, Ph.D., R.N., P.N.P., C.P.N.P. (U. Tex.). Coordinator PNP and NNP Tracks. Associate Professor.

Mary Elizabeth DuRant, M.S.N., R.N.C., W.H.N.P. (WVU). Clinical Assistant Professor.
Jann E. Foley, M.S.N., R.N.C., C.N.M. (Case Western Reserve). Adjunct Instructor.
Imogene P. Foster, Ed.D., R.N. (WVU). Associate Professor Emerita.
Kathleen B. Gaberson, Ph.D., R.N., C.N.O.R. (U. of Pitt.). Adjunct Professor.
Shirley Zinn Gainer, B.S., B.S.N. (WVU). Adjunct Clinical Instructor.
Suzanne Gross, Ph.D., R.N. (U. Tex.). Assistant Professor Emerita.
Patty Hermosilla, M.S.N., R.N.C., R.N.P.-C. (WVU). Senior Lecturer.
Jean Hoff, M.P.H., R.N. (U. Pitt.). Associate Professor Emerita.
Patricia Horstman, M.S.N., R.N. (WVU). Adjunct Instructor.
Elizabeth Hupp, M.S.N., R.N. (WVU). Adjunct Instructor.
Dorothy M. Johnson, Ed.D., R.N. (WVU). Assistant Professor.
Patricia Johnston, Ed.D., R.N., M.S.N. (WVU). Adjunct Assistant Professor.
Judith D. 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.
Barbara Kupchak, Ph.D., R.N. (U. Tex.). Associate Professor.
*June Larrabee, Ph.D., R.N. (U. of Tenn.). Professor.
*Nan Leslie, Ph.D., R.N. (U. Pitt.). Professor.
*June Lunney, Ph.D., R.N. (U. of Md.). Associate Dean for Research. Associate Professor.
Gina Maiocco, Ph.D., R.N. (U. of Utah). Clinical Assistant Professor.
Patricia Joyce Maramba, M.S.N., R.N. (WVU). Senior Lecturer.
Kathleen Marsland, M.S., R.N. (U. Colo.). Assistant Professor Emerita.
Professor.
Roberta McKee, M.S.N., F.N.P. (WVU). Adjunct Instructor.
Elizabeth A. Minchau, M.S.N., F.N.P. (U. of Pitt.). Clinical Assistant Professor.
Christine Mott, R.N., M.S.N. (WVU). Lecturer.
Kathleen Murphy, M.S.N., R.N. (U. of Phoenix). Adjunct Instructor.
*Georgia L. Narsavage, Ph.D., R.N., F.A.A.N. (U. of Pa.). Dean and Professor.
*Alvita Nathaniel, Ph.D., R.N.C., F.N.P. (WVU). Coordinator FNP Track. Assistant Professor, Charleston Division.
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.). Associate Professor.
Barbara Jean Nightengale, M.S.N., R.N. (WVU). Adjunct Instructor.
*Barbara Nunley, M.S.N., R.N., C.S. (Ohio St. U.). Associate Professor, Charleston Division.
The School of Nursing offers a program of study leading to the master of science in nursing (M.S.N.) degree. The major areas of study available in advanced practice nursing are family nurse practitioner (FNP), pediatric nurse practitioner (PNP), and neonatal nurse practitioner (NNP). The school also offers post-master's programs in these three areas for those who already hold an M.S.N. The programs are offered at the University's main campus in Morgantown and at the Charleston Division. Courses are offered via Web-based modalities in real time. 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. Dates of the special sessions are made available in advance so that students can plan their schedules in order to attend.

The master's program offers a curriculum that allows students to enroll on a part-time or full-time basis. Graduate students are strongly recommended to limit their credit load if they
are also involved in full-time work. Students employed in full-time work should enroll for no more than six hours of master’s-level coursework in any one term. 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. 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 five semesters (including a summer session) of full-time study. The average full-time load is nine to 12 credit hours per semester. Part-time options are also available.

Graduates meet all requirements to sit for the national certification examination in their major area of family nurse practitioner, pediatric nurse practitioner, or neonatal nurse practitioner. 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.

**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 April 1. The beginning sequence of courses in the M.S.N. program starts in the fall semester only. Class size and plans of progress 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 the 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 25301-1129.

4. Request a copy of Graduate Record Exam or Miller Analogies Test scores be sent to WVU Health Sciences Center Office of Admissions and Records P.O. Box 9815 Morgantown, WV 26506-9815.

   The parameters used for review of applicants include: academic achievement, Graduate Record Exam or Miller Analogies Test 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.

Note: Admission criteria are subject to change. Please see the School of Nursing Web site for the most up-to-date criteria at http://www.hsc.wvu.edu/son/.

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 a competitive score on the Graduate Record Exam or Miller Analogies Test.
4. Have a current, unrestricted R.N. license in at least one state.
5. Hold a bachelor of science degree 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 type-written, 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>
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<tbody>
<tr>
<td>NSG 622</td>
<td>Theory and Disciplined Reasoning</td>
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</tr>
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<td>NSG 623</td>
<td>Concepts of Advanced Nursing</td>
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</tr>
<tr>
<td>NSG 624</td>
<td>Advanced Pathophysiology</td>
<td>4</td>
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<td>NSG 626</td>
<td>Lifespan Health Promotion</td>
<td>2</td>
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<tr>
<td>NSG 627</td>
<td>Research and Systematic Analysis</td>
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<tr>
<td>NSG 628</td>
<td>Health Policy, Finance, and Ethics</td>
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</tr>
<tr>
<td>NSG 685</td>
<td>Clinical Scholarship</td>
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FNP Courses

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</tr>
<tr>
<td>NSG 632</td>
<td>Advanced Assessment</td>
<td>2</td>
</tr>
<tr>
<td>NSG 633</td>
<td>Primary Care Rural Families 1</td>
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<td>NSG 634</td>
<td>Primary Care Rural Families 2</td>
<td>4</td>
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<tr>
<td>NSG 635</td>
<td>Rural Family Practicum 1</td>
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<td>NSG 636</td>
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Pediatric NP Courses

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</tr>
<tr>
<td>NSG 647</td>
<td>Pediatric Assessment/Care 1</td>
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</tr>
<tr>
<td>NSG 644</td>
<td>Pediatric Primary Care 2</td>
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<tr>
<td>NSG 645</td>
<td>Pediatric Practicum 1</td>
<td>5</td>
</tr>
<tr>
<td>NSG 646</td>
<td>Pediatric Practicum 2</td>
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Neonatal NP Courses

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<td>NSG 663</td>
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<tr>
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School of Nursing
### Full-Time Progression Plan for Family Nurse Practitioner Track*

#### First Year (full-time)

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Hrs.</th>
<th>Spring Semester</th>
<th>Hrs.</th>
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<td>NSG 622 Theory</td>
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<td>NSG 626 Health Promotion</td>
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</tr>
<tr>
<td>NSG 623 Concepts</td>
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<td>NSG 627 Research</td>
<td>5</td>
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<td>NSG 624 Adv. Pathophysiology</td>
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<td>NSG 631 Pharmacotherapeutics</td>
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<td><strong>Total</strong></td>
<td><strong>12</strong></td>
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#### Summer

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>NSG 629 Advanced Practice/Families</td>
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<td>NSG 633 Primary Care 1</td>
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#### Second Year

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<th>Hrs.</th>
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<td>NSG 628 Health Policy</td>
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<td>NSG 635 Practicum 1</td>
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<td>NSG 636 Practicum 2</td>
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<td><strong>Total</strong></td>
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<td><strong>NSG 685 Clinical Scholarship</strong></td>
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### Full-Time Progression Plan for Pediatric Nurse Practitioner Track*

#### First Year

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<th>Hrs.</th>
<th>Spring Semester</th>
<th>Hrs.</th>
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<td>NSG 626 Health Promotion</td>
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<tr>
<td>NSG 623 Concepts</td>
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<td>NSG 627 Research</td>
<td>5</td>
</tr>
<tr>
<td>NSG 624 Adv. Pathophysiology</td>
<td>4</td>
<td>NSG 647 Peds. Assessment/Care 1</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>9</strong></td>
<td><strong>NSG 685 Clinical Scholarship</strong></td>
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#### Summer I

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<table>
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<tr>
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<tbody>
<tr>
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<tr>
<td>NSG 631 Pharmacotherapeutics**</td>
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<td><strong>Total</strong></td>
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#### Second Year

<table>
<thead>
<tr>
<th>Fall Semester</th>
<th>Hrs.</th>
<th>Spring Semester</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>NSG 644 Pediatric Primary Care 2</td>
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<td>NSG 645 Pediatric Practicum 1</td>
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<td><strong>NSG 685 Clinical Scholarship</strong></td>
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### Full-Time Progression Plan for Neonatal Track*

#### Fall Semester                                      | Hrs. | Spring Semester                             | Hrs. |
<table>
<thead>
<tr>
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<tr>
<td>NSG 622 Theory</td>
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<tr>
<td>NSG 623 Concepts</td>
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<td>NSG 627 Research</td>
<td>5</td>
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<tr>
<td>NSG 654 Neonatal Pathophysiology</td>
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<td>NSG 663 Neonatal Assment./Care 1</td>
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<td><strong>NSG 685 Clinical Scholarship</strong></td>
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#### Summer I

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<tr>
<td>NSG 629 Advanced Practice/Families</td>
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</tr>
<tr>
<td>NSG 631 Pharmacotherapeutics**</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
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</table>
### Second Year

**Fall Semester**  
- NSG 664 Neonatal Care 2 ................. 4  
- NSG 665 Neonatal Practicum 1 ............ 5  
**Total.......................................................... 9**

**Spring Semester**  
- NSG 666 Neonatal Practicum 2 .......... 5  
- NSG 628 Health Policy ...................... 3  
- NSG 685 Clinical Scholarship .......... 1  
**Total.......................................................... 9**

*Part-time progression plans are also available that allow the student to extend coursework over three or four years and may be viewed at the School of Nursing Web site: [http://www.hsc.wvu.edu/son/](http://www.hsc.wvu.edu/son/).**

**Only those in PNP and NNP tracks.**

---

**Post-Master’s Nurse Practitioner Certificate Program**

The post-master’s nurse practitioner certificate program requires a minimum of 19 credit hours. The program prepares master’s level nurses to sit for the national certification examination as a nurse practitioner in the selected area of focus (family, pediatric, neonatal). To be considered for admission, the applicant must have a master’s degree in nursing from a nationally accredited program with a minimum cumulative GPA of 3.0 or better and an unrestricted R.N. license in at least one state. 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 required clinical courses in the program are evidence of competence in advanced pathophysiology and advanced pharmacotherapeutics.

The five required courses for post-master’s certification follow:

#### Required Courses for Post Master’s Family Nurse Practitioner

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSG 632 Advanced Assessment</td>
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<td>(Competency exam for exemption)</td>
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<tr>
<td>NSG 633 Primary Care: Rural Families 1</td>
<td>3</td>
</tr>
<tr>
<td>(Competency exam for exemption)</td>
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</tr>
<tr>
<td>NSG 634 Primary Care: Rural Families 2</td>
<td>4</td>
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<td>NSG 635 Rural Family Practicum 1</td>
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<td><strong>Total...................................................................</strong></td>
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</table>

#### Required Courses for Post Master’s Pediatric Nurse Practitioner

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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<tbody>
<tr>
<td>NSG 647 Pediatric Assessment/Care 1</td>
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<td>(Competency exam for exemption)</td>
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<td>NSG 644 Pediatric Primary Care 2</td>
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#### Required Courses for Post Master’s Neonatal Nurse Practitioner

<table>
<thead>
<tr>
<th>Course</th>
<th>Hrs.</th>
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</thead>
<tbody>
<tr>
<td>NSG 654 Neonatal Pathophysiology</td>
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<td>NSG 655 Neonatal Health Promotion</td>
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<td>NSG 665 Neonatal Practicum 1</td>
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<td>NSG 666 Neonatal Practicum 2</td>
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<tr>
<td><strong>Total...................................................................</strong></td>
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</table>

All students in post-master’s certificate programs will complete a minimum of 600 supervised clinical hours.
Doctor of Nursing Practice Online Program

Program Description

The School of Nursing offers a program of study leading to the doctor of nursing practice (D.N.P.) degree. Courses are offered via Web-based modalities in real time. 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. Dates of the special sessions are made available in advance so that students can plan their schedules in order to attend.

The D.N.P. program offers a curriculum that allows students to enroll on a part-time or full-time basis. Graduate students are strongly recommended to limit their credit load if they are also involved in full-time work. Students employed in full-time work should enroll for no more than six hours of doctoral level coursework in any one term. Throughout the curriculum, students are guided in the processes of self-development aimed at pursuing excellence in scholarly and professional endeavors.

At the completion of the program, the Doctor of Nursing Practice (D.N.P.) graduate will be able to practice at the highest professional level to:

1. Use science-based theories and concepts to:
   • Determine the nature and significance of health and health care delivery phenomena,
   • Describe actions and advance strategies to improve health care delivery, and
   • Develop, deliver, and evaluate theory-based health care.
2. Demonstrate organizational and systems leadership that emphasizes the primacy of clinical work, continually improving health outcomes, and ensuring patient safety.
3. Use analytical methods and research to develop best practices and practice guidelines and to facilitate the evaluation of systems of care that will improve patient outcomes.
4. Use information systems and technology-based resources that support clinical and administrative decision making, care systems, nurse-sensitive outcomes, and quality improvement.
5. Assume a leadership role in the development of health care policy.
6. Interview.
7. Utilize a strong conceptual foundation in clinical prevention and population health.
8. Base practice on biophysical, psychosocial, sociopolitical, cultural, economic, and nursing science and ethics.
9. Develop, implement, and evaluate practice and care delivery models, which are politically and culturally appropriate.

Admissions Criteria

1. Master's or doctoral degree in nursing,
2. Unencumbered licensure as a registered professional nurse,
3. National certification as an advanced practice nurse in a direct care specialty,
4. Minimum GPA of 3.5 in prior program of study,
5. Graduate level course in research and statistics in the past five years,
6. Scheduled interview, and
7. Online writing exercise.

Note: Admission criteria are subject to change. Please see the School of Nursing Web site for the most up-to-date criteria at http://www.hsc.wvu.edu/son/.

Full-Time Progression Plan

First Year

<table>
<thead>
<tr>
<th></th>
<th>Fall Semester</th>
<th>Spring Semester</th>
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<tbody>
<tr>
<td>NSG 715 Scientific Underpinnings</td>
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<td>NSG 717 Orgs. and Leadership</td>
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<tr>
<td>NSG 716 Analytic Methods</td>
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<tr>
<td>NSG 761 Clinical Project I</td>
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<td>NSG 762 Clinical Project II</td>
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### Summer
NSG 742 *Clinical Application* .......... 2–8  
NSG 763 *Capstone I* ......................... 3  
**Total** ............................................. 5–11

### Second Year
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<td>NSG 742 <em>Clinical Application</em> .......... 2–8</td>
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<td>NSG 764 <em>Capstone II</em>  ................... 3</td>
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### Part-Time Progression Plan

#### First Year
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<th>Hrs.</th>
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<td>NSG 717 <em>Orgs. and Leadership</em> .......... 3</td>
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<td>NSG 716 <em>Analytic Methods</em>  ............... 4</td>
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#### Second Year
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### Summer
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NSG 763 *Capstone I* ......................... 3  
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*NSG 742 can be taken any semester after NSG 741 is completed and must total a minimum of four credit hours.

### Doctor of Philosophy Summer Program
The purpose of the Ph.D. program is to prepare nurse scholars/educators for roles in research, teaching, and service. The program will prepare graduates who will contribute their unique nursing expertise to the collaborative development of knowledge to improve health and quality of life.

### Admission Criteria
1. Cumulative grade point average of 3.0 of 4 points in master’s degree work.
2. Competitive achievement of the Graduate Record Examination:
   - at least 1000 total in verbal and quantitative,
   - neither can be below 450, and
   - 3.0 analytic
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.

Note: Admission criteria are subject to change. Please see the School of Nursing Web site for the most up-to-date criteria at [http://www.hsc.wvu.edu/son/](http://www.hsc.wvu.edu/son/).
Degree Requirements

The nursing component of the PhD program is offered during six-week summer sessions. Students attend class two days a week, taking six credits of nursing courses for four summers. Three curricular components comprise the 55 credits of post-master’s coursework. These are core, cognate/electives, and dissertation.

The goals of the program are to prepare graduates who will:

1. Critically analyze phenomena using a variety of approaches to contribute to the development of nursing science.
2. Synthesize, reorganize, and expand knowledge from nursing and related disciplines to inform nursing science and practice.
3. Contribute to the development of the science of caring to improve quality of life.
4. Disseminate advances in scientific knowledge to diverse audiences.
5. Assume collaborative leadership roles in academia, health care organizations, research teams, and scholarly networks to promote and improve health.
6. Demonstrate integrity in the design, conduct, analysis, interpretation, and dissemination of research.

Core

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Cognate/Electives

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Part-time and Full-time progression plans are available.

Part-time progression

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NSG Principles of Measurement .............. 3 Cognate ................................................
NSG 729 Qualitative Rsch. Meth. .............. 3 NSG 781 Research Mentorship ................. 2
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Third Year
Summer Hrs.
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Fall Semester Hrs. Spring Semester Hrs.
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Total ..................................................... 1–9 Total ..................................................
1–9

Nursing (NSG)
593 A-Z. Special Topics. I, II, S. Variable 1-6 Hr. A study of contemporary topics selected from recent developments in the field.

622. Theory and Disciplined Reasoning. 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.


624. Advanced Pathophysiology. 4 Hr. Theoretical basis of pathophysiological changes in acute and chronic illness confronted in primary care across lifespan. This course lays the foundation for subsequent courses in diagnosis, management, and therapeutic interventions.

626. Lifespan Health Promotion. 2 Hr. An in-depth study of theoretical foundations, epidemiological principles, and advance practice strategies for the promotion of health and prevention of disease across the life-span.

627. Research and Systematic Analysis. 5 Hr. PR: NSG 622. An overview of research methods, evidence and epidemiological and statistical measures used in advanced practice nursing.

628. Health Policy, Finance, Ethics. 3 Hr. PR: NSG 622. Study of how health policy, the organization and financing of health care, and of how ethical principles shape professional practice.

629. Advanced Practice/Families. 2 Hr. PR: NSG 622 and NSG 623 and NSG 626 and NSG 627. Exploration and analysis of family theories, assessments, and interventions applicable to the advanced practice of nursing.

631. Advanced Pharmacotherapeutics. 3 Hr. PR: NSG 624. Examination of the relationship between pharmacologic principles and the selection of pharmacologic agents in lifespan. This course lays the foundation of subsequent courses in diagnosis, management, and therapeutic interventions.

632. Advanced Assessment. 2 Hr. PR: NSG 622 and NSG 623 and NSG 624. Preparation for the conduct of advance health assessment of patients. Diagnostic reasoning is emphasized as the student collects and analyzes data obtained from the patient history, physical examination, and diagnostic procedures.
633. **Primary Care: Rural Families 1.** 3 Hr. PR: NSG 622 and NSG 623 and NSG 624 and NSG 626, and NSG 631 and NSG 632. Introduction to the domains and competencies of the advanced practice nursing role that are fundamental to primary health care of the rural family unit.

634. **Primary Care: Rural Families 2.** 4 Hr. PR: NSG 633. Further development of the domains and competencies of the advanced practice nursing role introduced in NSG 633 that are fundamental to primary health care of the rural family unit.

635. **Rural Family Health Practicum 1.** 5 Hr. PR or Conc: NSG 634. Supervised practicum designed to apply theory- and evidence-based advanced practice nursing. Students develop the advanced practice role as they manage health care and participate in service learning.

636. **Rural Family Health Practicum 2.** 5 Hr. PR: NSG 635. Supervised practicum that builds upon NSG 635 and focuses on the application of theory- and evidence-based advanced nursing practice. With supervision, students manage health care and participate on interdisciplinary terms.

643. **Pediatric Primary Care 1.** 3 Hr. PR: NSG 622 and NSG 623, and NSG 624 and NSG 631 and PR or CONC: NSG 642. Knowledge and skills basic to the assessment of health status, diagnosis, treatment, and evaluation of children in the primary care setting.

644. **Pediatric Primary Care 2.** 4 Hr. PR: NSG 643. Further acquisition of knowledge and skills central to the assessment of health status, diagnosis, treatment and evaluation of children in the primary care setting.

645. **Pediatric Practicum 1.** 5 Hr. PR or CONC: NSG 644. Supervised practicum designed to facilitate the student’s competency in the delivery of primary health care to children.

646. **Pediatric Practicum 2.** 5 Hr. PR: NSG 645. Supervised practicum designed to advance the student’s competency in the delivery of primary health care to children.

647. **Pediatric Assessment/Care 1.** 5 Hr. PR: NSG 622, NSG 623 and NSG 624 and NSG 627. Coreq: NSG 655. Preparatory content for conducting advanced assessment of neonates/young infants. Diagnostic reasoning is emphasized through collecting and analyzing data obtained from patient history, physical examination, and diagnostic procedures.

654. **Neonatal Pathophysiology.** 4 Hr. An introduction to the scientific foundations underlying processes contributing to health/illness states in neonates. Principles from genetics, embryology, and developmental physiology lay the foundation for subsequent courses in assessment, diagnosis and management.

655. **Neonatal health Promotion.** 2 Hr. PR: NSG 622. Review of practices and services that contribute to healthy outcomes for sick and well neonates with focus on health promotion, disease prevention and maintenance of function in the context of critical care and primary care.

660. **Women's Reproductive Health.** 2 Hr. PR: Graduate status or Permission. This course focuses on fertility control, reproductive health, menopause, and health promotion activities for women.

663. **Neonatal Assessment/Care 1.** 5 Hr. PR: NSG 622, NSG 623 and NSG 654. Coreq: NSG 655. Preparation for conducting advanced assessment of neonates/young infants. Diagnostic reasoning is emphasized through collecting and analyzing data obtained from patient history, physical examination, and diagnostic procedures.

664. **Neonatal Care 2.** 4 Hr. PR: NSG 663 and NSG 631. This course focuses on the management of common problems and conditions in neonates.

665. **Neonatal Practicum 1.** 5 Hr. PR: NSG 631. Coreq: 664. This supervised practicum is designed to facilitate the student’s competency in the delivery of care to infant populations.

666. **Neonatal Practicum 2.** 5 Hr. PR: NSG 665. This supervised practicum is designed to facilitate the student’s competency in the delivery of care to infant populations.
670. **Curriculum in Nursing.** 3 Hr. A review of contemporary theory-based determinants of curriculum development in nursing, including analysis and evaluation of curricula for nursing education.

671. **Clinical Practicum: Educators.** 2 Hr. PR: NSG 635. Implementation of theory-based advanced nursing practice in an area of student's clinical interest/expertise. Student develops the advanced practice role with a select population of clients and families.

672. **Education Practicum.** 5 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.

685. **Clinical Scholarship.** 1 Hr. Co-Req: NSG 635 (For FNP Track) or NSG 645 (For PNP Track). Knowledge dissemination within the advanced practice role using disciplined reasoning and systematic inquiry to examine and incorporate evidence-based strategies in the caring/healing process.

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.** 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.)

715. **Scientific Underpinnings.** 3 Hr. Provides an understanding of the scientific underpinnings of the application of theory to health care at the highest level of advanced nursing practice.

716. **Analytical Methods.** 4 Hr. PR: NSG 715. Prepares the DNP student to translate research into practice, evaluate practice guidelines to improve health care practices and outcomes, and to participate in collaborative research.

717. **Organization and Leadership.** 3 Hr. Provides a foundation for developing organizational and systems leadership skills critical to clinical care and health outcomes. Knowledge will help students to promote patient safety and excellence in health care organizations.

718. **Population Health.** 3 Hr. PR: NSG 716. Provides a foundation for analysis of clinical prevention and population health programs for individuals, aggregates, and populations.

719. **Health Care Policy.** 3 Hr. Provides a foundation for influencing, developing, implementing, and evaluating health care policies and legislation pertinent to issues in health care such as ethics, safety, costs, access, and quality.

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: NSG 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.

741. *Clinical Focus.* 2 Hr. Provides for the development of knowledge and skills relative to the state of the science in a particular area of clinical practice.

742. *Clinical Application.* 2-8 Hr. PR: NSG 741. Provides for the mastery of clinical skills relative to the state of the science in a particular area of clinical practice.

761. *Clinical Project 1.* 1 Hr. PR: NSG 715 and NSG 716. Identifies a practice problem and connects the problem to existing knowledge and science.

762. *Clinical Project 2.* 1 Hr. PR: NSG 716 and NSG 717 and NSG 718. Students design an initiative to address the practice problem identified in NSG 761 using the appropriate research methods and a variety of scientific principles.

763. *Capstone 1.* 3 Hr. PR: NSG 762. Develops leadership skills to create change relative to the practice problem as designed in NSG 762.

764. Capstone 2. 3 Hr. PR: NSG 763. Evaluates the change implemented in NSG 763 and analyzes the relationship of the findings to practice and policy.

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.

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. **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 Pharmacy
Patricia A. Chase, Ph.D., Dean
W. Clarke Ridgway, B.S., Assistant Dean for Student Services
Rae R. Matsumoto, Ph.D., Associate Dean for Research and Graduate Programs
Mary K. Stamatakis, Associate Dean for Academic Affairs and Educational Innovation

http://www.hsc.wvu.edu/sop

Degrees Offered
  Doctor of Pharmacy (entry-level) (See Health Sciences Catalog.)
  M.S., Ph.D. in Pharmaceutical and Pharmacological Sciences

Introduction
The WVU School of Pharmacy offers graduate programs in the pharmaceutical and pharmacological 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, research core facilities, 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, a leading generic drug producer in the country, is located across the street from the Health Sciences Center campus. Also, the school has long-standing collaborations with several state agencies and multinational pharmaceutical companies.

Applicants for the Ph.D. may choose among several specialty areas, which include pharmacology, medicinal chemistry, pharmaceutics, drug metabolism, nanoscale science, and health outcomes and policy research. The pharmaceutical and pharmacological 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 health economics, epidemiology, behavior research, and health policy research methods to improve health care and pharmaceutical access, quality, and affordability and reduce health disparities.

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 3.0 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, Web site: www.hsc.wvu.edu/sop.

To obtain specific application and admission information about the Ph.D. program in health outcomes and policy research and availability of fellowships or graduate assistantships, please visit http://www.hsc.wvu.edu/sop/psp/programs/phd_graduate.html or e-mail smadhavan@hsc.wvu.edu.
Faculty
* Indicates associate membership in the graduate faculty.

Professors
Patrick S. Callery, Ph.D. (UCSF). Drug design, Drug metabolism.
Vincent Castranova, Ph.D. (WVU).
Jeffrey Fedan, Ph.D.
Peter M. Gannett, Ph.D. (U. Wisc.). Carcinogenesis, Drug design and structural biology hydrazines.
Joseph H.K. Ma, Ph.D. (Duquesne U.). Pharmaceutics and pharmaceutical chemistry; Molecular and cellular approaches to targeted drug delivery.
Rae R. Matsumoto,Ph.D. (Brown) Neuropharmacology. Drug abuse research.
S. Suresh Madhavan, Ph.D. (Purdue U.). Health services and outcomes research, Pharmaceutical cost-containment.
S. Jamal Mustafa, Ph.D. Pharmacology.
James O'Donnell, Ph.D. Pharmacology.
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.
Ginger G. Scott, Ph.D. (U. Minnesota). Pharmacy practice and health services research.

Associate Professors
Fei Chen, Ph.D.
*Robert K. Griffith, Ph.D. (Ohio St. U.). Drug design, Medicinal chemistry.
Paul D. Siegel, Ph.D. (Tulane). Immunopharmacology and toxicology.

Assistant Professors
Maurice Moffett, Ph.D. (U. New Mexico). Health economics, Health care decision making and policy.
Michael Smith, Ph.D. (U. Tex.). Pharmacoepidemeology, Pharmaeconomics, Administrative claims data research.
Cindy Tworek, Ph.D. (SUNY). Tobacco control, Health behavior and health policy.

Pharmaceutical and Pharmacological Sciences
Rae R. Matsumoto, Associate Dean for Research and Graduate Programs
1136 Health Sciences North
http://www.hsc.wvu.edu/sop/graduate_programs/phd_specializations.html

Degrees Offered
Master of Science, Doctor of Philosophy

The School of Pharmacy offers graduate programs in the basic pharmaceutical and pharmacological 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 GPA of at least 3.0, and an aptitude and interest for graduate work in the pharmaceutical sciences. Graduate Record Examination scores in the verbal, quantitative, and analytical essay 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 GPA 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 care and pharmaceutical services outcomes and policy research, 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 care and pharmaceutical services outcomes and policy research.

Coursework
All graduate students in the biomedical sciences at the Health Sciences Center are admitted under the undifferentiated graduate program for their first year and may, at the end of the first year, select the pharmaceutical and pharmacological sciences program. During their first semester, all graduate students are enrolled the same set of core courses and begin a set of three rotations through selected laboratories of research mentors. During the second semester, students begin to specialize and may select modules corresponding to one of the seven thematic programs including the pharmaceutical and pharmacological sciences program. At the end of the first year, students select their M.S. or Ph.D. mentor, and committee members for their master’s thesis or doctoral dissertation are selected. Second year and thereafter, the student’s coursework is guided by the student’s thesis or dissertation committee. Students seeking a M.S. degree may opt to continue on and obtain a Ph.D. In this case, all requirements for their M.S. degree must be met except for the preparation and defense of a thesis.
Graduate students applying to the master of sciences and doctor of philosophy degrees in the health services/outcomes research track must apply directly to the School of Pharmacy. To obtain specific information about the application and the admissions process for the Ph.D. program in health outcomes and policy research and availability of fellowships or graduate assistantships please visit http://www.hsc.wvu.edu/sop/psp/programs/phd_graduate.html or e-mail smadhavan@hsc.wvu.edu.

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)
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.

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.)

700. Pharmacy as a Profession. 1 Hr. PR: First professional year standing or consent. Introduces students to the concept of professionalism, the scope of pharmacy practice opportunities, the health care system as it relates to pharmacy, and other contemporary issues in pharmacy practice. (Grading will be S/U.)

701. Pharmaceutical Care Lab 1. 2 Hr. PR: First professional year standing or consent. Students will develop skills in medical terminology, communications, information retrieval, dispensing, compounding, calculations, pharmaceutical care, and problem-solving skills.

702. Physical Pharmacy. 3 Hr. PR: First professional year standing or consent. Designed to teach students the basic principles related to physical phenomena and stability as well as introduce them to a variety of factors that influence drug dosage form design and stability.

703. Practicum 1. 1 Hr. PR: First professional year standing or consent. Introduces students to the concept of professionalism. Students will gain hands-on experience in a community pharmacy setting.

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 and Biotechnology. 3 Hr. PR: First year professional 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.

710. Practicum. 1 Hr. PR: First professional year standing or consent. The course exposes students to a variety of pharmacy practice settings and patient care experiences. Students also receive training in first aid and cardiopulmonary resuscitation.

711. Chemical Properties of Drugs. 2 Hr. PR: First year professional standing or consent. 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 and metabolism.

712. Pharmaceutical Care Lab 2. 2 Hr. PR: First professional year standing or consent. Continuation of PHAR 701.

714. Intro Community Rotation. 2 Hr. PR: PHAR 710. Students will gain experience preparing prescriptions, providing basic drug information to patients, and participating in disease prevention activities in a community pharmacy setting.

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.
717. Practicum 3. 1 Hr. This course introduces students to the basic principles of institutional pharmacy practice and service learning.

719. Practicum 4. 1 Hr. PR: PHAR 717. Continuation of PHAR 717.

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).

723. Pharmaceutical Care Lab 3. 1 Hr. PR: Second professional year standing or consent. Continuation of PHAR 712.

724. Pharmaceutical Care Lab 4. 2 Hr. PR: Second professional year standing or consent. Continuation of PHAR 723.

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.

727. Medical Literature Evaluation. 2 Hr. PR: Second professional year standing or consent. Emphasis is placed on the critical analysis and evaluation of the primary literature. Secondary and computerized information resources are also discussed, including other selected aspects of drug information.

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.

729. Intro Institutional Rotation. 2 Hr. PR: PHAR 719. Second professional year standing or consent. Gain experience in an institutional pharmacy setting.

730. Pathophysiology/Therapeutics 3. 4 Hr. PR: PHAR 725 or consent. A continuation of PHAR 725. 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).

732. Non-Prescription Drugs. 3 Hr. PR: Third year professional standing or consent. An advanced level course on the appropriate selection, and use of non-prescription drug products in the contemporary practice setting, the basis for self-medication, assessment of patient condition, and approach to patient counseling.

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.

734. Pharmacy Law and Ethics. 3 Hr. PR: First professional year standing or consent. The legal and ethical basis of pharmacy practice. Students learn about federal and state statutes, rules, and regulations that affect pharmacy practice. Ethics related situations that can arise during pharmacy practice will also be discussed.

735. Pharmaceutical Care Lab 5. 1 Hr. PR: PHAR 724. Continuation of PHAR 724.
736. **Pharmaceutical Care Lab 6.** 1 Hr. PR: Third year professional standing or consent. Experience in pharmaceutical compounding, patient assessment and monitoring, professional/ethical decision making, pharmacokinetic dosing of medications, and prevention of adverse drug-related events and medication errors.

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.** 4 Hr. PR: PHAR 730 or consent. A continuation of PHAR 730.

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.

747. **History of Pharmacy.** 2 Hr. Gives the student a deeper appreciation of the background of pharmacy and its development from ancient times to present.

749 A-Z. **Pharmaceutical Investigations.** 2-3 Hr. PR: Consent. Original investigation in pharmaceutics, medical chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be S/U.)

750. **Automation and Technology.** 2 Hr. PR: Second year professional standing or consent. Provides an understanding of the newest technology that is available to a pharmacist in a retail or institutional setting. Students will learn to use PowerPoint, and gain experience making presentations and public speaking.

751. **Geriatrics and Gerontology.** 2 Hr. PR: Second or third year pharmacy students. A review of common pharmacotherapeutic and social issues of importance to older adult patients.

760. **Medicine Rotation 1.** 4 Hr. PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in an acute care setting. (Course will be graded S/U.)

761. **Medicine Rotation 2.** 4 Hr. PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in an acute care setting. (Course will be graded S/U.)

762. **Ambulatory Care Rotation 1.** 4 Hr. PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in an ambulatory care setting. (Grading will be S/U.)

763. **Ambulatory Care Rotation 2.** 4 Hr. PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in an ambulatory care setting. (Course will be graded S/U.)

764. **Elective Rotation 1.** 4 Hr. PR: Fourth year professional standing or consent. Students will gain pharmacy experience in an acute care or ambulatory care setting, research environment, or nontraditional pharmacy site. (Course will be graded S/U.)
765. **Elective Rotation 2.** 4 Hr. PR: Fourth year professional standing or consent. Students will gain pharmacy experience in an acute care or ambulatory care setting, research environment, or nontraditional pharmacy setting. (Course will be graded S/U.)

766. **Elective Rotation 3.** 4 Hr. PR: Fourth year professional standing or consent. Students will gain pharmacy experience in an acute care or ambulatory care setting, research environment, or nontraditional pharmacy site. (Course will be graded S/U.)

767. **Elective Rotation 4.** 4 Hr. PR: Fourth year professional standing or consent. Students will gain pharmacy experience in an acute care or ambulatory care setting, research environment, or nontraditional pharmacy site. (Grading will be S/U.)

768. **Elective Rotation 5.** 4 Hr. PR: Fourth year professional standing or consent. Students will gain pharmacy experience in an acute care or ambulatory care setting, research environment, or nontraditional pharmacy site. (Course will be graded S/U.)

770. **Community Rotation 1.** 4 Hr. PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in a community pharmacy setting. (Course will be graded S/U.)

771. **Community Rotation 2.** 4 Hr. PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in a community pharmacy setting. (Course will be graded S/U.)

772. **Institutional Rotation 1.** 4 Hr. PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in a health system setting. (Course will be graded S/U.)

773. **Institutional Rotation 2.** 4 Hr. PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in a health system setting. (Course will be graded S/U.)

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.

779. **Drugs: Bench to Market.** 3 Hr. PR: Graduate standing or permission of instructor. This is an introductory course that describes the process of drug discovery to the development of new forms for therapeutic use. Topics covered include drug design/discovery, pharmacokinetics and dynamics, pharmaceutics and industry pharmacy.

780. **Introduction to Molecular Modeling.** 4 Hr. PR: Graduate standing or permission of instructor. Introduction to molecular modeling describes computational methods for chemical and biological problems and is designed to enable the student to use molecular modeling methods as a research tool in this current or future research activities.

781. **Drug Metabolism.** 3 Hr. PR: Graduate standing or permission of instructor. This course presents a comprehensive review of the field of drug metabolism with an emphasis on the chemistry and enzymology of drug biotransformation, and current methods in drug metabolism research.
782. **Behavior Theory in Outcomes Research.** 3 Hr. Behavior theories (individual, intrapersonal, and organizational/community) applied to patient health behavior intervention by health care providers to explain, predict, and/or achieve patient health, humanistic and economic outcomes; includes patient education and intervention research.

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.)

791 A-Z. **Advanced Topics.** 1-6 Hr. PR: Consent. 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 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. **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.)
Special Opportunities

Harley O. Staggers National Transportation Center
John Zaniewski, Ph.D., Director, Department of Civil and Environmental Engineering
http://www.cemr.wvu.edu/research/centers.php

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 (ICDI) was established in 1965 as a rehabilitation research and training center. This organization houses information databases on vocational rehabilitation, 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. Special studies involving disability include projects on consumer needs assessment, program evaluation of vocational rehabilitation, and emergency-service research and development. The Job Accommodation Network is an information service about job accommodations and the employability of people with functional limitations. It has operated in the ICDI since 1983 and is funded through the Office of Disability Employment Policy of the U.S. Department of Labor.

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.

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 WVU’s 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, (ORISE) 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, 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.
Regional Research Institute
Randall W. Jackson, Director
http://www.rri.wvu.edu

The Regional Research Institute is dedicated to multidisciplinary research on the economic and social development of lagging regions. Our area interests cover the globe, with a special focus on our own Appalachian region. Our research focuses on theories and history of regional development, methods for studying regions, and policies for stimulating their development. We seek to advance our understanding of socioeconomic processes and our ability to explain regional differences in rates of growth and levels of 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 at the intersection of economics, geography, and planning. Throughout its distinguished 42-year history, the Institute has been a separate unit, independent of any college. Currently the Institute brings together 35 faculty associates drawn from 12 departments in five colleges, a core of 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 have 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, geography, or natural resource economics, but 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 about the Institute, contact the Regional Research Institute, West Virginia University, 3040 University Ave., 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.

WVU Extension Service
http://www.wvu.edu/~exten/

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 56,000 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 17,500 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.
Extension operates the University’s special-mission campus, which 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.

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.