The Graduate Bulletin is a supplement to The University of Akron Undergraduate Bulletin. The Undergraduate Bulletin contains information on undergraduate degree programs, non-degree continuing education programs, and additional information on the policies of The University of Akron.

For a copy of the Undergraduate Bulletin contact the Office of Admissions, The University of Akron, Akron, OH 44325-2001, 330-972-7100, or toll-free, 1-800-655-4884.

Inquiries

Address inquiries concerning:
Graduate study to the Graduate School, The University of Akron, Akron, OH 44325-2101, 330-972-7623.


Athletics to the Athletic Director, The University of Akron, Akron, OH 44325-5201, 330-972-7080.

Registration, scheduling, residency requirements, and veteran's affairs to the Office of the Registrar, The University of Akron, Akron, OH 44325-6208, 330-972-8300.

Undergraduate admissions information, campus tours, housing, and transfer information to the Office of Undergraduate Admissions, The University of Akron, Akron, OH 44325-2001, 330-972-7077 or toll-free inside Ohio, 1-800-665-4884.

The University switchboard number is 330-972-7111.

University Closing Policy

The president, or designee, upon the recommendation of the Manager, Environmental Health and Occupational Safety, will determine when conditions such as severe weather or a state of emergency necessitate closing the entire University or cancelling classes at the main campus and/or Wayne College in Orrville.

The Director of Public Safety and Chief of Police will promptly notify other designated University officials and members of the Department of University Communications, who will contact area media. University colleges/departments/schools are encouraged to establish a method for communicating the closing decision to departmental personnel. Closing information will be announced as early as and simply as possible to avoid confusion.

Cancellation of classes and closure announcements will be made as early as possible in the day and will clearly state the affected campuses. Call 330-972-5000 or 330-972-8228 (TDD/voice) for updated information.

Disclaimer

While every effort is made to provide accurate and up-to-date information, the University reserves the right to change, without notice, statements in the Bulletin which include, but are not limited to rules, policies, procedures, fees, curricula, courses, programs, activities, services, schedules, course availability, or other matters. For example, programs may be modified due to limited resources or facilities, unavailability of faculty, insufficient enrollment, or such other reasons as the University deems necessary.

The Graduate Bulletin is published once each year by The University of Akron Graduate School The Poysky Building, 467-469, Akron, Ohio 44325-2101

Dolli Quattrocchi Gold, Assistant to the Vice President for Research and Dean of the Graduate School, editor of the Graduate Bulletin
**Important Phone Numbers**

**University Area Code (330)**

All phone numbers are subject to change without notice. For numbers not listed, call the University Switchboard 330-972-7111. General Campus Information Center 330-972-INFO (4636)

### Graduate School

**Vice President for Research, & Dean, Graduate School**  
Dr. George R. Newkome ........................................ 972-6458  

**Associate Dean, Graduate School**  
Dr. Lathardus Goggins ............................................. 972-6783  

**Assistant to the Vice President for Research, & Dean Graduate School**  
Mrs. Dolli Quattrocchi Gold ..................................... 972-6737

**Senior Executive Administrative Assistant**  
Mrs. Cynthia S. Angersient ....................................... 972-7558

**Administrative Assistant Senior**  
Mrs. Heather A. Blake ............................................. 972-7664

**Coordinator, Graduate Financial Assistance**  
Mrs. Karen L. Caldwell ............................................. 972-6310

**Examiner Assistant**  
Ms. Jessica N. Fritz ............................................... 972-7663

**Coordinator, Graduate Degree Completion**  
Ms. Cheryl A. Garcia ................................................ 972-5169

**Coordinator, Graduate School Admissions**  
Miss Brenda J. Henry ................................................. 972-7665

**International Admissions Officer**  
Ms. Theresa M. McCune ............................................. 972-6405

**Graduate Student Government**  
Mrs. Diane L. Sotnak, President .................................. 972-5387

### Graduate School

**World Wide Web Location**

Graduate School Homepage ........................................ http://www.uakron.edu/gradsch/

Graduate School E-mail ............................................ gradschool@uakron.edu

### Colleges

**Buchtel College of Arts and Sciences** ................................ 972-7680

**Community and Technical College** ................................ 972-7220

**College of Business Administration** ................................ 972-7040

**College of Education** ............................................ 972-6970

**College of Engineering** ........................................... 972-7816

**College of Fine and Applied Arts** ................................ 972-7564

**College of Nursing** ................................................ 972-7551

**College of Polymer Science and Polymer Engineering** ............ 972-7500

**The University of Akron-Wayne College** .......................... 1-800-221-8308

**NEOUCOM (Northeast Ohio Univ. College of Medicine)** ........ 325-2511

**University College** ................................................ 972-7666

### Other Offices

**Accessibility, Office of** ........................................... 972-7928

**TTY/TDD** ................................................................... 972-5764

**Buchtelite, The (student newspaper)** ................................ 972-7919

**Campus Diversity, Office of** ........................................ 972-7658

**Academic Support Services/Access and Retention** .................. 972-6769

**Careers Program, Arts and Sciences** ................................ 972-5714

**Center for Child Development** ...................................... 972-8210

**Cooperative Education Programs** ................................... 972-7747

**Counseling, Testing, and Career Center**

- **Counseling** .................................................................. 972-7082
- **Testing** ....................................................................... 972-7084

**English Language Institute** ......................................... 972-7544

**Financial Aid, Office of Student** .................................... 972-7032

**Scholarships (non-University)** ...................................... 972-6368

**Scholarships (University)** ............................................. 972-6343

**Student Employment** ................................................... 972-4055

**Student Volunteer Program** ......................................... 972-6841

**Work Study** ............................................................... 972-8034

**Gardner Student Center**

- **Director’s Office** .................................................... 972-7866
- **Information Center** .................................................. 972-INFO (4636)

**Health Services, Student** ............................................. 972-7808

**International Programs** ................................................ 972-6349

**Academic Advising** .................................................... 972-6194

**Immigration** ............................................................... 972-6740

**International Admissions** ............................................. 972-6405

**Libraries, University**

- **Bierce Library** .......................................................... 972-7236 or 972-7497
- **Law Library** ............................................................ 972-7330
- **Photocopying, Bierce Library** ..................................... 972-6278
- **Science and Technology Library** ................................. 972-7196
- **University Archives** .................................................. 972-7670

**Pan-African Culture and Research Center** .......................... 972-7030

**Parking Services** ........................................................ 972-7213

**Peer Counseling Program** ............................................ 972-8288

**Photocopying**

- **Bierce Library** .......................................................... 972-6278
- **DocuZip (Gardner Student Center)** ............................... 972-7876
- **Polsky’s Center** ......................................................... 972-2043

**Registrar, Office of the University**

- **Graduation Office** .................................................... 972-8300
- **Records and Transcripts** ............................................. 972-8300

**Residence Life and Housing** .......................................... 972-7800

**Student Affairs, Vice President for**

- **Special Services for Students** ...................................... 972-6048
- **Student Conduct** ..................................................... 972-7021
- **Study Abroad** .......................................................... 972-7480
- **Ticketmaster** ............................................................ 972-6684

**Tours (of the University)** .............................................. 972-7077

**University Program Board** .......................................... 972-7014

**Veterans Affairs Coordinator and Counselor** ....................... 972-7838

**WZIP-FM, Radio Station** ............................................. 972-7105

### Emergency Phone Numbers

**Police/Fire/EMS** ......................................................... 911

**Police (non-emergency)** .............................................. 972-7213

**Campus Patrol** .......................................................... 972-7263

**University Switchboard** .............................................. 972-7111

**Closing Information** ................................................... 972-SNOW (7669)
SECTION 1. Background

HISTORY

The connection between The University of Akron and its surrounding community has been a recurring theme from the institution's founding as a small denominational college in 1870 to its current standing as a major, metropolitan, state-assisted university. It is significant that the efforts, energy, and financial support of an Akron manufacturer of farm equipment, John R. Buchtel, were instrumental in persuading the Ohio Universalist Convention to build its college on a hill overlooking the Ohio Canal. That stretch along the Ohio Canal, the campus and its trustees responded by naming the school—Buchtel College. It is also significant that during its first four decades the struggling institution was repeatedly aided in its efforts to survive by various local entrepreneurs who pioneered and prospered in such industries as gunpowder, chewing gum, matches, and rubber. Buchtel College's emphasis on local rather than denominational interests became increasingly clear, and by 1913 those strong ties and the school's financial situation caused its trustees to transfer the institution and its assets to the city. For the next 50 years, The Municipal University of Akron received its principal support from city tax funds and swelled from an enrollment of 190 to nearly 10,000.

The growth of the college paralleled the remarkable expansion of the community itself. From 1910 to 1920 Akron was the fastest-growing city in the country, evolving from a thriving canal town of 70,000 to a major manufacturing center of 208,000, thanks in large part to a boom in local factories that bore names such as Goodyear, Firestone, Goodrich, and others. The age of the automobile, and the demand for suitable rubber tires changed the complexion of Akron—forever.

Changes within the Municipal University's curriculum reflected the strong interrelationship of town and gown. In 1914, a College of Engineering began instruction, and other professional schools followed: Education (1921), Business Administration (1930), Law (1959), the Community and Technical College (1964), Fine and Applied Arts (1967), and Nursing (1967).

Considering the institution's location in the heart of a burgeoning rubber industry, it seemed only appropriate that the world's first courses in rubber chemistry would be offered at Buchtel College in 1909. From those first classes in Professor Charles W. Knight's laboratory would evolve the world's first College of Polymer Science and Polymer Engineering (1946), now the largest academic polymer program in the world. In the 1930s and 1940s, with the establishment in Akron of the Daniel S. Greenbaum Research Institute, University scientists studied the structure and design of zeppelins. During World War II, University of Akron researchers helped fill a critical need in the U.S. war effort by contributing to the development of synthetic rubber. The University's polymer programs have produced some of the world's most able scientists and engineers, and today attract millions of dollars annually in research support, as well as top graduate students from around the world.

In 1963, the receipt of state tax money made the University a state-assisted municipal university, and on July 1, 1967, The University of Akron officially became a state university. Today, nearly 23,300 students from 40 states and 70 foreign countries are enrolled in its 10 degree-granting units. The University of Akron is only Ohio institution, public or private, with a science and engineering program ranked in the top five nationally, its College of Polymer Science and Polymer Engineering also is the nation's largest academic polymer program. The University excels in many other areas, including management, human resources, accounting, osteopathic, global business, organizational psychology, educational technology, marketing, dance, intellectual property law and nursing. Alumni of the University number more than 115,000 and include scientists, engineers, artists, lawyers, educators, nurses, writers, business people, and other professionals at work in every state and 84 foreign countries.

Research, innovation, and creativity actively take many forms at the University—in the sciences and in the arts and humanities. Today, University faculty study ways of matching workers with jobs to maximize performance; develop new ways to synthesize fuel; write and produce plays, pen poetry, choreograph dance works; explore improved methods of tumor detection; evaluate water quality in northeast Ohio; provide speech and hearing therapy to hundreds of clients; aid the free enterprise system by sharing the latest in business practices with new and established companies alike; provide health care in community clinics; and study-political campaign financing and reform. Faculty are awarded patents each year for their work on new technologies and products. The University of Akron's continuing and central commitment to the liberal arts is signified by the perpetuation of the institution's original name—the Buchtel College of Arts and Sciences.

The University has a long tradition of serving the needs of part-time and full-time students through day and evening classes, and it attracts traditional-age students and adult students, single, families, and ethnic backgrounds. Committed to a diverse campus population, the University is at the forefront of all University in recruiting and retaining minority students.

The University's first doctoral degree was awarded in polymer chemistry in 1959, but master's degrees were granted as early as 1982. The University of Akron now offers 17 doctoral degree programs and four law degree programs as well as more than 100 master's degree programs and options.

The 170-acre Akron campus, with 70 buildings, is in walking distance of downtown Akron and is located in a metropolitan area of 2.8 million people. The University's presence in northeast Ohio provides numerous opportunities in recreation, major colleges, and professional sports, concerts, cultural events, and commerce, all within easy driving distance and many accessible via public transportation. Located in the city, the Ohio Ballet, Emily Davis Art Gallery, University Orchestra, Opera/Musical Theatre, concerts, recitals, chorals, programs, Touring Arts Program, University Theatre, Repertory Dance Company, and professional artists performing at E.J. Thomas Performing Arts Hall contribute to the University's rich cultural environment; The University joined the Mid-American Conference in 1991, and participates on the NCAA Division I level in 18 sports. (Women's soccer begins in Fall 2001.)

The University of Akron campus, already one of the most modern in Ohio, has embarked on an ambitious venture to create "a new landscape for learning." With a $350 million investment, six new buildings and major expansions or renovations of 14 other structures will be completed during the next five years. Among the new buildings will be a Student Recreation and Wellness Center and a Student Union. The campus will have 30 additional acres of green space as well.

For 130 years, The University of Akron has been an active participant in Akron's renewal of commercial and artistic endeavors, a leader in the metropolitan area's intellectual and professional advancement, a center for internationally funded research efforts, a source of enrichment, education, and vitality for northeast Ohio. Our history is a long and proud one—yet at The University of Akron our eyes are on the future, for our students, our faculty and staff, our community, and our world.

MISSION STATEMENT

The University of Akron, a publicly assisted metropolitan institution, strives to develop enlightened members of society. It offers comprehensive programs of instruction from associate through doctoral levels; pursues a vigorous agenda of research in the arts, sciences and professions; and provides service to the community. The University pursues excellence in undergraduate and graduate education, and distinction in selected areas of graduate instruction, inquiry, and creative activity.

CHARTING THE COURSE

Today, the University stands on the threshold of a fundamental shift in thinking and a sweeping recommitment of institutional talents, energies and resources toward attaining even greater excellence. The blueprint for change is "Charting the Course," an ongoing and dynamic process of strategic thinking that begins with the University's fundamental strategies and builds to where the institution envisions itself in the future.

Objective and documented excellence tells us that The University of Akron is already the leading public university in northern Ohio and signals a clear promise and destiny. We have framed our vision as a Statement of Strategic Intent:

The University of Akron intends to be recognized as the public research university for Northern Ohio.

That recognition will be gained by building upon the documented excellence that has established The University to advance to its current high level of achievement, and by strategic investments, partnerships and initiatives.

The University will continue to build a leadership position in information technology—to better prepare our students for today's technologically advanced knowledge economy, to make learning more accessible and dynamic, and to increase the effectiveness of the University's planning and operations.

We will attain technological and programmatic excellence throughout the University by taking full advantage of our metropolitan setting and long-standing relationships with area businesses and industry. We will act decisively to form and optimize strategic partnerships that will benefit our students and our community.

Enabling student success will continue to be the hallmark of The University of Akron. We recognize, importantly, that students are the responsibility of all of us at the University. We will work to strategically shape and determine the quality, diversity and size of our student body and, we will strive to offer students the challenges necessary for them to succeed through interdisciplinary research, service, internships, cooperative education or similar opportunities.

Student success is our number one priority.

A CIVIL CLIMATE FOR LEARNING:

Statement of Expectations

The University of Akron is an educational community of diverse peoples, processes, and programs. While all of us have our individual backgrounds, outlooks, values, and styles we all share certain principles of personal responsibility, mutual respect, and common decency. Our campus culture requires that we maintain
and extend those principles, for without them we cannot thrive as a humane and worthwhile university. To keep ourselves aware of these shared principles, this statement articulates some of the expectations and responsibilities of a civil climate for learning on our campus.

Principles of Our Campus Culture

Our campus culture acknowledges the importance of all in our community for their participation in our common enterprise as a university. We value the contributions and we respect the needs of students, faculty, contract professionals, staff, administrators, maintenance and service personnel, and everyone else whose work and dedication enables us to pursue our individual and collective academic goals.

Together we maintain an intellectual culture that is accessible, disciplined, free, safe, and committed to excellence. By our behavior with one another we endorse a culture of diversity, celebrating the uniqueness of the individual and developing our understanding and tolerance of differences in gender, ethnicity, age, spiritual belief, sexual orientation, and physical or mental potential. We take responsibility for sustaining a caring culture, nurturing growth and fulfillment in one another and in the larger communities of which we are a part. We insist on a culture of civility, united in our rejection of violence, coercion, deceit, or terrorism. We work to increase cooperation, coordination, and consensus within rational dialogue characterized by mutual respect and consideration. Ours is a responsible culture. We expect each member of our community to carry out responsibly his or her duties for preserving the integrity, quality, and decency of our environment and our discourse.

Expectations and Responsibilities

To preserve and propagate the Culture of The University of Akron, everyone must engage in certain specific behaviors. Anyone new to this campus must be aware of the expectations we have of each other and be committed to fulfilling our responsibility in maintaining our culture.

Inside the Classroom

Inside the classroom, faculty are expected to respect the sanctity of the teaching/learning process by honoring their commitment to students in terms of fairness, and enthusiasm. It is the responsibility of faculty to set and enforce the classroom rules of conduct. Faculty members are expected to treat men and women, persons of all colors and ethnicities, and persons with varying abilities, spiritual preference, or sexual orientation with equitable respect and consideration. Faculty should value and pursue excellence in teaching as well as research. Faculty shall not engage in sexual or other forms of harassment or engage in inappropriate dual relationships with students. Faculty are expected to take responsibility for their own learning and, in return, can expect responsible teaching from the faculty member. Students should report unprofessional behavior on the part of faculty members. Students have a right to expect that they will not be sexually or otherwise harassed, intimidated, or threatened.

On the Campus

On the campus, everyone is expected to respect and protect the dignity and freedom of each other. There must be the opportunity for expression of all points of view, free from name-calling or ridicule. All members of the University family are expected to be civil and tolerant of others. It is the responsibility of each member of the University community to express dissatisfaction with anyone who fails to meet the responsibility of civility and to request that they do so. In the event that cooperation cannot be attained, proper authorities must be involved to insist upon these minimum expectations. Only by campus-wide compliance to these expectations can we achieve a clear sense of our campus culture and, accordingly, a sense of mutual pride.

Students can expect that all representatives of all departmental and administrative offices will treat them with respect, a sense of cooperation and with concern for their welfare. Students can also expect appropriate coordination of services among departments.

Everyone is expected to respect the campus environment by behaving in ways that protect the safety, order, and appearance of all campus facilities. Each person must take steps to preserve the ecological and aesthetic aspects of the campus.

Additional Behavioral Expectations

All members of the University community are required to abide by all laws and regulations of The University of Akron, the City of Akron, the State of Ohio, and the Federal Government. Students are expected to abide by the Student Code of Conduct and the University Disciplinary Procedures. Faculty, contract professionals, administrators, and staff are expected to abide by all University regulations and procedures.

ACCREDITATION

Accreditation assures that degrees are recognized and approved by select regional and national education associations, societies and councils. Accreditation serves two fundamental purposes: quality assurance and institutional and program improvement.

There are two types of accreditation of educational institutions: institutional accreditation and specialized accreditation. Institutional accreditation evaluates the entire institution and accredits it as a whole. The University of Akron has been approved by The Higher Learning Commission of The North Central Association of Colleges and Schools (30 North La Salle Street, Suite 2400 Chicago, IL 60602-1992-7440) since 1914 and has been reaccredited at the highest level as a comprehensive doctoral degree-granting institution.

Institutional accreditation is separate from the accreditation given by professional associations or organizations. Specialized accreditation evaluates particular units, schools or programs within an institution and is often associated with national professional associations or with specific disciplines.

Accreditation provides the security of knowing that the University will honor most credits earned at a similarly accredited college or university. Degrees earned at the University are respected and sought after by prospective employers.

Institutional Accreditation:

The Higher Learning Commission of The North Central Association of Colleges and Schools

Specialized Accreditations:

AACSB-The Association to Advance Collegiate Schools of Business
Accreditation Board for Engineering and Technology
American Association of Nurse Anesthetists
American Council on Education for Technical Educators
American Dietetic Association
American Psychological Association
American Speech-Language-Hearing Association
Association of Collegiate Business Schools and Programs
Committee on Allied Health Education and Accreditation of American Medical Association
Council for the Accreditation of Counseling and Related Educational Programs (provisional)
Council on Social Work Education
Foundation for Interior Design Education Research
International Association of Counseling Services
National Association of Education for Young Children
National Accrediting Agency for Clinical Laboratory Sciences
National Association of Schools of Art and Design
National Association of Schools of Dance
National Association of Schools of Music
National Council for Accreditation of Teacher Education
National League for Nursing Accrediting Commission
North Central Association for Teacher Education
Ohio Board of Nursing
Ohio Department of Health
Ohio State Department of Public Instruction

The School of Law is accredited by or holds membership in the following:

American Bar Association
Association of American Law Schools
League of Ohio Law Schools
Council of the North Carolina State Bar
State of New York Court of Appeals

The University also holds membership in the following educational organizations:

American Association of Colleges for Teacher Education
American Association of Community Colleges
American Association of State Colleges and Universities
American Council on Education
American Society for Engineering Education
American Society for Training and Development
Council of Graduate Schools
Department of Baccalaureate and Higher Degree Programs
National League for Nursing
International Council on Education for Teaching (associate)
Midwestern Association of Graduate Schools
National Association of Graduate Admissions Professionals
National Association of State Universities and Land-Grant Universities
North American Association of Summer Sessions
Ohio College Association
Ohio Continuing Higher Education Association
Ohio Greek Officers' Association of Evening Students
University Council on Education for Public Responsibility
University Continuing Education Association

The American Association of University Women grants membership to women graduates with approved baccalaureate degrees from The University of Akron.
The Campus

LOCATION

The University is situated in a large metropolitan area. The campus, although centrally located within the city, features parklike pedestrian areas. Students have easy access to retail outlets, transportation, and churches. Akron is easily reached by automobile from major national east-west routes (Interstates 80, 90, 76, and the Ohio Turnpike) and north-south routes (Interstates 71 and 77), all of which link Akron to the surrounding states and regions. The University itself is located between East Market Street and East Exchange Street in the downtown area. For air passengers, limousine service is available from the Cleveland Hopkins International Airport and the Akron-Canton Regional Airport, south of Akron.

BUILDINGS

Many of the buildings on campus bear the names of prominent persons who are recognized for their contributions in administration, education, business, science, or University service. Major buildings include:

Akron Polymer Training Center. The Akron Polymer Training Center at 225 East Mill Street is an instructional classroom and laboratory facility for Polymer Engineering and Engineering and Science Technology Polymer Science classes.

Arts & Sciences Classroom Building. Construction of this new $19.5 million, 122,200 sq. ft. building at 290 East Buchtel Avenue, just north of Bierce Library, is expected to be completed by Summer 2002. Occupants include the Dean of the Buchanan College of Arts and Sciences, Psychology, Public Administration and Urban Studies, Geography and Planning, Mathematics and Computer Science, and Statistics. The building will also feature 16 new state-of-the-art classrooms.

Auburn Science and Engineering Center. Named for Dr. Norman P. Auburn, 10th president of the University, this complex is one of the largest academic buildings in the state. The Center houses the College of Engineering, including the dean's office, the Engineering Coop Office; Mechanical, Electrical, Chemical, and Civil Engineering; as well as the Department of Biology, biology research facility, and the science and engineering holdings of University Libraries. The Sci-Tech Library is currently being remodeled to provide 26,500 sq. ft. of additional stack and study space.

Bierce Library. Named for General Lucius V. Bierce, an Akron lawyer, lawyer, historian, state senator, philosopher, philanthropist, and soldier, the building opened in the spring of 1973. In addition to the book and periodicals collections, the facility houses audio-visual materials, maps, and microforms, University Libraries, including science and technology materials located in the Auburn Science and Engineering Center, have holdings of more than 2.6 million items.

Buchtel Hall. Originally built in 1970, this structure was destroyed by fire in 1989 and rebuilt in 1992. The administrative center of campus, Buchtel Hall was completely restored in 1973 following a devastating fire in 1971. It is the University's link with its predecessor, Buchtel College. It provides office space for numerous administrative officials of the University.

Buchingham Center. This building houses a Cultural Diversity Center, which includes the Black Cultural Center, Peer Counseling Program, Diversity Council, and a repository of African-American history.

Business Administration Building. This $3.1 million facility, located at 259 South Broadway, was completed in 1991. The structure consolidates office, classroom, and laboratory facilities for the dean of the College of Business Administration, the George W. Daverio School of Accountancy, and the departments of Finance, Marketing, and Management.

Carroll Hall. Adjacent to the Gardner Student Center, Carroll Hall houses classrooms, laboratories, and includes offices for the departments of Counseling and Special Education, and Geography and Planning.

Central Services Building. At 185 South Forge Street, this building houses the administrative service departments of central stores, printing services, and mail room.

Computer Center. This building at 185 Carroll Street houses the University's Information System Services offices, main computers, and workrooms, as well as student and faculty microcomputer labs and time-sharing terminals.

Crouse Hall. Crouse Hall houses the Department of Geology, the Center for Environmental Studies, classrooms, and some of the College of Education offices.

E.J. Thomas Performing Arts Hall. Named for Edwin J. Thomas, prominent industrialist and dedicated member of the University Board of Trustees from 1952 to 1975, this cultural center, which cost more than $13.9 million, was formally opened in 1973. Designed to accommodate concerts, opera, ballet, and theater productions, the hall is a masterpiece in architecture, aesthetics, and creative mechanisms. It stands at the corner of University Avenue and Hill Street.

Firestone Conservatory. On the first floor of Guzzetta Hall, this facility provides classrooms, practice rooms, and offices for music.

Gardner Student Center. This complex was named for Donnfield H. Gardner, who was appointed dean of men in 1926, the University's first dean of students in 1937, the first dean of administration in 1955, and later, in 1959, was promoted to vice president, retiring in 1962. This facility, which serves as a unifying force in the life of the institution, houses nearly 60 percent of all non-academic activities on campus. It provides bowling alleys, meeting rooms, lounges, student activity and publication offices and workrooms, a game and billiard room, a bookstore, bank facilities, Computer Solutions store, the Gardner Theatre, a cafeteria, and other dining facilities.

Goodyear Polymer Center. Construction of the $17 million Polymer Science Building was completed in 1991. This two-tower structure of steel, concrete, and glass, located at 170 University Avenue, houses offices for the Vice President for Research and the Graduate School. The building provides laboratory facilities for the departments of Polymer Science and Polymer Engineering. The facility features a 260-seat lecture hall, offices, classrooms, and research laboratories for the Institute and Department of Polymer Science.

Guzzetta Hall. Complementing the E.J. Thomas Performing Arts Hall, this facility was constructed directly across Hill Street. The $3.5 million structure, dedicated in October 1975, houses the Offices of the Dean of Fine and Applied Arts and departmental space for the School of Dance, Theatre and Arts Administration and for the School of Music. In addition to providing more than 40 student practice rooms, the complex houses a small experimental theater and a 300-seat recital hall.

Hower House. Located on Fr. Hill, this 18th-century mansion has been designated a Historic Place by the National Park Service.

Interim Student Administrative Services Building. All student services operations presently located in Space Hall are scheduled to move to this interim remodeled facility at 185 East Mill Street (formerly the Goodwill Building) by January 2002. Occupants will include Registrar's Office, Cashier, Parking, Loans and Receivables, Financial Aid, Academic Advising, Controler, Auditor, University College, and the Office of Accessibility.

Knight Chemical Laboratory. This $10 million complex is named in honor of Dr. Charles M. Knight, who taught the first general chemistry course at the College of Science in 1909. Opened in 1973, the building houses the Department of Chemistry and features many innovative laboratories with the most sophisticated safety equipment, as well as classrooms and faculty and administrative offices.

Kolbe Hall. Named for the first president of the Municipal University of Akron, this building was remodeled for the School of Communication at a cost of $17.3 million. Additions to and remodeled space within the building have provided space for faculty and staff offices, TV studio areas, WZIP-FM radio station, computer labs and classrooms. The building also houses the Paul A. Daum Theatre.

Leigh Hall. Named in honor of Warren W. Leigh, first dean of the College of Business Administration, this facility on Buchtel Common currently houses the John S. Knight Auditorium and general purpose classroom space. Temporary occupants of the building include Interdisciplinary Studies, the English Language Institute, World Civilizations and Humanities in the Western Tradition office, the Statistics Department, and the Equal Employment Opportunity/Affirmative Action Office.

Paul E. Martin University Center. Located at 105 Fr. Hill, the Paul E. Martin University Center has changed from a private club serving dues-paying members to a University-operated restaurant and banquet center. The table service restaurant is open for lunch between 11 a.m. and 2 p.m. and 5 p.m. to 9 p.m. on weekdays and until 9 p.m. on weekends. Banquets, receptions, and parties can be scheduled during the hours of 7:30 a.m. to noon.

McDowell Law Center. Named for C. Blake McDowell, prominent local attorney, alumnus, and benefactor of the University, the center houses the School of Law. Opened in 1973, it provides space for the law library, classrooms, moot courtroom, appellate-review office, seminar rooms, and faculty offices. A $2.8 million addition provided library and support space, and a $1.5 million second expansionlinked McDowell Law Center to West Hall, remaking administration office space. The law center contains study lounges at the corner of University Avenue and West Ledges Parkway.

Memorial Hall. Dedicated to the memory of Summit County men and women who died in World War II, this is the companion building to the JAR. It contains offices of
the Department of Sports Science and Wellness Education, a main gymnasium, a
gymnastics area, a combatIVES area, a motor learning lab, a human performance lab, an
athletic training lab for sports medicine, a weight training and fitness center, an
athletics batting cage, the intramurals sports office, and classrooms.

Ocasek Natatorium. The $6 million natatorium, completed in 1988, is a 70,000-
square-foot structure that houses an Olympic-size swimming pool with adjacent
swimmer seating area, and locker rooms and showers. The center also houses nine
racquetball courts as well as the newly opened tennis courts. The natatorium is named for for-
mer Ohio State Senator Oliver Ocasek.

Olin Hall. Named inonor of Professor Oscar E. Olin and Mr. Charles Olin, this facility
was completed in May 1975. The hall houses the Office of the Dean of the Buck-
tel College of Arts and Sciences and the following departments and institutes:
Classics, Economics, Educational Services Careers Program, History, Modern
Languages, Political Science, Philosophy, Sociology, and the C. Biss Bliss Institute of
Applied Politics. The complex is at the corner of Buceth Common and South Union Street.

Olson Research Center. This remodeled warehouse on Forge Street houses the Department, and Institute of Biomedical Engineering, and the Department and Insti-
tute of Polymer Engineering.

Physical Facilities Operations Center. This building, located at 146 Hill Street, houses
physical facilities offices, craft shops, the central heating and cooling distribution center, and the Campus Police/Security Department.

The Pohsy Building. The largest academic building in Ohio, this renovated downtown
building is home to the Graduate School. Also located here are the University Archives, The Archives of the History of American Psychology, The School of
Speech-Language Pathology and Audiology, the Department of Psychology, the Department of Public Administration and Urban Studies, the School of Social
Work, the Office of International Programs, the Office of Research Services and
Sponsored Programs, the Institute for Policy Studies, the Institute for Health and Social Policy, and temporary quarters for the Department of Psychology and the Insti-
tute for Life-Span Development and Aging.

Polymer Engineering Academic Center. The construction is complete for this new
$5.3 million 31,900 sq. ft. facility, located by pedestrian bridge to the Olson Research Center Polymer Engineering laboratories. The new building includes depart-
ment, faculty, and graduate student offices, the Rubber Division offices of the American Chemical Society, classroom space and a 134-seat lecture hall.

Robertson Dining Hall. This building at 248 East Buceth Avenue has a cafeteria and
dining room for students, as well as the campus infirmary, which provides health ser-
VICES for the University.

Rubber Bowl. This off-campus stadium at 800 George Washington Boulevard, four
miles from campus, features an artificial turf playing field, seating for 35,000, locker
rooms, concessions, and a press box.

Schrank Hall. Named for Harry P. Schrank, long-time member and chairman of ULA
Board of Trustees, this complex, which adjoins Auburn Science and Engineering Center, is composed of two academic structures and a parking deck. Schrank Hall North contains space for some Civil and Mechanical Engineering faculty offices and research space, a College of Engineering minority students study area, the Biology lab and general purpose classroom space. Schrank Hall South provides facilities for the School of Family and Consumer Sciences.

Spicer Hall. This major student services building currently houses the Registrar's
Office, Academic Advisement Center, the Office of Student Financial Aid, University
College, the Office of Services for Students with Disabilities, and the Student Assis-
tance Center, as well as the Parking Systems office. In addition, the University Controller, the University Auditor and External Auditor, the Cashier's Office, and the
Loans, Receivables Office. All offices are scheduled to move to the ISAS Building at 185 East Mill Street by January 2002.

Stitzlein Alumni Association Center. Named for Harry P. and Rainey G. Stitzlein, this
recently remodeled building, north of East Buceth Avenue at Fir Hill, houses the Office of The Alumni Association.

Whitby Hall. Named for G. Stafford Whitby, a pioneer in the development of poly-
mer science, this building opened in 1975. Located in this facility are some polymer
science laboratories and the Department of Chemical Engineering. Occupants will
vacate the building temporarily to ASEC for a major remodeling project from Janu-
ary 2002 to August 2003.

Zook Hall. Named to honor George F. Zook, president of the University from 1925 to 1935, this Buceth Common facility houses the College of Education offices of the Dean, Associate Dean for Academic Affairs and Assistant Dean for Student Affairs, and admission advisement offices. Other facilities include a lecture room that seats 245, general classrooms, a science and mathematics classroom/laboratory, a dis-
tance learning classroom, a Center for Literacy, and its Audio/Visual Demonstra-
tion classrooms, two computer/training classrooms, and a multi-media laboratory.

Background Information

Buchtel College of Arts and Sciences

The Department of Biology houses greenhouses, controlled-environment cham-
bers, a new animal research facility, a molecular biology research center, modern laboratories and equipment that includes advanced light microscopes (differential
interference contrast, fluorescence), electron microscopes (transmission and re-
mission), slihcton counters, ultracentrifuges, DNA sequencing apparatus, and
physiographs; vehicles and boats and a 400-acre nature preserve are available for
fieldwork. Many oecology courses use the department's student computer lab for
review of multimedia presentations, data analysis, simulations, Internet and Web
assignments, teleconferencing, scanning, word-processing, and printing.

The Department of Chemistry is located in Knight Chemical Laboratories, The
department offers outstanding instrumentation, such as nuclear magnetic reso-
nance spectrometers, research-grade gas chromatographs, infrared and ultraviolet
spectrophotometers, and other modern research tools for identification and char-
acterization of compounds. The Chemistry and Research Center houses a laboratory of more than 1,100 items, including chemicals, glassware, and apparatus.

The Department of Classical Studies, Anthropology and Archaeology has a
Macintosh-based computer lab which gives easy student access to a collection of
seven thousand original digital images of ancient Mediterranean buildings, arti-
facts and art works, to the Perseus program, a digital multimedia database on the
Greek world (2000 BCE) and images of Greek literature both in Greek and in
translation), and to the Internet and the Web. The lab includes an extensive suite of
graphics software, three dual-monitor authoring workstations as well as desktop
machines, flatbed and film scanners, and an accelerated 100 base-T local network
connected to the University backbone. Digital imaging and creation are a reg-
ular part of most classes. The Interdisciplinary Archaeology Program laboratory
containsoinid fossil casts, archaeological collections, and a variety of equipment
used in field research projects as well as computers for use with faculty and stu-
dent research projects using ArchView and qualitative software packages. The
ArchView program is affiliated with the Institute for Health and Social Policy.

The Department of Economics is housed on the second floor of Olin Hall in a
modern office facility with space for faculty and graduate assistants. Economics as
discipline has become increasingly analytic. In keeping with this trend, the depart-
ment recently opened a new computer laboratory for faculty and students. The lab
is equipped with the latest equipment, running in a Windows environment. In ad-
tion, the department has an electron microscope and data analysis computer, a
distance learning classroom, and a special purpose computer lab. The lab is equipped
with many interactive lectures, internet access, and student computer labs which
facilitate interaction between faculty and students, and enhances the students' ed-
curative experiences.

The Department of English maintains a Communication Center, where students
can create and print documents, do desktop publishing, and gain telecommu-
nication access through the ZipNet and internet. The department supports the
journal Seventeenth-Century News and co-sponsors and staffs The Social History
of Alcohol Review. The Thackrey Room houses bibliographies, indices, and ref-
erence works relevant to the specialties taught. Graduate seminars are held in the
department's own seminar room within the English complex.

The Department of Geography and Planning has an instructional computer lab
and specialized labs for research and production work in cartography, geographic information systems (GIS), remote sensing, and soils analysis. These labs have a
variety of computer software and data sets, including ArcView, remote sensing,
spatial database, spreadsheet and statistical analysis software as well as digitizers, scanners, printers and plotters. The department also houses a collection of maps, aerial photographs and satellite images.

The Department of Geology has modern instrumentation for field and laboratory
studies which includes an automated electron microprobe, an atomic X-ray dif-
fraction system, ion-coupled plasma spectrometer, atomic absorption spectrome-
ter, ion chromatograph, coal and sulfur analyzers, oxygen bomb calorimeter,
gyrometer, resistivity gauge, refractometer, spectrophotometers, and spectrometers. The data can be analyzed using ArcView, GIS, remote sensing, database, spreadsheet and statistical analysis software as well as digitizers, scanners, printers and plotters. The department also houses a collection of maps, aerial photographs and satellite images.

The Department of Geology has modern instrumentation for field and laboratory
studies which includes an automated electron microprobe, an atomic X-ray dif-
fraction system, ion-coupled plasma spectrometer, atomic absorption spectrome-
ter, ion chromatograph, coal and sulfur analyzers, oxygen bomb calorimeter,
gyrometer, resistivity gauge, refractometer, spectrophotometers, and spectrometers. The data can be analyzed using ArcView, GIS, remote sensing, database, spreadsheet and statistical analysis software as well as digitizers, scanners, printers and plotters. The department also houses a collection of maps, aerial photographs and satellite images.

The Department of History in Olin Hall is housed in a modern office suite with
specialized computer labs as well as professors. The Clara C. Roe Seminar Room is
grouped for graduate seminars.

The Department of Mathematics and Computer Science is located on the upper
floors of Aver Hall. Students of mathematics, applied mathematics, and computer
science have access to a wide variety of computing facilities, operating environ-
ments, languages, and software in laboratories maintained in and by the depart-
ment.

Two labs, which contain Intel-based computers, are connected by a NT Server Net-
work. One of these labs is frequently used for class laboratory sessions for up to
twenty students. This is a standard feature of many entry-level courses in mathe-
ematics and computer science. The other lab is an open lab in which students find
a similar environment in which to work independently of assignments. The lab PCs run
Windows NT 4.0. NSF TGP/IP has been installed and access is provided to the Inter-

FACILITIES AND EQUIPMENT

The University's addition of modern teaching aids demonstrates its recognition of
the need in this technological age, for up-to-date facilities and equipment. Many of
these facilities are described below.

1. Outside Laboratory: A new science and mathematics classroom/ laboratory, a
distance learning classroom, a Center for Literacy, and its Audio/Visual Demonstra-
tion classrooms, two computer/training classrooms, and a multi-media laboratory.
net via ftp, telnet, and Netscape. Software available includes Maple, ISETL, and MATLAB for mathematics; Turbo C++, Java, Visual C++, Micro Assembler, Visual Basic for computer science; Microsoft Office, and Microsoft Works for more general use.

Another open laboratory mainly devoted to a UNIX client/server environment, includes 15 SUN SparStation (Solaris 2.5.1) and 9 RedHat Linux machines, all of which support a graphical user interface. They are connected to the corporate Internet network supported by a high-performance server running OSF TRU64 Unix operating system. They also support Mosaic and Netscape. Languages available include Lisp, FORTRAN, Pascal, two versions of C and C++, Perl, and JAVA.

Two special graduate/research laboratories are also part of the Department; a lab is also available for graduate students in computer science. The address for the home page of the department is http://www.mathcs.ualk.net.

A most important resource of the Department of Modern Languages is the Language Resource Center in Olin Hall. The Language Resource Center contains facilities for students to listen to audiotapes and view videotapes as a class or individually. Fourteen networked multimedia computers have software for additional language practice and foreign language word processing. Access to the World Wide Web provides students with the opportunity to both read and listen to up-to-date news and cultural information. Magazines and dictionaries are also available for student use. Additional information about the department and its programs is available on the Internet at www.ualk.net/index.html.

The Department of Physics is located on the first three floors of Ayer Hall. Facilities include research laboratories used for faculty and student research projects, laboratories for experiments associated with coursework and several microcomputer labs for undergraduate and graduate use. Most of the four floors of the building are networked. The department has an e-mail system and a web page www.physics.ualk.net for use by the faculty and physics students. Many instructors use this system to distribute course materials and entertain questions and feedback from students. The smallness of the department provides ample opportunity for interaction between faculty and members combined with the laboratory space, computing facilities and reading room offers a diverse learning experience to the student in an attractive and hospitable environment.

The Department of Psychological Science maintains an instructional computer laboratory consisting of eight computers and a scanner. This laboratory is used by Psychological Science students assigned research tasks requiring improved computer and Internet skills.

The Department of Psychology is located on the third floor of the Rosky Building. The department maintains four computer labs that are available for graduate students in Psychology. All labs have access to the Internet via Netscape as well as access to campus programs that include OneLink, ZipLink, MVS and DAX. Equipment available in the computer labs include: Pentium-based computers, laser printers, VCRs, and videoconferencing equipment. Supplemented throughout the labs are statistical packages which include SAS, SPSS and LISREL. WordPerfect and MS Word are available throughout the department for word processing. A full-time research programmer/writer also provides software and hardware support for the department and writes custom software for computerized research.

In addition to the computer labs, a speech and hearing laboratory is also maintained. The department maintains videoconferencing capabilities for the study of counseling processes and outcomes. Additional facilities of the Psychology Department include: research areas for individual computer research, and small group behavior research, and a Test Room where current psychological testing materials are kept. Additional information about the department, its faculty, and its programs, is available on the Internet at http://www.ualk.net/psychology.

The Department of Sociology facilities include research laboratories used for funded research projects. The department shares a computer facility for all students in Olin Hall which includes microcomputers and terminals directly linked to the University's mainframe computer. Many statistical, word processing and web search capabilities are included in the software packages. The Newman Library, providing many current professional journals, is open for students' use. The department is also affiliated with the Institute for Health and Social Policy.

The Department of Statistics maintains two instructional computer labs. One of these labs is used for class laboratory sessions for the general education mathematics/research course, Basic Statistics, and is located in Lehigh Hall, Room 102. The other lab, located in Lehigh Hall, Room 207, is being used for various undergraduate and graduate statistics courses. The Center for Statistical Consulting, housed in the department and maintained by the Buchtel College of Arts and Sciences, provides opportunities for students to gain valuable experience in the practical applications of statistics while interacting with faculty and clients.

College of Business Administration

The College of Business Administration, which has the 81,000-square-foot, four-story College of Business Administration Building that houses the college's offices, classrooms, computer laboratories, and advising services. The departments of Finance, Management, Marketing, the George W. Davewo School of Accountancy, the Fritzinger Institute for Entrepreneurial Studies, the Fisher Institute for Professional Selling, and the Institute for Global Business share the CBG. Graduate programs are fully accredited by AACSB—the Association to Advance Collegiate Schools of Business, the most prestigious accrediting agency for business schools. Tiered, amphitheater-style classrooms permit close contact between students and professors. The Milton and Henrietta Kuckin Computer Laboratory provides three computer classrooms, each equipped with approximately 35 personal computers and a homework laboratory for students with more than 72 computers. Each PC is equipped with current versions of word processors, spreadsheets, database managers, and multi-media software and all are connected to the Internet.

The nationally acclaimed Carl V. and Clyde A. Fisher Sales Laboratory offers six group labs connected by one-way mirrors to a central monitoring and control room. Supervisors can observe videotape equipment permitting the recording of activities in the lab which can then be shown to students to provide immediate feedback. This facility is a key resource in college programs for training in sales, sales management, negotiation, leadership, and employment interview preparation.

The Goodyear Tire and Rubber Company Lecture Hall, the building's largest classroom, is equipped with a state-of-the-art audio-visual system capable of projecting text, slides, video tapes, movies, and the like onto the room's 10-by-10 foot screen. Other classrooms also offer multimedia capabilities. Facilities for seminars, continuing education programs, and student organization meetings are provided in the John P. Murphy Executive Room and adjacent small-group meeting room.

College of Education

The offices, laboratories, and other facilities of the College of Education are located in Olin Hall, Carroll Hall, Olin Hall, the James A. Rhodes Health and Physical Education Building, and Memorial Hall.

The Department of Educational Foundations and Leadership serves graduate students in the College of Education. In the area of leadership, the department provides graduate courses in school administration and higher education administration. The department members also teach the core curriculum of historical, philosophical, psychological, and social foundations required in all graduate education programs. They teach, advise, and supervise problems, theses, and dissertations of students in their degree-granting graduate programs, the master's programs in Educational Foundations, the master's and doctoral programs in Educational Administration, and the master's program in Higher Education.

The Department of Sports Science and Wellness Education prepares students for careers in teaching, athletic training for sport participation, health education, coaching, related recreational fields, and related health fields. There are laboratories for the study of exercise physiology, motor behavior, teaching skills (microteaching), and computer utilization in physical and health education. The department has access to the James A. Rhodes Health and Physical Education Building (classrooms, the main gym, an indoor running track, a multi-purpose room, and four teaching station areas), Memorial Hall (classrooms, as well as large and small gymnasiums, Ocasek Natatorium (a classroom, a swimming pool, nine racquetball courts, and a weight room), and Lee Jackson Field (14 tennis courts, an outdoor running track, and two softball fields). The Department of Curricular and Instructional Studies includes the areas of early childhood, middle childhood, secondary (adolescent to young adult) and preschool to grades 12 (P-12) education. Initial teacher preparation programs are available at the post-baccalaureate and master's degree levels. The early childhood program prepares teachers to teach age three to grade three. The middle childhood program prepares teachers to teach grades four through nine with specialization in two of the areas selected from reading/language arts, mathematics, science and social studies. The secondary program prepares teachers in grades seven to twelve to teach language arts, mathematics, science, social studies, family and consumer science (grades 4-12), or vocational education (grades 4-12). The P-12 program prepares teachers of foreign language, music, dance, drama, or visual arts. Endorsements are available in computer/technology, reading, and teaching English as a second language. The department also offers the Technical Education degree, which prepares students for teaching or training in the technical arts. The department is also affiliated with the Institute for Health and Social Policy.

The Department of Counseling and Special Education incorporates two divisions: Counseling and School Psychology. The department operates a multidisciplinary clinic, the Clinic for Child Study and Family Therapy.

College of Engineering

The College of Engineering is located on the 81,000-square-foot, four-story College of Engineering Administration Building that houses the college's offices, classrooms, computer laboratories, and advising services. The departments of Civil, Mechanical, and Aeronautical Engineering, the College of Engineering, and the College of Engineering, share the CBG. The CBG provides a central location for the college's administration, and the Microscale Physiological Engineering Center.

The Department of Biomedical Engineering is located in the Olin Research Center and has classrooms, instructional laboratories and research laboratories. There are three major research laboratories located in the Biomedical Engineering Department. The Musculoskeletal Biomechanics Laboratory is equipped with materials testing equipment and finite element analysis capabilities. The Imaging Devices, Detector
The Multiphase and Solids Laboratory conducts research in virtual reality, telemanipulation, biofeedback therapy and minimally invasive surgery. The Rehabilitation Engineering Laboratory is equipped to conduct collaborative research on problems related to stroke, head injury and arthritic patients. The Biomedical Instrumentation Laboratory has contributed Doppler ultrasonic equipment, temperature sensing devices, and blood pressure and flow monitoring equipment.

The Vascular Dynamics Laboratory provides facilities to analyze blood flow using laser Doppler anemometer and Doppler ultrasound techniques. The Motion Analysis Laboratory is equipped with a Vicon Motion Analysis System, two AMTI force plates, a MA-100EMG system, and associated computer hardware and software.

The Biospectrometry Laboratory is equipped to perform spectral analysis using three-dimensional sensing technology, which includes a Kern Map200 Digitalizing System and a JK Laser Holographic camera for laser holographic interferometry.

The Department of Chemical Engineering is located in Whitby Hall with research laboratories in the North Tower of the Auburn Science and Engineering Center. The Applied Colloid and Surface Science Laboratory has a state-of-the-art laser light scattering facility including a Lelavelargon-on-laser, a vibration isolated optical bench, a Brookhaven correlation and probability analyzer, FTIR-Raman, TGA, and an IBM PC-based data acquisition system. The Biochemical and Environmental Bioengineering Laboratory is a satellite center of the Ohio Biodiversity Processing Research Consortium, housing a state-of-the-art laser Raman spectrometer. The lab is equipped with several bioanalytical assemblies, Sorval RC-5C refrigerated super centrifuge, Perkin-Elmer UVVIS spectrometer and LS-50B luminouscone spectrophotometer, and on-line NADH fluorometers. The Biomaterials Laboratory is available for polymer synthesis and storage including a nitrogen hood, SDSPage separation columns, an oil bath, a dry bath, a vacuum oven, a Buch rotavapor, and a Labconco lypholizer.

The Catalysis Research Laboratory is equipped with high pressure and high temperature IR reactor system with a Nicolet Magna-IR 560 Spectrometer Series II, a Nicolet Magna-IR 560 Spectrometer E.S.P and a Balzers Prisma QMG 200 Mass Spectrometer for in situ catalyst preparation, in situ characterization, temperature programmed desorption of NO, H2, and CO, and in situ reaction studies.

The Multiphasic and Solids Processing Laboratory is equipped to do research in filtration and flows through porous media. The lab contains a gamma ray housing a gamma ray spectrometer for in situ catalyst preparation, in situ characterization, temperature programmed desorption of NO, H2, O2 and CO, and in situ reaction studies.

The Biomedical Instrumentation Laboratory has contributed Doppler ultrasonic equipment, temperature sensing devices, and blood pressure and flow monitoring equipment.

The Vascular Dynamics Laboratory provides facilities to analyze blood flow using laser Doppler anemometer and Doppler ultrasound techniques. The Motion Analysis Laboratory is equipped with a Vicon Motion Analysis System, two AMTI force plates, a MA-100EMG system, and associated computer hardware and software.

The Biospectrometry Laboratory is equipped to perform spectral analysis using three-dimensional sensing technology, which includes a Kern Map200 Digitalizing System and a JK Laser Holographic camera for laser holographic interferometry.

The Department of Chemical Engineering is located in Whitby Hall with research laboratories in the North Tower of the Auburn Science and Engineering Center. The Applied Colloid and Surface Science Laboratory has a state-of-the-art laser light scattering facility including a Lelavelargon-on-laser, a vibration isolated optical bench, a Brookhaven correlation and probability analyzer, FTIR-Raman, TGA, and an IBM PC-based data acquisition system. The Biochemical and Environmental Bioengineering Laboratory is a satellite center of the Ohio Biodiversity Processing Research Consortium, housing a state-of-the-art laser Raman spectrometer. The lab is equipped with several bioanalytical assemblies, Sorval RC-5C refrigerated super centrifuge, Perkin-Elmer UVVIS spectrometer and LS-50B luminouscone spectrophotometer, and on-line NADH fluorometers. The Biomaterials Laboratory is available for polymer synthesis and storage including a nitrogen hood, SDSPage separation columns, an oil bath, a dry bath, a vacuum oven, a Buch rotavapor, and a Labconco lypholizer.

The Catalysis Research Laboratory is equipped with high pressure and high temperature IR reactor system with a Nicolet Magna-IR 560 Spectrometer Series II, a Nicolet Magna-IR 560 Spectrometer E.S.P and a Balzers Prisma QMG 200 Mass Spectrometer for in situ catalyst preparation, in situ characterization, temperature programmed desorption of NO, H2, O2 and CO, and in situ reaction studies.

The Multiphasic and Solids Processing Laboratory is equipped to do research in filtration and flows through porous media. The lab contains a gamma ray housing a gamma ray spectrometer for in situ catalyst preparation, in situ characterization, temperature programmed desorption of NO, H2, O2 and CO, and in situ reaction studies.

The Vascular Dynamics Laboratory provides facilities to analyze blood flow using laser Doppler anemometer and Doppler ultrasound techniques. The Motion Analysis Laboratory is equipped with a Vicon Motion Analysis System, two AMTI force plates, a MA-100EMG system, and associated computer hardware and software.

The Biospectrometry Laboratory is equipped to perform spectral analysis using three-dimensional sensing technology, which includes a Kern Map200 Digitalizing System and a JK Laser Holographic camera for laser holographic interferometry.
tosh computer laboratory with complete desktop publishing layout, graphics, and print capabilities. The School of Dance, Theatre, and Arts Administration is located in the Ballet Center. The Theatre Program offers graduate programs in Theatre and Arts Administration. It utilizes three different performing spaces to present its annual season of two to five productions. Guzzetta Hall houses the versatile "black box," experimental Sandefur Theatre as well as rehearsal, teaching, and shop facilities. Kohe Hall is the site of the 244-seat Daum Theatre, complete with support facilities. This conventional proscenium theatre is the home of theatre productions as is E.J. Thomas Performing Arts Hall. Student productions are performed in Studio 2, Sandefur Theatre, and Daum Theatre.

The School of Family and Consumer Sciences is housed in Schrank Hall South. Nine laboratories, including a computer center, are available for authentic student learning experiences. All programs provide community experiences through internships, clinicals, and student teaching. These programs have active Advisory Committees of community professionals who provide advice and networking assistance. The School's Center for Family and Consumer Sciences, a new facility for Certificate programs, including Divorce Mediation, Home Based Intervention and Case Management. In cooperation with the College of Education, the School maintains the Early Childhood Center for the study of child development and teacher education. The School of Music is housed in Guzzetta Hall and also utilizes the E.J. Thomas Performing Arts Hall. Guzzetta Recital Hall seats 250 and is equipped with a pipe organ, harpsichord, two concert grand pianos, and a recording booth. The Music Computer Center is equipped with Macintosh computers and MIDI/sound and video equipment. An electronic music studio features digital and analog multitrack recording and sound synthesis equipment for music composition. Classrooms, studios, and 40 practice rooms (acoustical sound modules) are used for teaching, rehearsals, and practice.

The School of Social Work offers CSWE-accredited professional training to social work students by linking them to a variety of local health and human services community agencies and organizations. The strong commitment and interaction with a network of agencies in the community serves as a laboratory for students.

The School of Speech-Language Pathology and Audiology provides professional and practical training to students who wish to become speech-language pathologists and/or audiologists. The School houses the Audiology and Speech Center, which functions as a practicum training arm as well as a service agency for persons in the region who have speech, language, and/or hearing problems.

College of Nursing

The College of Nursing, located in Mary Hackwood Hall, has a Student Affairs Office which provides academic advising services to prospective students. The College contains a state-of-the-art Learning Resource Center, including a computer laboratory exclusively for nursing students. The Center for Nursing within the College is closely linked to the Akron community and is used by faculty and students for community service, practice, education and research.

College of Polymer Science and Polymer Engineering

The facilities of the Department of Polymer Science and the Maurice Morton Institute of Polymer Science support fundamental and applied research in polymer chemistry, physics, and many aspects of polymer behavior. There are extensive laboratories for polymer synthesis and for the characterization of macromolecules and polymer morphology. The macromolecular modeling center provides state-of-the-art computer modeling capabilities. A nuclear magnetic resonance laboratory is maintained with several high-resolution instruments. The applied research section of the Maurice Morton Institute of Polymer Science operates a variety of analytical and compounding/testing laboratories to serve the needs of industry and government agencies for a reliable source of problem solving and data. The total value of major instrumentation and equipment housed in the Polymer Science laboratories exceeds $3 million.

The Department of Polymer Engineering and Institute of Polymer Engineering maintain a broad-based range of processing, structural, and rheological characterization facilities. Processing facilities include unique blending and compounding facilities with five twin-screw extruders, a Buss kneader, and seven internal mixers including flow visualization capability; seven single-screw extrusion lines for plastics and rubber, with ultrasonic and sound waves and rotational mandrel dies, and with single/multiple bubble tubular film and cast film extrusion capability as well as a biaxial film stretcher. Molding facilities include screw injection molding capability of five machines, blow molding, plug assist thermforming and compression molding with composites capability. The Institute of Polymer Engineering is the home of the EPIC-M.A. Hanna Compounding and Blending Center and the Molding Technology Center. Characterization capabilities include scanning and transmission electron microscopy, X-ray diffractometry (including a rotating anode X-ray generator), Fourier transform infrared, small angle light scattering, optical microscopy and retardation, radiography, differential scanning calorimetry, thermogravimetric analysis, dielectric thermal analysis, and surface profiling, rheological and mechanical testing, including elongational flow, rotational and capillary shear rheometry, dynamic mechanical, tensile and impact testing.

Developed at the urging of the Akron Regional Development Board and EPIC, an industrial-government-university consortium, the Akron Polymer Training Center serves as a laboratory for the processing and testing of rubber and plastic materials. The Center provides classrooms and laboratories for graduate students in Polymer Engineering.

University Libraries

Library facilities are housed in three separate locations: in Bierce Library on Buchtel Common; the Science Library in Auburn Science and Engineering Center, Room 104; and Archives Services in the Polsky Building, lower level.

Library services include reference and research assistance, user education, bibliographic instruction, and computer-based information searching. Materials can be borrowed from the University Libraries through the circulation department or obtained from other libraries through the OCLC network or other resource-sharing arrangements.

The University Libraries' collections contain more than 2.8 million items: books, periodicals, government documents; curricular materials, microforms, maps, audio-visual materials, and archival documents. The library receives nearly 5,000 magazines, journals, newspapers, and other serial publications, such as annual reports and the publications of various societies. Through the library's memberships in the Center for Research Libraries, the OhioLINK network, and the Ohio Network of American History Research Centers, access to vast resources is greatly increased for University students, faculty, and staff.

University identification cards function as library cards. Photocopy services and equipment for use in making paper copies from microforms are available in Bierce Library and in the Science Library. Group study rooms and typing facilities are also available in the Science Library. Audiovisual services, located in Bierce Library, Room 6B, maintain an extensive centralized collection of media hardware and audio-visual resources for student and faculty use. It also has a collection of instructional materials in various media formats (films, slides, etc.). The New Media Center supports faculty who want to improve teaching through the use of technology. Audio Visual Services designs, installs, and maintains technology-enhanced general purpose classrooms, offering permanent in-room projection, sound reinforcement and a sophisticated media retrieval system.

Bierce Library houses the Distance Learning Classroom on the second floor. Part of the Medina Link initiative, this classroom is connected to "virtually" any geographic location that has the appropriate technology.

Information Services

Information Services supports the entire University technology needs including data, communications and library services. In today's environment, professors, students, administrators and staff use the same technology and products. Information Services is available directly to those who need it. Personal productivity tools, network connectivity and services provide a common infrastructure for the dissemination of information and communications. Information Services is preparing for the University's future technology needs with an emphasis on the continued convergence of voice, video and data networks into a single digital network environment.

Distributed Technology Services provides technology and support services for the campus community. Technology and support services are provided through the following areas:

- **Computer Labs:** 150 IBM wireless laptops are available for two-hour loan periods in Bierce Library. The wireless laptops can be used anywhere within the library to access the internet, to get email, or do class assignments. Two general-purpose computer labs for students are also located in Polsky, room 287 and the Gardner Student Center, room Chestnut B. Both the wireless and the general-purpose labs have the same productivity tools such as Microsoft Office Suite, Apple eBook, SPSS and SAS.
- **Computer Acquisition:** Computer Solutions (www.uakron.edu/compsol) is the central point for campus technology acquisitions. It is an education reseller for computer hardware, software, and many peripheral devices. State-of-the-art IBM laptop wireless computers can be purchased or leased at Computer Solutions, located in Gardner Student Center. The wireless laptops can be used within any building on campus. Details of the laptop program can be found at www.uakron.edu/laptop.
- **Support Services:** The Technology Learning Support Center (TLS), located in Bierce Library, room 69 provides call-in (330-972-8888) and walk-in support for all students, faculty and staff. The TLS support services include software issues, hardware diagnostics, and hardware repair.

Technology Learning Support Centers are staffed by: Monday - Thursday 7:30 a.m.-8:00 p.m. Friday 7:30 a.m.-5:30 p.m. Saturday 11:00 a.m.-4:00 p.m. Sunday 2:00 p.m.-8:00 p.m.
Design and Development supports faculty and students who participate in distributed learning courses and programs. Support is provided through the following activities: design, develop and support selected curriculum-based distributed learning programs and courses, and design and develop customized computer-based multimedia programs.

Network and Communication Services provide more than 500 dial-in lines for faculty, staff and students to use with their computers and modems from home to access UA and Internet networks. UA's computer network, named UniversityNET, has about 4,000 computers connected on campus. To use these services, faculty, staff and students should go to the Technology Learning Support Center at Bierce Library, room 68 to obtain a UniversityNET ID. The network provides access to ZipLINK, including the library catalog; OhioLINK, the library catalogs of all Ohio universities and colleges; electronic mail (e-mail); the Internet, including the popular World Wide Web; multimedia information; general reference materials; discussion lists; Wayne College, IBM mainframes and Digital servers.

Student information is available using the web, the following services are provided: registration for classes, personal financial aid information, course grades, and fee payments by credit card.

Other services provided to the campus by the Network and Communication Services include: cable television (ZIP-TV), telephone and voice mail services, security systems, cable plant management, cable television and network connections to residence hall rooms in Bulger, Grant, Garson, Galileo and the Townhouses.

Visit our website at http://Gazips.uskron.edu/is for more information.

RESEARCH CENTERS AND INSTITUTES

The University Research Council is responsible for encouraging, supporting, and making recommendations pertaining to sponsored and contractual research carried out at the University's departments, schools, centers, and institutes. The council consists of the Vice President for Research and Dean of the Graduate School, the Director of Research Services and Sponsored Programs, representatives of the Faculty Senate, various college deans and institute directors, and General Counsel. Sponsored research activities on campus are coordinated by the Vice President for Research and Dean of the Graduate School and the Director of Research Services and Sponsored Programs.

Ray C. Bliss Institute of Applied Politics

John C. Green, Ph.D., Director

The Ray C. Bliss Institute of Applied Politics is a public education and research adjunct of The University of Akron and its Department of Political Science. The broad purposes of the institute, in keeping with the career of its namesake, Ray C. Bliss, are: to give all citizens, and particularly students, an opportunity to learn how to become active and competent in political life; to help maintain a tradition of ethical public service in politics; to foster useful relationships between applied politics and political science; to promote public comprehension of political organizations and the requirements for their effectiveness; and to improve understanding of continuity and change in American political institutions.

Institute for Biomedical Engineering Research

This institute was established in 1979 to promote interdisciplinary studies in the rapidly growing areas of knowledge which overlap the fields of biology and medicine, on the one hand, and engineering and the physical sciences, on the other. It conducts seminars, courses and degree programs in biomedical engineering in association with the College of Engineering and individual departments.

In addition to its research and educational functions, the institute provides a research service to local hospitals and industry, as well as to private and government agencies. The premise for this program is that the combined resources of the University, Northeastern Ohio Universities College of Medicine and affiliated organizations will often permit more cost-effective solutions than would be possible by an individual or group doing the research independently.

The work of the institute is carried out by faculty of the Department of Biomedical Engineering in association with "members" selected from the faculties of The University of Akron and Northeastern Ohio Universities College of Medicine, as well as from the ranks of area physicians, engineers and scientists. The Institute and the department occupy the third floor of the Olston Research Center on the north edge of the campus.

Center for Conflict Management

James Stanley, Ph.D., Acting Director

The Center for Conflict Management provides students with the opportunity for an interdisciplinary program of study in resolving and managing conflicts in the areas of Business/Economics/Labor, Family/Community, and the International arena. Course programs draw on the resources of a wide spectrum of the University's academic departments. Upon completion of all selected courses, students receive not only academic credits for the courses but a Certificate for Conflict Management in their area of specialization. The Center sponsors workshops for teachers, special campus programs, and research projects. It also collaborates with community organizations and similar programs on other campuses.

For more information, contact the office, 201 Leigh Hall, 330-972-6113.

Center for Economic Education

Fred M. Carr, Ph.D., Director

The center exists to improve the economic literacy of individuals to help them function competently as citizens, producers and consumers.

The center conducts workshops, seminars and economic programs for teachers, students and interested groups. It provides consulting services in the area of economic education and acts as a clearinghouse for the gathering and dissemination of economic education materials and programs. It also fosters an understanding and appreciation of the American economic system.

Center for Environmental Studies

Ira D. Sadowsky, Ph.D., Director

The Center for Environmental Studies matches the expertise of 95 affiliates in 33 disciplines with the needs of students seeking study and research opportunities in complex environmental issues. Since its founding in 1970, the center has sponsored, or in other ways supported, activities appropriate to the goal of attaining a quality environment for mankind.

The center coordinates special forums, workshops and seminars that address major issues. Examples include the National Energy Forum, the World Food Forum, and Evaluation of Environmental Data. Workshops on energy, natural history and environmental studies in England also emphasize the interdisciplinary approach to the resolution of issues.

Center for Family Business

Susan C. Hanlon, D.B.A., Director

The Center for Family Business provides seminars, conferences and round table groups to help business owners address problems unique to family enterprises.

The center seeks to increase the survival rate of family-owned businesses by focusing on the special challenges inherent in multigenerational family enterprises. For information, call 330-972-6201.

Center for Family Studies

Helen K. Clemenshaw, Ph.D., Director

The Center for Family Studies, established in 1979, was designed to stimulate and encourage the interdisciplinary study of the family. It serves both the University and the community by fostering collaboration between faculty, students, practitioners and community leaders on curriculum development, educational conferences and seminars, research and training, and public policy relevant to important family issues.

The Center is represented by faculty from 15 colleges and over 15 disciplines. It also includes leaders from various community systems, such as the schools, hospitals, courts, churches, mental health, social and health care agencies. In addition, the Center has a fellows program in which outstanding faculty and community leaders are named as either fellows, adjunct fellows or senior fellows.

The Center offers certificates in the following specialty areas: Divorce Mediation and Home-Based Intervention. For more information, please refer to the descriptions of Interdisciplinary and Certificate Programs in this Bulletin or the General Bulletin.

Any student, faculty member or community person interested in family issues is invited to call the director to learn how they can participate or learn more about the Center's activities.

Center for Nursing

Elizabeth Kinion, Ed.D., R.N., Director

The Center for Nursing is part of The University of Akron College of Nursing. It is an education and practice center for College of Nursing faculty and students, as well as faculty and students from other health care disciplines on campus.

Since 1981 the Center for Nursing has provided wellness services to campus students, faculty and staff as well as outreach services to community residents of all ages. Services include health assessments and nursing physicals, stress management, and self-care assistance, family and group education and support sessions. Community outreach to vulnerable populations is a major emphasis of the center.
Center for Organizational Development

Mark B. Lewis, M.A., Director

The Center for Organizational Development in the College of Business Administration was established to meet the training and development needs of the business community. The Center offers management development seminars, programs, consulting services designed to enhance the skills of individuals and improve company productivity in a rapidly changing world. The Center specializes in offering dedicated supervisory training and management development programs that are custom designed to meet the specific needs of companies.

Center for Policy Studies

Jesse F. Marquette, Ph.D., Director

The Center for Policy Studies is an associated center of the Institute for Health and Social Policy.

The Center houses the University of Akron's survey research unit, with responsibility for external grant and contract research, research support for the Urban University linkage program, sponsored research for faculty, and internal University surveys. Geographic scope of work for center projects extends from local jurisdictions through state, national and international projects. Most of the work conducted at the Center is on behalf of government or nonprofit agencies or grant-funded subcontracts for faculty researchers. Center professional staff are available for consultation in the development of grant proposals and budgets.

The Center's responsibilities include the management of the Board of Regents Urban University Program (URP), which links eight state universities to collaborate on the identification of significant urban problems and propose solutions designed to improve the urban environment. The University of Akron Urban University Program, in addition to the collaborative mission of the Ohio URP, encourages community-oriented research and policy analysis through Partnership Grant Program. The Center also houses a State Data Center under the aegis of the Ohio Department of Development to provide Census and other data to appropriate agencies and coordinate geographic information system activities with the Department of Geography and Planning.

Center for Urban Studies

Peter J. Leahy, Ph.D., Director

The Center for Urban Studies (CUS) is the University of Akron's oldest policy research and professional service unit. Established in 1965, the Center acts as a bridge between the University and the Akron community, Ohio and beyond in pursuit of the University's urban mission.

An associated center of the Institute for Health and Social Policy, the Center for Urban Studies provides the setting and facilities through which interested faculty and graduate students involved in urban research or professional service activities in the urban community. For many graduate students, experience gained in the Center for Urban Studies becomes an important complement to formal classroom training in their future careers.

Using the talents of faculty, researchers, administrative staff, and students, the Center explores important economic, social, and political issues; works with others to build a better understanding of these issues, and assists groups and organizations actively engaged in problem-solving, coalition building, or strategic planning. The Center also offers a training curriculum designed to meet the organizational development needs of public and non-profit organizations. To reflect the expanded mission of the Center, it has been proposed that the Center be renamed the Center for Public Affairs Research and Training.

English Language Institute

Debra L. Dearen, M.A., Director

The English Language Institute (ELI), established in 1979, provides non-credit academic English as a Second Language (ESL) instruction to international students and non-native residents who plan to pursue an undergraduate or graduate degree at The University of Akron or another U.S. university. The intensive, 20-hour per week English program also serves students who wish to improve their English to meet their own professional and/or personal goals.

ELI courses at four levels of English proficiency target language and academic skills needed for successful study at a U.S. university: reading efficiently, writing clearly, taking lecture notes, and communicating effectively with people on and off campus. Students also study grammar and vocabulary and prepare for the TOEFL test of English language proficiency, which is required for admission to the University. In addition, students receive a wide variety of support services designed to facilitate their transition to life and study in the United States.

The ELI serves as a resource on issues relating to language proficiency not only for University faculty, staff, and students but also for members of the local community. ELI faculty can provide workshops and specialized courses to help department meetings of the needs of their international students. For more information, visit the ELI web site at www.uakron.edu/eli or call 330-972-7544.

Fisher Institute for Professional Selling

Jon M. Hawes, Ph.D., Director

The Fisher Institute for Professional Selling was founded in 1994. Its mission is to enhance the image of the sales profession, to promote professional selling and sales management as a rewarding lifetime career, to provide quality sales training and selling experiences, and to advance the knowledge of professionals' selling through the support of applied research.

William and Rita Fitzgerald Institute for Entrepreneurial Studies

Wayne H. Watkins, B.S.M.E., M.B.A., J.D., Director

In 1995, a generous gift from William and Rita Fitzgerald created the Fitzgerald Institute for Entrepreneurial Studies in the College of Business Administration. The Institute was established to promote the principles of free enterprise and encourage entrepreneurial spirit and practices both within the University's curriculum and throughout the business community.

The Fitzgerald Institute focuses on the development of curriculum appropriate for both new ventures and the entrepreneurial development and growth of existing businesses. The Institute provides the needed link between the University and the community of entrepreneurs critical to business development in the future. The Fitzgerald Institute also sponsors several outreach projects, such as the Center for Family Business, The Center for Small Business, and Students in Free Enterprise.

For information, contact the institute, CBA 330, 330-972-7038.

Institute for Global Business

James W. Barnett, B.B.A., Director

The University of Akron received special funding from the State of Ohio to expand its offerings of undergraduate and graduate degree programs in international business. Thus, the College of Business Administration created the Institute for Global Business, which coordinates both credit and noncredit programming in international business. The Institute also develops short courses and seminars designed to help improve the international competitiveness of area business.

Institute for Health and Social Policy

Richard C. Stephens, Ph.D., Director

The Institute for Health and Social Policy, located on the fifth floor of the Potsky Building, was established in February 1989 for the study of the delivery of effective health and social services. The mission, objectives and research continuum are defined as follows:

Mission
To improve the quality of services to specific target groups most at risk of health and social consequences in order to reduce morbidity and mortality and the burden of health and social problems on the community and individuals.

Objectives
- Conduct research appropriate to the mission
- Collaborate with units on campus
- Assist faculty in the development of proposals

Research Continuum
- Epidemiology
- Intervention: Development
- Service delivery
- Technology transfer
- Policy

Most of the work conducted by the Institute is on behalf of government or nonprofit agencies. Faculty and students have the opportunity to collaborate on research and evaluation projects of national significance.

The Institute also serves as an educational resource for students and the community for the most up-to-date social and health services research available and the latest advances in behavioral and social science research technologies.

Intellectual Property and Technology Center

Jeffrey Samuels, J.D., Director

The Intellectual Property and Technology Center in the School of Law is one of approximately 14 such centers in the nation. The Center has established the community to critical thinking in the intellectual property field, bringing in several distinguished speakers and hosting an annual Conference on Intellectual Property Law and Policy. The center is exploring the possibility of implementing intellectual property curricula into the operations of a number of local businesses, and is
evaluating the intellectual property portfolio for an area company. The center is also developing a master’s of law in intellectual property program.

**Institute for Life-Span Development and Gerontology**

Harvey L. Sterns, Ph.D., Director

The Institute for Life-Span Development and Gerontology, founded in 1976, coordinates multidisciplinary credit certificate programs in gerontology at the undergraduate and graduate levels. In addition, this certificate is included in the Ohio Board of Examiners of Nursing Home Administrators approved course of study in Nursing Home Administration which combines a Bachelor of Science degree in management (Human Resource Management Concentration) with a Certificate in Gerontology.

The Institute of Life-Span Development and Gerontology has grown into a campus-wide program involving more than 65 faculty in 23 different departments, representing 8 colleges. Students in the certificate programs carry out field placements at numerous community service settings. There are over 40 courses at the undergraduate and graduate levels. Research, education, training and service support has been received from the U.S. Administration on Aging, National Institute on Aging, U.S. Department of Education, Office of Special Education and Rehabilitation Services, National Institute on Disability and Rehabilitation Research, AARP Andrus Foundation, Ohio Department of Aging, and Area Agency on Aging 108. The Institute also serves as a major site for the Rehabilitation Research and Training Center Consortium on Aging and Developmental Disabilities involving seven universities in six states.

Examples of outreach activities include the Elderhostel program, offered each summer for older adults who participate in a week-long residential learning experience.

The institute is a member of the Northeastern Ohio Consortium on Geriatric Medicine and Gerontology, joining together with the Office of Geriatric Medicine and Gerontology, Northeastern Ohio Universities College of Medicine; Gerontology Center, Kent State University; and Gerontology Committee, Youngstown State University.

**Institute of Polymer Engineering**

James L. White, Ph.D., Director

The Institute of Polymer Engineering carries out fundamental and applied research in polymer processing, engineering performance and associated characterization.

The institute, founded in 1983, seeks to be a major intellectual and research resource in northeast Ohio. The institute maintains up-to-date and futuristic polymer facilities, with continued support for the investigation of new process technology and new materials. Its activities also include organization of scientific symposia and various seminars related to polymer processing and engineering.

**The Maurice Morton Institute of Polymer Science**

Frank W. Harris, Ph.D., Director

The institute is concerned with basic and applied research in polymers. It was established in 1956 as the Institute of Rubber Research and in 1964 became the interdisciplinary Institute of Polymer Science. The University’s first Ph.D. program in polymer chemistry was started in 1966 and was administered by the institute until a separate Department of Polymer Science was established in 1957. The institute maintains extensive laboratory facilities, an applied research group, a macromolecular modeling center, and a mini pilot plant for polymer synthesis. It is the principal organization responsible for external funding of research projects and graduate fellowships in polymer science.

**Microscale Physiochemical Engineering Center (MPEC)**

William Brian Arbuckle, Ph.D., Director

The Microscale Physiochemical Engineering Center (MPEC) was established in 1996 by faculty with a common research interest in materials composed of very small particles. These small particles occur, for example, in heterogeneous catalysts, fluid/solid separations, paper/pulp processing, soil remediation, waste water decontamination, and solid transport. The unique feature of MPEC is the ability to form multi-disciplinary teams of faculty and graduate students to solve specific industrial problems.

The Center hosts an annual conference, promotes networking, provides a forum for industrial-university cooperation, and is a consortium of industrial sponsors for fundamental and applied research in microscale physiochemical engineering.

**Training Center for Law Enforcement and Criminal Justice**

John M. Boal, M.S., Acting Director

The Training Center for Law Enforcement and Criminal Justice, employing the expertise of the Criminal Justice Technology faculty and the experienced professionals in the field of Criminal Justice, provides state certified training in the following areas: Basic Peace Officer Training Academies, Corrections, Private Security, Private Investigations, Jail Training, Police Refresher Training, Bailiff Training, Firearms Requalification, and In-service Seminars.

**Training Center for Fire and Hazardous Materials**

David H. Hoover, Ph.D., Director

The Training Center for Fire and Hazardous Materials brings the University, government and industry together into one comprehensive regional center to integrate educational programs, fire and hazardous materials training and other applications of fire and safety technology. The center coordinates seminars and workshops presented by the Federal Emergency Management Agency (FEMA), the Division of State Fire Marshal and other related organizations. Training in all phases of hazardous materials containment and fire prevention and control is provided under contract to various municipalities, industries and agencies. The programs are supported by the faculty of the Fire Protection Technology degree program in association with other state and nationally recognized professionals.

**Student Affairs**

Counseling, Testing, and Career Center

The Counseling, Testing, and Career Center provides a wide range of psychological counseling, therapy, testing, career planning, and outreach and consulting services to the University community. The Center is staffed by psychologists and psychology technicians. All of our psychological services are confidential and free to enrolled students. The Center is located in Schrank Hall North, with the Counseling Services in Room 152 and the Testing Services in Room 158. Phone numbers are: Counseling Services 330-972-7082, and Testing Service 330-972-7084.

**Counseling Service**

The Center’s counseling service offers assistance in the following areas:

- Short-term personal counseling and therapy designed to address a variety of areas. Areas of concern may include but are not limited to, feelings of loneliness, depression, anxiety, and stress; substance abuse; mental health; prevention of suicide; or recovery from acquaintance or stranger rape; interpersonal relationships, especially with the immediate family, intimate relationships, and roommates; personality development, issues of oppression, identity, and self-esteem.

- Educational counseling relates to educational goals, motivation, attitudes, abilities, and the development of effective study habits and skills.

- Group educational programs, through the College Survival Kit, cover a wide range of topics which typically deal with improving grades, reducing test anxiety, planning careers, increasing wellness, and addressing personal issues, as well as providing support groups for minority students and others with a variety of concerns. Brochures are available.

- Career counseling involves helping students make decisions on majors and career direction. It consists of discovering one’s own interests, needs, values, aptitudes, abilities and goals, relating these to the world of work, exploring appropriate major, subject and career fields. Interest, attitude, personality and values testing is available through individual and group counseling. Occupational information is available through reference books and computerized career guidance and information systems.

**Testing Service**

- A wide range of testing programs including college entrance examinations, career assessments, personality assessments, academic placement testing and some learning disability assessments are available to students.

**Outreach and Consulting Service**

- The Center’s outreach and consulting service offers assistance to the larger university community by providing programs and workshops for a wide variety of campus groups. The Center regularly provides speakers for classrooms, residence halls, student organizations, and administrative offices. Topics include, among others, academic performance, wellness, sexuality, and appreciating cultural diversity.
Center for Career Management

- The primary mission of the Center for Career Management is to assist graduating students in their initiatives in seeking full-time employment and to provide guaranteed major-related experiential learning opportunities prior to graduation for every student regardless of academic major or degree level under the newly created Career Advancement Program. The Center for Career Management is located in Schrank Hall North Rooms 153, 330-972-7947. www.uakron.edu/employment.
- Placement Services for graduating students include on-campus interviews with representatives of businesses, industries, education, branches of the government and military. In addition, workshops are offered on Resume Writing, Cover Letters, Interviewing Skills, and the Self-Directed Job Search through the fall and spring semesters. Personal career consultation may be scheduled with placement advisors. A reference library of employer literature, videotape presentations and numerous career and job reference materials is also available. Other services to registrants include computerized job referrals and the maintenance and distribution of students’ credential files. The Center for Career Management also sponsors Career Fairs, that give students the opportunity to meet and speak with a large number of potential employers.

Health Services

The goal of Health Services is to assist students to achieve their educational and personal goals by addressing their health care concerns while they are enrolled at The University of Akron. Health Services provides primary care, minor urgent care and health promotion education. Health Services is located in Robertson Dining Hall, immediately adjacent to the North Quad residence halls and is open from 8:00 a.m. to 5:00 p.m. Monday through Friday. The student who becomes seriously ill or suffers a serious injury on campus should be taken to an emergency ward of one of the local hospitals without delay. Those persons present in this kind of emergency should call University Police or 911 immediately. The University assumes no legal responsibility or obligation for the expenses of such transportation or for medical services at the hospital.

Student Health and Accident Insurance, designed specifically for students, is required of all residence hall students and all international students except those who present proof of similar coverage. Other students may purchase this insurance at the annual individual rate. The student insurance policy covers for such items as hospitalization, surgical benefits, and in-hospital medical benefits.

Complimentary forms and other health-related records are treated as confidential and are kept in the Student Health Services offices. For more information, contact Health Services at 330-972-7808 or visit the website at http://www.uakron.edu/health/.

Office of Accessibility

The University welcomes students with disabilities. The mission of the Office of Accessibility is to provide equal access opportunities to students with disabilities and coordinate academic accommodations, auxiliary aids, and programs to enable students with physical, learning, and intellectual disabilities to maximize their educational potential. The office encourages students to contact them to find out more about the programs and services. For more information, call 330-972-9282 twice or 330-972-5764 (TTY) or visit Spier Hall 124.

Center for Child Development

The University of Akron Center for Child Development provides a variety of early childhood programs which are open to students, faculty, staff, and the community. The trained teaching staff provides a stimulating learning environment and opportunities for growth in all areas of development—social, emotional, physical, and intellectual.

The Center for Child Development is open during the Fall and Spring semesters of the academic year between 7:30 a.m. and 6:00 p.m. Monday through Friday. The program offers hourly flextime and half-day programs for children three to five years old and toilet trained. Full-day sessions are available year round for children 12 months to five years old.

A summer pre-school flextime program is offered Summer Sessions I and II.

A summer program is also offered for school-aged children. This program is offered during Summer Sessions I and II from 7:00 a.m. until 6:00 p.m.

For more information call the Center for Child Development, 330-374-8210.

Gardner Student Center

The Gardner Student Center, located in the center of campus, serves the students, faculty, and staff, and is one of the University’s major assets in meeting the University-wide goal of public service. The busy facility houses various food service facilities, meeting rooms, lounges, Gardner Theatre, student organization offices, recreation facilities, Computer Solutions—the University of Akron’s computer technology store, the DocuZip Copy Center, a bank, Ticketmaster/Film/Fax Center, the Information Center and a bookstore. Visit our website at www.uakron.edu/gardner.

- **Food Areas** in the Gardner Student Center offer a variety of food items. On the first floor, the Chuckery features the services of a full food operation, a pizza shop, and an ice cream and yogurt shop. For more of a café style offering, the Hillico, on the second level, provides deli-style selections at Sara Lee’s, as well as full catering for banquets and meals.
- **Gardner Theatre**, located on the upper level, screens first and second-run movies and is open to the public.
- **The Game Room**, located on the lower level of the Gardner Student Center, is open six days a week for the convenience of the University family to enhance free time activity. The Game Room offers 8 bowling lanes, 16 billiard tables, foosball, and a variety of video games. For the competitive individual, tournaments in many of these recreational activities are programmed each semester by the Game Room staff.
- **Computer Solutions**—The University of Akron computer technology store, is located in Gardner Student Center Room 102. As an education reseller, personal computer hardware, peripherals, and software are available at educational pricing.
- The store is a service for students, faculty and staff. In addition, the store is a point of contact for other services, such as requesting a University network ID (UANet ID) or requesting a network connection for the residence halls.
- **The DocuZip Copy Center**, located in the lobby of Gardner Student Center offers the following services: copying, including color, oversize and reduced copies; binding of materials; mailing facilities for campus and U.S. mail; literature distribution; and class support files.
- **The Ticketmaster/Film/Fax Center**, located in the lobby of Gardner Student Center 330-972-6584. sells tickets to most events in northern Ohio, including Blossom Music Center, The IX Center, Playhouse Square, Public Hall, and the Jacobs Field and Gund Arena. Over-the-counter sales include tickets to campus functions, including sporting events, and to local shows. Film and film processing services are also available.
- **The Information Center**, located in the Gardner Student Center lobby, is operated Monday–Saturday. The Information Center staff can answer questions regarding departments and student organizations, on-campus and off-campus events, and the Metro Buses and University Bus Loop. The Information Center staff can also print student class schedules. Please call 972-INFO if you need a question answered.
- **The Bookstore at The University of Akron** is operated as a service of Barnes & Noble Bookstores, Inc. of New York City. Barnes & Noble operates 300 other college stores. The primary purpose of the Bookstore is to make available books and supplies required for course work. In addition, the store also carries a wide range of classroom supplies, paperbacks, engineering and art supplies, greeting cards, University memorabilia, clothing and other sundry items.

---

**Campus Safety and Security Information**

**Safety and Security**

This information is provided as part of The University of Akron’s commitment to safety and security on campus and is in compliance with the Federal Crime Awareness and Campus Security Act of 1990.

**The Campus**

The University employs many people to keep the campus safe and secure. The Division of Public Safety provides for student and employee safety and security through the departments of University Police and Environmental and Occupational Health and Safety. The Division of Student Affairs is responsible for security and safety policies governing residence halls, fraternities, and sororities and for teaching students about security and crime prevention.

It is the intent of the University to continue and enhance current safety and security education and awareness programs throughout the year. The purpose of these programs is to assure that the campus community frequently receives information and instruction on University crime and safety policies and procedures, and on drug and alcohol control and prevention.

A safe campus can be achieved only with the cooperation of the entire campus community. The University hopes students will read and become familiar with this material and be responsible for their own safety and the security of others.
University Police

Campus law enforcement is primarily the responsibility of The University of Akron Department of Police. University police provide 24-hour-day patrol protection to the campus, parking lots, residence halls, and on-campus fraternity and sorority houses. The police station is located in the Physical Facilities Operation Center at the corner of Hill and South Forge streets and is staffed 24 hours a day.

The University's 32 police officers are commissioned by the State of Ohio with full law enforcement authority and responsibilities identical to the local police or sheriff. The UA Police Department works closely with the Akron Police Department and other law enforcement agencies. Reports are exchanged every business day so that both agencies receive pertinent information. Information is shared through personal contacts and by phone and radio. University and City of Akron police regularly work together at large campus events such as athletic competitions and dances.

UA Police officers have met or exceeded the training standards of the Ohio Peace Officers Training Council. They also receive ongoing in-service and specialized training in first aid, CPR, firearms, defensive tactics, legal updates, and other skills.

UA Police officers enforce laws regulating underage drinking, the use of controlled substances, weapons, and all other incidents requiring police assistance. They also are responsible for public safety services such as crime reports, medical emergencies, fire emergencies, and traffic accidents.

Incidents which may not rise to the level of a violation of law are referred to the Office of Student Conduct. The Student Code of Conduct Manual explains the University's disciplinary process and is available through the Office of Student Conduct.

It is the goal of every member of the University Police Department to promote, preserve, and deliver feelings of safety and security through quality services to the members of the University community.

Drug and Alcohol Prevention

The issue of drug and alcohol abuse concerns the entire University community as well as our surrounding neighborhoods. The federal Drug Free Schools and Communities Act Amendments of 1989 require schools, colleges, and universities receiving federal financial assistance to implement and enforce drug and alcohol prevention programs for students and employees.

The University of Akron prohibits the illegal use, possession, sale, manufacture, or distribution of drugs and alcohol by all students and employees on University premises or as part of any University activity. Any misuse of substances by University students and employees that presents physical or psychological hazard to individuals also is prohibited.

It is the responsibility of The University of Akron to adopt and implement a drug prevention program for its students and employees. The University as an institution, and each of us as individuals, must eliminate the use of illicit drugs and alcohol that contribute to the unrecoverable loss of time, talent, and lives.

Crime Prevention

Through the Office of Crime Prevention, University police officers provide educational programs to students and employees on personal safety, sexual assault/ acquaintance rape prevention, drug and alcohol abuse prevention, and related topics. The University Police Department welcomes the chance to talk with any campus group. Candid dialogue between UA Police and the public has created greater confidence in the community to report unlawful activities. These programs are scheduled when requested.

Potential illegal actions and on-campus emergencies can be confidentially reported by any student, faculty, or staff member. Complaints received by UA Police which fall outside their jurisdiction will be referred to the appropriate agency, or the complainant will be provided a phone number where the complaint can be filed. Likewise, other agencies refer complaints to University Police when appropriate. The University Police encourage prompt reporting of crimes.

Security considerations in maintenance are a high priority.

Police officers patrol parking lots 24 hours each day. UA Police also offer assistance to motorists with battery jumps, inflating tires, unlocking vehicles, and obtaining fuel for a small fee.

To request nonemergency assistance, call extension 7123. To schedule an appointment for an educational program, call extension 7123.

For emergencies, dial 911 from any campus telephone.

Student Campus Patrol

A student escort service operates 5 a.m. to 1 a.m. seven days a week for the safety of anyone walking alone on campus during the evenings. By calling extension 7263, an escort will come to the student's location and accompany him/her to any campus building or parking lot.

Employed and trained by The University of Akron Police Department, the campus patrol teams are easily identified by labeled blue jackets or maroon t-shirts. These teams assist the University police in patrolling campus parking lots and other campus areas and report suspicious individuals or activities directly to the police dispatch center.

Emergency Phones

Yellow or red emergency phones are directly connected to the UA Police Department. These phones are strategically located throughout campus pedestrian walkways and inside parking decks. Police respond to the activation of any emergency phone receiver, even if no words are spoken.

Outdoor security phones are at the main entrances of all campus residence halls. UA Police and other campus numbers can be dialed on these phones.

If using an off-campus phone, dial 330-972 before the campus extension.

Campus Buildings

Most University academic facilities are open to the public from 7 a.m. until the latest evening classes let out. Administrative buildings are generally locked at 5 p.m. When the University is closed, all buildings are locked and may be opened only by authorized personnel.

Health and Safety

Members of the Department of Environmental and Occupational Health and Safety routinely inspect the campus for environmental and safety concerns. The Department of Physical Facilities maintains University buildings and grounds and regularly inspects facilities and promptly makes repairs to ensure safety and security. University Police work with both units to respond to reports of potential safety and security hazards, such as broken windows and locks. UA police also work with physical facilities personnel to help maintain adequate exterior lighting and safe landscaping practices.

Personal Responsibility

The cooperation and involvement of students, faculty, and staff in any campus safety program is absolutely necessary. All must assume responsibility for their own safety and security of their property by following simple, common sense precautions. For example, although the campus is well-lighted, everyone should confine their movements to well-traveled areas. There is safety in numbers, and everyone should walk with a companion or with a group at night. Valuables should be marked with a personal identification number in case of loss or theft. Bicycles should be properly secured where not in use. Automobiles should be locked at all times. Valuables and purses should never be left in view in a car but locked in the car trunk for safekeeping.

Crime Statistics

The University of Akron Police Department prepares monthly statistics for the Federal Bureau of Investigation under the Uniform Crime Reporting (UCR) program. The serial numbers of property stolen on campus are reported nationwide through the National Crime Information Center. A LEADS computer terminal at the police station dispatch center allows information to be exchanged with law enforcement agencies across the United States and Canada.

Crime statistics can be found at the police department's website, http://www.uakron.edu/police/crimeprev.htm. A hard copy can be obtained at their office in the Physical Facilities Operation Center, 146 Hill Street.

EMERGENCY PHONE NUMBERS

Call extension 911 on campus to reach UA police immediately.

Police ................................................................. 7123
Campus Patrol .................................................. 7263
(Police Nonemergency) ...................................... 8123
Environmental and Occupational Health and Safety ............................................. 6866
Fire ................................................................. 911
EMS/Medical ................................................... 911
Electricity/Plumbing ......................................... 7415
Hazardous Materials .......................................... 8123
Closing Information .......................................... 7069

Emergency numbers are monitored 24 hours a day. If calling from an off-campus phone, dial 330-972 and then the four-digit number you wish to reach. Use 911 for emergencies when dialing from all campus extensions.
Graduate School

George R. Newkome, Ph.D., Vice President for Research and Dean
Lathardus Goggins, Ph.D., Associate Dean

OBJECTIVES

The purpose of the Graduate School is to provide a quality program of education by the following means:

• Advanced courses in various fields of knowledge beyond the baccalaureate level.
• Opportunities to develop and apply research techniques and to use the resources appropriate to various graduate programs.
• Advancement of student's knowledge for the benefit of mankind through the efforts of its faculty and students.

Nature of Graduate Education

The Graduate School provides a qualified student with education which may be required for the full development of scholarly and professional capacities, subject to the criteria developed by graduate departments.

Graduate education involves the extension of knowledge. However, it is by no means a mere continuation of undergraduate study. At its best, graduate education is characterized by an able and enthusiastic advanced student who joins faculty leaders to form a community of scholars dedicated to the common pursuit of truth. Critical analysis, independence of thought, originality of method, intensity of purpose, freedom from bias, thoroughness of inquiry, keenness of perception and vital creativity combine to produce in the successful student both the professional competence and the breadth of understanding essential to leadership in many areas of human endeavor.

History of the Graduate School

Graduate study began a few years after Buchtel College opened its doors, and the first earned master's degree was conferred in 1922. The College of Education awarded its first master's degree in 1924, the College of Engineering and Business Administration in 1959, the College of Fine and Applied Arts in 1967 and the College of Nursing in 1979. The School of Speech-Language Pathology and Audiology in its previous Department of Speech and later, the School of Communicative Disorders, now housed in the College of Fine and Applied Arts, was formerly a part of the Buchtel College of Arts and Sciences and conferred a master's degree in 1963. The first earned doctoral degrees were conferred in 1959. Professor Charles Bulger was appointed first dean of graduate work in 1933, and he continued in that capacity until 1950. Professor Ernest H. Cherrington, Jr., served as director of graduate studies from 1955 to 1960 and as dean of the Graduate Division from its establishment in 1950 to 1967. Dr. Arthur K. Brintnall was appointed dean of Graduate Studies and Research in 1967 being succeeded in 1968 by Dr. Edwin L. Lively. Dr. Clasbourne E. Griffin succeeded Dr. Lively in 1974 and served in that capacity until 1977. Dr. Joseph M. Walton, associate dean of Graduate Studies and Research, was administrative head of the Graduate School during the 1977-78 academic year. Dr. Alan N. Gent was appointed dean of Graduate Studies and Research in 1978 and served in that capacity until 1986. Dr. Joseph M. Walton served as acting dean of Graduate Studies and Research from 1986 until 1989. In 1988 Dr. Patricia L. Carroll became dean of the Graduate School. Dr. Charles M. Dye was named interim dean in 1993 and became the dean of the Graduate School in 1994, remaining in that position until his retirement in July 2000. Dr. George R. Newkome was appointed Vice President for Research and Dean of the Graduate School in January 2001.

The administrative functions of the Graduate School include establishment of suitable entrance requirements, admission of qualified students, maintenance of high-quality instruction and approval of graduate requirements for advanced degrees.

Graduate Programs

A qualified student who has completed the baccalaureate program with sufficiently high grades may continue studies through the University's Graduate School in a program leading to the master's degree as well as to the doctoral degree. An undergraduate student who qualifies may enroll in certain graduate-level classes and apply the credits earned to the total required for the baccalaureate degree. To receive graduate credit for the courses, however, the student must first be admitted to the Graduate School.

The Graduate School offers programs of advanced study, leading to the degree of Doctor of Philosophy in philosophy, counseling psychology, engineering education, engineering technology, computer science, electrical engineering and applied mathematics, mechanical engineering, civil engineering, applied mathematics, and physics, computer science, chemical engineering, clinical psychology, education, and linguistics. The Doctor of Philosophy degree is conferred by the Graduate School.

The Doctor of Philosophy program in nursing is a joint program with Kent State University. The Doctor of Philosophy program in urban studies and public affairs is a joint program with Cleveland State University. Further, the school also offers programs of study leading to master's degrees in majors in diverse areas as delineated in the following sections.

Several departments offer a limited amount of work which may be taken on the graduate level. Such courses may supplement the major program of study for students who do not wish to devote their entire attention to one field.

Graduate Faculty and the Graduate Council

The graduate faculty is comprised of those members of the faculty who hold appointments at the rank of assistant professor or above and teach graduate courses, supervise theses and dissertations and are generally responsible for the content in the graduate programs at the University. They are appointed by the dean of the Graduate School after recommendation by the department, college dean and Graduate Council. Guidelines for recommendation and appointment include the following:

• quality and experience in upper-level and graduate-level teaching,
• possession of terminal degree in field,
• scholarly publication record,
• activity in research, and
• activity in profession or discipline.

The purpose of the graduate faculty is to encourage and contribute to the advancement of knowledge through instruction and research of highest quality, and to foster a spirit of inquiry and a high value on scholarship throughout the University.

The graduate faculty recommends a student who has been nominated by the student's college faculty for the appropriate master's or doctoral degree.

Graduate Council is elected by the graduate faculty. Membership in the council presently includes two members from the College of Engineering, two members from the College of Business Administration, two members from the College of Education, four members from the Buchtel College of Arts and Sciences, two members from the College of Fine and Applied Arts, one member from the College of Nursing, one member from the College of Polymer Science and Polymer Engineering, and one student member elected yearly by the Graduate Student Council. Members serve three-year terms and may not succeed themselves. The dean of the Graduate School serves as chair of both the graduate faculty and the Graduate Council.

The functions of the council include examination of proposed graduate programs and course offerings, recommendation of policy for all phases of graduate education, recommendation of persons for membership in the graduate faculty and advising and counseling the dean in administrative matters.

*An exclusive listing of graduate faculty and Graduate Council can be found in the "Directory" of the Graduate Bulletin.

Graduate Student Government

All registered graduate students at the University are constituents of the Graduate Student Government (GSG). The graduate council consists of elected representatives from each of the graduate departments, an executive board of officers, and a faculty advisor.

The objectives of GSG are to govern graduate student affairs, represent graduate student sentiment, and promote interdepartmental social and interaction between students. These objectives are met by appointing members to participate in various administrative committee meetings, such as the Faculty Senate, Graduate Council and Board of Trustees meetings.

Anyone wishing more information or anyone who wants to air a complaint, problem or suggestion concerning graduate students may contact the Graduate School or attend the bi-monthly GSG meetings, where all graduate students are welcome.

Other Graduate Student Organizations

Chi Sigma Iota Alpha Upsilon Chapter Counseling Psychology Graduate Student Organization Graduate Nursing Student Association Industrial/Organizational Psychology Graduate Student Organization Master of Social Work Student Association Minority Graduate Student Council Polymer Engineering Student Organization Polymer Science Graduate Student Organization Public Administration and Urban Studies Student Association Student Association for Graduates in Education (SAGE)
SECTION 2. General Information

REGULATIONS

Student Responsibility

A student assumes full responsibility for knowing the regulations and pertinent procedures of his or her college or university. The degree requirements in effect at the time a student is admitted to a program will apply through graduation. However, if existing programs are revised, the student has the option of continuing the revised program as long as all requirements in the revised program are met. Additional information pertaining to programs can be obtained from the appropriate department chair.

Admission

Every person who desires to enroll in or audit any graduate credit course must be first admitted or approved by the Graduate School.

Applications for admission to the Graduate School should be submitted to the dean of the Graduate School at least six weeks before the start of the term for which admission is sought in order to allow adequate time for complete processing. All applications will be accepted after the University deadline for applications, which is usually about three weeks before the beginning of a term and is published in the Schedule of Classes. Some programs, such as nursing, counseling and psychological services, have earlier deadlines. Applicants should contact the departments for more detailed application information.

Each first-time application to the Graduate School must be accompanied by an application fee. The fee for domestic students is $25. The fee for international students is $50.

An official transcript from each college or university attended must also be received by the Graduate School before the application will be processed. This applies to the completed academic record, both undergraduate and graduate. Transcripts should be sent from the institutions attended directly to the Graduate School. The applicant is responsible for seeing that the above conditions are met by the deadlines for filing applications.

All records, including academic records from other institutions, become part of the official file and cannot be returned for any purpose. An offer of admission will normally be made to an applicant who meets all admission requirements. However, if the applicant does not meet all the requirements for full admission (2.75 or 2.75 over the last two years), this admission status permits a student to take up to 15 semester credits of graduate coursework. Graduate courses taken under this admission status may be applied to a graduate degree program, but only when all requirements for full admission have been met.

Deferred Admission may be granted if the applicant's record does not meet the minimum admission standards. After completion of a postbaccalaureate program of study with an appropriate GPA, as prescribed by the department, admittance will be reconsidered. Applicants who are reclassified for preliminary admission may be granted admission after meeting all admission requirements.

Provisional Admission may be granted to a person who has not met all of the requirements for full admission (2.75 or 2.75 over the last two years). This admission status permits a student to take up to 15 semester credits of graduate coursework. Graduate courses taken under this admission status may be applied to a graduate degree program, but only when all requirements for full admission have been met.

Special Workshop status is for a person permitted to take workshops for graduate credit without being admitted to the Graduate School. Such permission is granted by the workshop director upon receipt of a signed statement of possession of a baccalaureate degree by the applicant, and terminates upon completion of the workshop. A student admitted to special workshop status must apply through regular channels for any other category. A maximum of six workshop credits may be applied to degree work at a later date if the applicant is full admission status.

Transient status may be given to a person who is a regularly enrolled graduate student in good standing in a degree program at another accredited university and has written permission to enroll at The University of Akron. Such permission is valid only for the courses and semester specified, with a maximum of 10 semester credits allowable, and is subject to the approval of the instructor, department chair, and Graduate School. A transient student is subject to the same rules and regulations as a regularly enrolled student of the University.

Undergraduate status is for a person permitted to take one or more graduate-level courses if all the following conditions are met.

- Senior standing
- Overall grade-point average of 2.75 or better during prequalifying term
- Written approval is given by the instructor of the course and the student's advisor.

These courses may later be applied to a degree program if not used to satisfy baccalaureate degree requirements. The maximum number of graduate credits that may be taken by an undergraduate and applied later toward a graduate degree is 12.

POSTDOC status is divided into three categories:

- A Fellow is a person holding an earned doctorate who desires an additional graduate degree. A special may be admitted to any program upon submission of an application form, application fee, and an official transcript from the institution awarding the doctorate. A Fellow will be treated as a regular student subject to registration fees and program degree requirements.
- A Special is a person holding an earned doctorate who desires an additional graduate degree. A special may be admitted to any program upon submission of an application form, application fee, and an official transcript from the institution awarding the doctorate. A Special student will be treated as a regular student subject to registration fees and program degree requirements.
- A Guest is a person holding an earned doctorate who desires to attend courses and seminars relevant to individual work or interest without registering or receiving grades. A written application should be submitted to the dean of the Graduate School for each course to be taken, and approval of the instructor, department chair, and college dean shall be obtained. A Guest is welcome to...
any course or seminar provided space is available. Normally, space and facilities for research cannot be provided for a postdoctorial guest but special requests will be considered. Requests should be submitted, in writing, to the dean of the Graduate School who will review such requests with the appropriate college dean and department chair.

Course Load
A full load of coursework at the graduate level is normally 9-15 semester credits including audit. Full-time status is defined as a minimum of 9 semester credits; or as defined by the Internal Revenue Service for those students with graduate assistantships.

Registration
The responsibility for being properly registered lies with the student, who should consult with the assigned advisor in preparing a program of courses and/or research. A schedule of courses, hours, class location and registration procedures is obtainable from the registrar.

Financial Assistance
The University awards a number of graduate assistantships to qualified students. Assistantships are normally awarded for up to two years of master's study and up to four years of doctoral degree study. These assistantships provide stipends of $6,000 to $18,000 plus remission of tuition and fees and are available in all departments with graduate degree programs. A graduate assistant renders service to the University through teaching and/or research. For information and application, contact the department chair or school director. Tuition scholarships may be available for first-time graduate students on a limited basis in some departments.

A number of fellowships sponsored by industry and government agencies are available in some departments. Stipends range up to $10,000. For information, contact the chair of the department.

Information about student loans can be obtained from the Office of Student Financial Aid.

Additional information concerning financial aid policies is available in the Graduate Assistant Handbook which can be obtained from the Graduate School.

International Students
The University of Akron welcomes international students and seeks to make their educational experience pleasant and meaningful. Each year, approximately 850 international students from 89 countries pursue studies and research at The University of Akron.

Admission
International students may apply to begin their graduate study for the Fall or Spring semester or for either of the University's two summer sessions. Students should submit their applications at least five months in advance of the date they wish to begin their studies. Graduate students applying for assistantships should submit applications nine months before the term begins for best consideration. The following procedures should be followed:

- Obtain a graduate student application from the Graduate School, The University of Akron, Polsky Building, room 483, Akron, OH 44325-3101, the Declaration and Certification of Finances (DCF) and an original statement from the bank showing availability of sufficient funds to cover the cost of the first year of study. The Office of International Programs will prepare the Certificate of Eligibility (I-20A/B or IAP-68) upon receipt of adequate financial support and admission to the University.

Costs, Financial Aid, and Medical Insurance
To cover tuition and living expenses for the 2001-2002 academic year, international graduate students holding J-1 visas will need approximately $13,000. Additional costs for J-1 visa holders and student's dependents are indicated on the DCF. Graduate students may request financial aid through fellowships and graduate assistantships. A graduate student interested in applying for this aid should request the necessary forms when requesting the admission application.

The University of Akron requires that all international students carry medical insurance that meets minimum established requirements. Such coverage must be effective throughout the students' studies at The University of Akron. International students will not be permitted to register without proof of such coverage.

International Student Orientation
The required International Student Orientation takes place one week before classes begin and costs $45. The orientation dates will be mailed to students with their orientation letter and immigration documents.

Teaching Assistants
Applicants whose native language is not English and who expect to become teaching assistants, are also required to achieve a minimum score of 50 on the Test of Spoken English (TSE, Revised 1999). This exam must be taken prior to functioning as a teaching assistant. Those for whom English is the native language and who expect to become a teaching assistant must demonstrate proficiency in English through departmental certification. Neither the TSE nor departmental certification is required for research or administrative assistants.

Note: International students are encouraged to contact the Office of International Programs directly with questions about housing, climate, insurance, or immigration regulations. Questions concerning degree programs should be directed to the appropriate academic department.

Grades
A student admitted to graduate study under any status at the University is expected to maintain a minimum grade-point average of 4.00 (A) at all times. A minimum grade-point average of 3.00 is required for graduation. No more than six semester credits of "C-", "C", and "C+" grades may be counted toward the degree. Grades of "D+", "D", and "D-" are treated as "F" grades. No grades below "C-" may be counted toward a degree.

Official academic records for graduate students are maintained with a grade-point system as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Quality Points</th>
<th>Key</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>A-</td>
<td>3.7</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>3.3</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>B-</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>2.3</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>C-</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>D-</td>
<td>0.0</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>0.0</td>
<td>Failure</td>
</tr>
<tr>
<td>CR</td>
<td>0.0</td>
<td>Credit</td>
</tr>
<tr>
<td>NC</td>
<td>0.0</td>
<td>No credit</td>
</tr>
<tr>
<td>AUD</td>
<td>0.0</td>
<td>Audit</td>
</tr>
</tbody>
</table>

The following grades may also appear on the term grade reports or on the official academic record. There are no grade points associated with these grades.

I — Incomplete: Indicates that the student has done passing work in the course but that some part of the work is, for good and acceptable reasons, not complete at the end of the term. Failure to make up the omitted work satisfactorily by the end of the following term, not including summer sessions, converts the "I" to an "F." When the work is satisfactorily completed within the allotted time the "I" is converted to whatever grade the student has earned.*

IP — In Progress: Indicates that the student has not completed the scheduled course work during the term because of the nature of the course does not permit completion within a single term, such as work toward a thesis.

PI — Permanent Incomplete: Indicates that the student's instructor and the instructor's dean have for special reason authorized the change of an incomplete ("I") or an in progress ("IP") to a permanent incomplete ("PI").
W – Withdrawn: Indicates that the student registered for the course but withdrew officially sometime after the second week of the term.

NGR – No Grade Reported: Indicates that, at the time grades were processed for the present issue of the record, no grade had been reported by the instructor.

INV – Invalid: Indicates the grade reported by the instructor for the course was improperly noted and thus unacceptable for proper processing.

*If instructors wish to extend the “I” grade beyond the following term for which the student is registered, prior to the end of the term, they must notify the Office of the Registrar in writing of the extension and indicate the date of its termination. It is the responsibility of the student to make arrangements to make up the incomplete work. The faculty member should submit the new grade to the Office of the Registrar in writing.

Repeating Courses
Any graduate course may be repeated once for credit; however, the degree requirements shall be increased by the credit hour value of each course repeated. The hours and grades of both the original and the repeated section shall be used in computing the grade-point average. Required courses in which a “D” or “F” was received must be repeated.

Audit Policy
A student choosing to audit a course must be admitted and indicate audit at the time of registration. The student pays the enrollment fee and may be expected to do all the work prescribed for students taking the course for credit, except that of taking the examination. Any faculty member may initiate withdrawal for a student not meeting these expectations.

Thesis and Dissertation Credits
Course number 699 will only be used for courses which indicate credit is being given for a master’s thesis. 899 will only be used for courses which indicate credit it is being given for a doctoral dissertation. No credit for 699 or 899 will be given unless the thesis or dissertation is completed.

Colloquia, Seminars and Workshops
Colloquium (credit/noncredit grading) – A course that normally involves guests, faculty or graduate students as speakers. The intent of the course is to introduce a broad range of topics using resource personnel. Normally, assignments are limited to class participation.

Seminar (letter grades) – A course that normally involves group discussion or other activities based on assigned material. Grades are awarded based on a combination of assignments, tests and class participation.

Workshop (credit/noncredit grading) – A course that normally operates over a shorter period than a semester or a summer session. Workshops focus on a particular aspect or aspects of a field of study, require a combination of assignments, tests and class participation, and may or may not be permitted to satisfy degree requirements.

Probation and Dismissal
Any student whose cumulative graduate grade-point average falls below 3.00 will be placed on probation and is no longer in good standing. In consultation with the college or department, as appropriate, the dean of the Graduate School will dismiss full-time students who do not return to good academic standing within two consecutive semesters (excluding summers) and part-time students who do not return to good academic standing within the attempting of 15 additional credits. For the purpose of administration of the full-time and part-time provisions of this policy, full-time and part-time status are determined by the semester in which the student goes on probation. Full-time enrollment constitutes nine or more graduate credits; part-time is less than nine graduate credits.

The dean of the Graduate School, with the approval of the relevant department chair, may also dismiss anyone who fails to make satisfactory progress toward declared goals or who accumulates six semester credits of "C-" or below. The accumulation of six semester credits of "F" will result in mandatory dismissal.* A student dismissed from the Graduate School for academic reasons may not be readmitted for one calendar year, and then only if evidence for expecting satisfactory performance is submitted and found to be acceptable.

*Grades of “D-,” “D,” and “F” are treated as “I” grades. (See previous section on Grades.)

Commencement
Students earning graduate degrees are expected to participate in the commencement exercises. A degree candidate who has legitimate reasons for graduating "in absentia" should make a written request to the registrar within the established dates and pay the designated fee.

Students must apply to graduate in advance of completing degree requirements. Applications are filed with the Graduation Office which observes the following deadlines:
- Fall graduation: May 15.
- Spring graduation: September 15.
- Summer graduation: February 15.

Academic Dishonesty
Students at The University of Akron are an essential part of the academic community, and substantial freedom within the framework of the educational objectives of the institution. The freedom necessary for learning in a community so rich in diversity and achieving success toward our educational objectives requires high standards of academic integrity. Academic dishonesty has no place in an institution of advanced learning. The University community is governed by the policies and regulations contained within the Student Code of Conduct available in the Office of Student Conduct, Gardner Student Center 104, 330-972-7021.

The University of Akron considers academic integrity an essential part of each student's personal and intellectual growth. Instances of academic dishonesty are addressed consistently. All members of the community contribute actively to building a strong reputation of academic excellence and integrity at The University of Akron.

It is each student's responsibility to know what constitutes academic dishonesty and to seek clarification directly from the instructor if necessary. Examples of academic dishonesty include, but are not limited to:

- Submission of an assignment as the student's original work that is entirely or partly the work of another person.
- Failure to appropriately cite references from published or unpublished works or print/non-print materials.
- Unauthorized copying of an assignment in computer programming, or the unauthorized examination or view of the computer, specifically during examinations.
- Possession and/or unauthorized use of tests, notes, books, calculators or formulas stored in calculators not authorized by the instructor during an examination.
- Providing and/or receiving information from another student other than the instructor, by any verbal or written means.
- Observing or assisting another student's work.
- Violation of the procedures prescribed by the professor to protect the integrity of the examination.
- Cooperation with a person involved in academic misconduct.

A student who has been accused of academic dishonesty will be asked to meet with the course instructor. The matter can be resolved informally at the College level, and an academic sanction can be imposed. If the student opposes the decision, he/she may appeal to the College Dean.

A further discussion of these procedures and other avenues for recourse can be found in the Grievance Procedures for Graduate Students, available at the Graduate School, The Polsky Building 469, and included in the Appendix of this Bulletin.

Ohio Residency Requirements
Payment of a non-resident surcharge is required of any student who does not qualify as a permanent resident of Ohio as defined by Section 3333.1-1 of the Ohio Revised Code.

A. Intent and Authority
1. It is the intent of the Ohio Board of Regents in promulgating this rule to exclude from treatment as residents, as that term is applied here, those persons who are present in the state of Ohio primarily for the purpose of receiving the benefit of a state-supported education.

2. This rule is adopted pursuant to Chapter 119 of the Revised Code, and under the authority conferred upon the Ohio Board of Regents by Section 3333.31 of the Revised Code.

B. Definitions
For purposes of this rule:
1. A "resident of Ohio for all other legal purposes" shall mean any person who maintains a 12-month place or places of residence in Ohio, who is qualified as a resident to vote in Ohio and receive state welfare benefits, and who may be subjected to tax liability under Section 5747.02 of the Revised Code, provided such person has not, within the time prescribed by this rule, declared himself or herself to be or allowed himself or herself to remain a resident of any other state or nation for any of these or other purposes.

2. "Financial support" as used in this rule, shall not include grants, scholarships, and awards from persons or entities which are not related to the recipient.
C. Exceptions to the subsidy and tuition surcharge purposes:

1. For the purpose of determining residency for tuition surcharge purposes at Ohio's state-assisted colleges and universities, "domicile" is a person's permanent place of abode; there must exist a demonstrated intent to live permanently in Ohio, and a legal ability under federal and state law to reside permanently in the state. For the purpose of this policy, only one (1) domicile may be maintained at a given time.

2. A person who enters and remains in active duty status in the military of the United States or an ally of the United States and who is not receiving, and has not directly or indirectly received in the preceding 12 consecutive months or more immediately preceding the first day of a term, support from persons or entities who are not residents of Ohio, will not be classified as a resident for these purposes as long as such person has fulfilled his or her tax liability to the state of Ohio for at least the tax year preceding enrollment.

3. A person who has been employed as a migrant worker in the state of Ohio and his or her dependents shall be considered a resident for these purposes provided such person has worked in Ohio at least four months during each of the three years preceding the proposed enrollment.

F. Procedures:

1. A dependent person classified as a resident of Ohio for these purposes (under the provisions of Section C.1. of this rule) and who is enrolled in an institution of higher education when his or her parents or legal guardian removes their residency from the state of Ohio shall no longer be classified as a resident during continuous full-time enrollment and until the person completes any one academic degree program.

2. In determining residency, removal of the student or the student's parents or legal guardian from Ohio shall not, during a period of 12 months following such removal, constitute relinquishment of Ohio residency status otherwise established under paragraphs C.1. or C.2. of this rule.

3. For students who qualify for residency status under C.3., residency status is lost immediately if the employed person upon whom resident student status was based accepts employment and establishes domicile outside Ohio less than 12 months after accepting employment and establishing domicile in Ohio.

4. Any person once classified as a nonresident, upon the completion of 12 consecutive months of residency, must apply to the institution he or she intends for reclassification as a resident of Ohio for these purposes if such person in fact wants to be reclassified as a resident. Should such person present clear and convincing proof that no part of his or her financial support is or was in the preceding 12 consecutive months has been provided directly or indirectly by persons or entities who are not residents of Ohio for all other legal purposes, such person shall be reclassified as a resident. Evidence of determinations under this rule shall be made by the institution which may require, among other things, the submission of documentation regarding the sources of a student's actual financial support.

5. Any recategorization of a person who was once categorized as a nonresident for these purposes shall have prospective application only from the date of such recategorization.

6. Any institution of higher education charged with reporting student enrollment to the Ohio Board of Regents for state subsidy purposes and assessing the tuition surcharge shall provide individual students with a fair and adequate opportunity to present proof of his or her Ohio residency for purposes of this rule. Such an institution may require the submission of affidavits and other documentary evidence which it may deem necessary to a full and complete determination under this rule.

 Fees

All fees reflect changes in 2001-2002 and are subject to change without notice.

<table>
<thead>
<tr>
<th>Description</th>
<th>Domestic</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Fee (this fee is not refundable under any circumstances)</td>
<td>$25.00</td>
<td>$50.00</td>
</tr>
<tr>
<td>Tuition Fees</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resident student per credit</td>
<td>$218.70</td>
<td></td>
</tr>
<tr>
<td>Nonresident student per credit</td>
<td>$383.00</td>
<td></td>
</tr>
<tr>
<td>General Fee (same fees apply when auditing classes)</td>
<td></td>
<td>$8.36 per credit hour</td>
</tr>
<tr>
<td>Maximum of</td>
<td></td>
<td>$100.33 per semester</td>
</tr>
<tr>
<td>Administration Fee*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate, transient students</td>
<td>$11.00 per term</td>
<td></td>
</tr>
<tr>
<td>Facilities Fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per credit hour</td>
<td>$3.00</td>
<td></td>
</tr>
<tr>
<td>Maximum of</td>
<td>$36.00 per semester</td>
<td></td>
</tr>
<tr>
<td>Technology Fee</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering graduate courses (numbered 500-899)</td>
<td>$11.00 per credit hour</td>
<td></td>
</tr>
<tr>
<td>All other graduate courses (numbered 500-899)</td>
<td>$13.50 per credit hour</td>
<td></td>
</tr>
<tr>
<td>Master of Public Health Program</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuition and fees</td>
<td>$306.00 per credit hour</td>
<td></td>
</tr>
<tr>
<td>Parking</td>
<td>$25.00 per semester</td>
<td></td>
</tr>
<tr>
<td>Joint Ph.D. in Nursing Program (UA and KSU)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tuition and fees</td>
<td>$235.50 per credit hour</td>
<td></td>
</tr>
<tr>
<td>Non-resident surcharge</td>
<td>$200.00 per credit hour</td>
<td></td>
</tr>
</tbody>
</table>
Dissertation fee:
First semester of study, Dissertation I (flat rate) $1,353.00
Subsequent semesters, Dissertation I (flat rate) $15.00
Dissertation II $15.00

Parking Permit Fee
Per semester, Fall and Spring (enrolled for any number of credits) $30.00
Summer Session (one permit Summer I, II, Intercession) $22.00
Workshop participants $3.00 per day

Other Fees
Course materials fees – assessed for selected courses to cover the cost of instructional materials. Consult the Registrar's Office or the appropriate college, department, or school regarding specific course material fees for classes.

Thesis, dissertation, and binding fees (payable at time of application for degree)
- binding per volume $9.50
- microfilming (Ph.D./Ed.D. only) Up to $70.00

Copyright fee (payable at time of application for degree if copyright is sought)
Graduate Foreign Language Reading Proficiency Exam $50.00
Miller Analogies Test (Counseling, Testing, and Career Center) $45.00
Late graduation application fee $10.00
Late registration fee $100.00
(charged to students who have not paid fees by the first day of the term)

Financial Aid
Financial aid programs were developed by the federal and state governments as well as by institutions of higher education to assist students from families with limited resources to meet educational expenses. The primary purpose of financial aid is to ensure that no one is denied the opportunity of a college education because of financial need.

When applying for financial aid at The University of Akron, the Office of Student Financial Aid determines a budget that best suits the needs of the student. The budget includes direct costs that must be paid to the University (i.e., instructional and general fees and room and board in the residence halls) and variable expenses such as transportation and personal expenses.

A graduate student who has already received a bachelor's degree can apply for the Federal Subsidized and Unsubsidized Stafford Loans. The Federal Pell Grant, Ohio Instructional Grant and Federal Supplemental Educational Opportunity Grant cannot be received. Postbaccalaureate students may only apply for Subsidized and Unsubsidized Stafford Loans.

To apply for the Federal Subsidized and Unsubsidized Stafford Loans, the student must complete and submit the Free Application for Federal Student Assistance (FAFSA) or the Renewal Application to the Federal Processor. Applications are available in January for the following school year. Applications can be completed on the World Wide Web at http://www.fafsa.ed.gov. For technical assistance, call 1-800-609-0576. Inquiries may be directed to the Office of Student Financial Aid, Spicer 119, 330-972-7032 or 1-800-621-3847.

Installment Payment Plan
This plan is designed to spread registration and University housing fees into as many as four installments (two during a summer term) depending on when the application is received. An Application Service Charge of $23 per semester/session for registration fees and $23 per semester/session for University housing fees is assessed for the Installment Payment Plan (IPP). If a payment is not received on the due date, a late payment penalty is assessed at $20 per installment for registration fees or $40 per installment if University housing is included. These fees are subject to change.

For applications received up to and including the published semester fee deadline, a 25-percent down payment is required with three follow-up installments at 25 percent, 25 percent and 25 percent respectively. Applications received after the fee deadline and up to the first day of classes will require a 50-percent down payment with two follow-up installments of 25 percent each. For summer terms, the down payment is 30 percent plus one installment at 70 percent or less, depending on the amount of direct application. If the direct application of financial aid for the fall or spring semester is greater than 30 percent and is used as a down payment, the remaining balance will be billed in one, two or three equal payments, depending on when the student registers. Installments are billed monthly starting approximately 30 days after the start of classes.

Financial aid may be used to pay the down payment. If the amount of aid is greater than the required down payment, the entire aid amount must be used as the downpayment. The remaining installment balance will be billed either in two or three equal payments, depending on the registration period.

Application forms are included with the Student Fee invoice or may be obtained in Spicer Hall 109 or by calling 330-972-6100.

Graduate Assistantships
Graduate assistantships may be available through various graduate degree-granting academic units. Graduate assistantships and other graduate awards are distributed to the colleges through the Graduate School; therefore, a separate application is required. For further information, contact the Graduate School, Politics Building, room 469, 330-972-7863.

International Students
A student in the United States on a student or other temporary visa is not eligible for any state or federal financial aid. Application for scholarships, short-term loans, graduate assistantships, and some types of employment may be made.

Regulations Regarding Refunds
All fees, e.g., instructional, general, parking, etc., are subject to change without notice. Students shall be charged fees and/or tuition and other fees in accordance with schedules adopted by the Board of Trustees. Registration does not automatically carry with it the right of a refund or reduction of indebtedness in cases of failure or inability to attend class or in cases of withdrawal. The student assumes the risk of all changes in business or personal affairs.

Fees Subject to Refund
Certain fees are subject to refund.
- Instructional fee (tuition) and nonresident surcharge.
- General fee.
- Course materials and computing fee.
- Student parking fee (only if permit is returned).
- Student teaching fee.
- Laboratory breakage and late service deposit.
- Residence hall fees (note: subject to special policy).
- Technology fee.

Amount of Refund
Amount of refund is to be determined in accordance with the following regulations and subject to course instructor/advisor signature requirements contained in the University's official withdrawal policy:

- in full
  - if the University cancels the course;
  - if the University does not permit the student to enroll or continue except for disciplinary reasons. No refund will be granted to a student dismissed or suspended for disciplinary reasons;
  - if the student dies before or during the term; is drafted into military service by the United States; is called to active duty; or if the student enlists in the National Guard or Reserve prior to the beginning of the term. Notice of induction or order to active duty is required if the student is called to active duty. A student who enlists voluntarily for active duty should see "in part" below.

- in part
  - if the student requests official withdrawal after the Sunday (Midnight) which begins the second week of the fall or spring semesters, the following refund percentages apply:
    - During the second week of the semester 70%
    - During the third week of the semester 50%
    - During the fourth week of the semester 30%
    - During the fifth week of the semester 20%
    - Thereafter 0%
  - if the student requests official withdrawal after the Sunday (midnight) which begins the second week of the semester of any Summer Session, the following refund percentages apply:
    - During the second week of the summer session 40%
    - Thereafter 0%

- Refunds for course sections which have not been scheduled consistent with either the standard 15-week fall/spring semester or the five-week summer term scheduling pattern will be handled on a pro rata basis according to the number of days of the section (class, institute, or workshop) which have passed compared to the number of days said section has been scheduled to meet.

- Refunds will be determined as of the date of formal withdrawal unless proof is submitted that circumstances beyond control of the student, e.g., hospital confinement, prevented the filing of the formal withdrawal earlier, in which case the refund will be determined as of the said circumstance. The student assumes responsibility for filing for a refund.

- Refunds will be mailed as soon as possible. Refund checks are subject to deduction for any amount owed to The University of Akron by the student.
SECTION 3. Academic Requirements

MASTER'S DEGREE REQUIREMENTS

Admission

When a student is admitted to graduate study, an advisor is appointed by the chair of the major department. A student who is academically qualified in general but deficient in course preparation may be required to make up the deficiencies at the postbaccalaureate level. This may be recommended prior to beginning graduate work, or in some cases, can be done simultaneously.

Residence Requirements

There are no formal residence requirements for the master’s degree. A student may meet the degree requirements of the Graduate School and the department through either full- or part-time study.

Continuous Enrollment Requirements

There is no formal Graduate School continuous enrollment requirement for the master’s degree. Individual master’s programs, however, may require continuous enrollment. Students should consult their advisors about this requirement.

Time Limit

All requirements must be completed within six years after beginning graduate-level coursework at The University of Akron or elsewhere. An extension of up to one year may be granted in unusual circumstances by the dean of the Graduate School upon written request by the student and recommendation by the advisor and department chair.

Credits

A minimum of 30 semester credits of graduate work is required in all master’s degree programs. This includes thesis credit. Some departments require more (see departmental requirements). A minimum of two-thirds of the total graduate credits required in any master’s program must be completed at the University. A maximum of six workshop credits may be applied to a master’s degree. Such credits must be relevant to the degree program, recommended by the student’s advisor and approved by the dean of the Graduate School.

It should be noted that the requirements listed by department elsewhere in this section refer to the minimum necessary for a degree. It is entirely within the prerogative of the department to assign additional credits or course work or other requirements in the interest of graduating a fully qualified student.

No graduate credit may be received for courses taken by examination or for 500-numbered courses previously taken at the 400-number course level as an undergraduate without advance approval from the dean of the Graduate School.

Transfer Credits

Up to one-third of the total credits required for a master’s degree may be transferred from an accredited college or university. Departmental and colleges may set more restrictive limits. All transfer credit must be at the “A” or “B” level (4.00 to 3.00) in graduate courses. The credits must be relevant to the student’s program as determined by the student’s academic department, and must fall within the six-year time limit to complete degree requirements.

Credits transferred may come from a prior degree. Up to one third of the total credits required for a master’s degree may come from a prior or concurrent degree at The University of Akron. A University of Akron student who seeks to enroll in courses elsewhere for transfer credit must receive prior approval.

A student seeking to transfer credit must have full admission and be in good standing at The University of Akron and at the school at which the credits were earned. Transfer credit shall not be recorded until a student has completed 12 semester credits at The University of Akron with a grade-point average of 3.00 or better. Transfer credits from other institutions shall not be computed as part of a student’s University of Akron grade point average.

Optional Department Requirements

Each department may set special requirements with regard to entrance examinations, qualifying examinations, language examinations, required courses and thesis. Details are available from the chair of the major department.

Advancement to Candidacy

A student should apply for advancement to candidacy after completion of one-half of the credits required for the degree in his or her program. A student must be fully admitted and in good standing to be advanced to candidacy.

Advancement to Candidacy forms must be submitted no later than May 15 for the January commencement and no later than September 15 for the May commencement. These forms are available in the office of the Dean of the Graduate School or in the academic department.

Graduation

To be cleared for graduation, a candidate must have completed coursework with a minimum cumulative graduate grade-point average of 3.00; been advanced to candidacy; filed an application for graduation with the Registrar; paid all applicable fees; and met any other department and University requirements applicable.

If a thesis is required, two copies, properly prepared, are due in the Graduate School at least three weeks prior to commencement. These copies must be signed by the advisor, faculty reader, department chair/school director and college dean prior to submission to the dean of the Graduate School. A manual entitled Guidelines for Preparing a Thesis or Dissertation is available in the Graduate School and all copies of the thesis must conform to these instructions.

DOCTORAL DEGREE REQUIREMENTS*

A master’s degree is not a prerequisite for the doctorate; however, the first year of study after the baccalaureate will be substantially the same for both the master’s and doctoral student. Some programs admit students to doctoral programs directly after the bachelor’s degree; others require a master’s degree. No specific number or sequence of courses constitutes a doctoral program or assures attainment of the degree. A formal degree program consists of a combination of courses, seminars and individual study and research that meet the minimum requirements of the Graduate School and those of the committee for each individual student.

Admission

Usually, a student is not officially considered as a doctoral student until completion of a master’s program or its equivalent and approval for further study. Departments offering doctoral degree programs review each candidate carefully before recommending admission.

A minimum grade-point average of 3.00 is required for graduation of a candidate for all doctoral degrees.

Residence Requirements

A doctoral student may meet the degree requirements of the Graduate School and department by full-time study or a combination of full- and part-time study.

The minimum residence requirement for a doctoral candidate in all programs is at least two consecutive semesters of full-time study and involvement in departmental activities. Full-time study is defined as 9-15 semester credits, except for graduate teaching and research assistants for whom full-time study is specified by the assistantship agreements. The summer sessions may count as one semester, provided that the candidate is enrolled for a minimum of 10 consecutive weeks of full-time study and for a minimum of six semester credits per five-week session. Individual programs may have additional residence requirements such as credits or courses to be completed, proper time to fulfill the residence requirement, and the extent to which a resident may hold outside employment.

Before a doctoral student begins residency, the student’s advisor and the student shall prepare a statement indicating the manner in which the residence requirement will be met. Any special conditions must be detailed and will require the approval of the student’s committee, the department faculty member approved to direct doctoral dissertations, the college dean and the dean of the Graduate School.

*The doctoral program in engineering is an interdisciplinary program offered on a collegiate basis. In the descriptions of University doctorate degree requirements on the following pages, citations of department or departmental faculty should be interpreted as citations of college or collegiate faculty with specific reference to the doctoral program in engineering.
**Continuous Enrollment Requirement**

All students admitted to doctoral programs must register for a minimum of one graduate credit as approved by their advisors during each Fall and Spring semester. Individual departments may exceed this minimum requirement. Doctoral students shall consult their advisors about additional requirements. Master's programs may require continuing enrollment. Students should consult their advisors about this requirement.

**Time Limit**

All doctoral requirements must be completed within 10 years of starting coursework at The University of Akron or elsewhere. This refers to graduate work after receipt of a master's degree or the completion of 30 semester credits. Extensions of up to one year may be granted by the dean of the Graduate School under unusual circumstances.

**Credits**

A doctorate is conferred in recognition of high attainment and productive scholarship in some special field of learning as evidenced by the satisfactory completion of a prescribed program of study and research; and the successful passing of examinations covering the special field of study and the general field of which this subject is a part. Consequently, the emphasis is on mastery of the subject rather than a set number of credits. Doctoral programs generally encompass the equivalent of at least three years of full-time study at the graduate level. A minimum of 50 percent of the total credits above the baccalaureate required in each student's doctoral program must be completed at The University. A maximum of six workshop credits may be applied to a doctoral degree. Such credits must be relevant to the degree program, recommended by the student's advisor and approved by the dean of the Graduate School.

No graduate credit may be received for courses taken by examination or for 400-numbered courses previously taken at the 400-number course level as an undergraduate without advance approval from the dean of the Graduate School. "Repeat for change of grade" is not available at the graduate level.

**Transfer Credits**

Up to 50 percent of the total credits above the baccalaureate required in a doctoral program may be transferred from accredited colleges or universities. Departments and colleges may set more restrictive limits. The credits must be relevant to the student's academic program as determined by the student's academic department and must fall within the 10-year limit to complete degree requirements beyond the master's degree. All credits transferred must be at the "A" or "B" level (4.00 to 3.00) in graduate courses.

Credits transferred may come from a prior degree. No more than thirty semester credits may be transferred from a single master's degree. Credits earned in prior or concurrent programs at The University of Akron shall be treated in the same manner as credits earned elsewhere. A University of Akron student who seeks to enroll in courses elsewhere for transfer credit here must receive prior approval.

A student seeking transfer credit must have full admission and be in good standing at The University of Akron and at the school at which the credits were earned. Transfer credit shall not be recorded until a student has completed 12 semester credits at The University of Akron with a grade-point average of 3.00 or better. Transfer credits from other institutions shall not be computed as part of a student's University of Akron grade point average.

**Language Requirements**

There is no university-wide foreign language requirement for the Ph.D. The student is required to demonstrate one of the following skills depending upon the particular program:

- **Plan A**: Reading knowledge, with the aid of a dictionary, of two approved foreign languages. At the discretion of the major department an average of "B" in the second year of college-level courses in a language will be accepted as evidence of proficiency in reading knowledge for that language. English may be considered as one of the approved foreign languages for a student whose first language is not English; and demonstrated competence in research technique (e.g., statistics and/or computer) may be substituted for one of the two foreign languages. Under the last option, each department should define competence and publicizes.

- **Plan B**: Comprehensive knowledge of one approved foreign language, including reading without the aid of a dictionary and such additional requirements as the department may impose.

- **Plan C**: In certain doctoral programs (counseling and guidance, elementary education, engineering, psychology, secondary education, urban studies and public affairs) the demonstration of competence in appropriate research skills may serve as a substitute for the foreign language requirements.

**Optional Department Requirements**

Each department may determine requirements for a doctoral student with regard to entrance examinations, qualifying examinations, preliminary or comprehensive examinations and coursework sequences.

**Advancement to Candidacy**

A student should apply for advancement to candidacy after completion of one-half of the credits required for the degree in his or her program. A student must be fully admitted and in good standing to be advanced to candidacy.

Advancement to Candidacy forms must be submitted no later than May 15 for the January commencement and no later than September 15 for the May commencement. These forms are available in the office of the dean of the Graduate School or in the academic department.

**Dissertation and Oral Defense**

The ability to do independent research and demonstrate competence in scholarly exposition must be demonstrated by the preparation of a dissertation on some topic related to the major subject. It should represent a significant contribution to knowledge. This dissertation is open to the graduate faculty. The dissertation and oral examination must be approved by the committee before the dissertation is submitted to the Graduate School.

To be eligible to graduate during any given term, a candidate must meet both the preliminary and final dissertation submission deadlines. Each candidate is responsible for consulting the Schedule of Classes, their advisor/department, or the Graduate School to determine these deadlines.

A draft copy of the dissertation is due in the Graduate School prior to the preliminary deadline. Two copies of the dissertation are due in the Graduate School prior to the final deadline. These copies must be signed by the advisor, department chair, and college dean prior to submission to the dean of the Graduate School. A manual entitled Guidelines for Preparing a Thesis or Dissertation is available in the Graduate School and all copies of the dissertation must conform to these instructions.

**Graduation**

To be cleared for graduation, a candidate must have completed the academic program with a minimum cumulative grade-point average of 3.00; been advanced to candidacy; met the preliminary dissertation deadline; submitted an approved dissertation and passed an oral examination; filed an application for graduation with the registrar; paid all applicable fees; and met any other department and University requirements.
SECTION 4. Graduate Studies

Buchtel College of Arts and Sciences

Roger B. Creel, Ph.D., Dean
William A. Francis, Ph.D., Associate Dean
Devinder M. Malhotra, Ph.D., Associate Dean
Charles B. Monroe, Ph.D., Associate Dean

Mission Statement

The Buchtel College of Arts and Sciences serves the objectives of the University, which state that learning may be procured, preserved and enlarged. More particularly, the college seeks to foster:

- The commitment to humanity—that loyal devotion to the heritage contained in those disciplines growing out of the ancient liberal arts which teach limitations and potentialities. The college seeks to provide an appropriate environment for students to acquire an ability to evaluate, integrate and understand the conditions of human existence, to understand themselves in the natural world and in a particular civilization or society. No course or combination of courses can ensure such understanding, there is no schooling that can guarantee wisdom. Therefore, the college requires the student to study ideas and experiences that are the subject matter of a variety of disciplines;

- The nurture of civility—those actions whereby virtue, the advancement of society, and wise and humane government are encouraged;

- The advancement of learning—that substantive knowledge discovered and cultivated by critical curiosity, tempered by experimentation, propagated by instruction and capable of affecting lives so that all may in a free society exercise responsible liberty. The most enduring contribution which the college can make is to help individuals acquire the skill, motivation and breadth of knowledge to continue their intellectual development throughout their lives.

The college recommends each student for the appropriate bachelor’s, master’s or doctoral degrees in accordance with the level of accomplishment.

Buchtel College is one of 10 degree-granting college at The University. Its name truthfully implies that its traditions date back farther than those of the undergraduate colleges, since the University itself is an outgrowth of Buchtel College, a liberal arts institution founded in 1870.

When Buchtel College became the Municipal University of Akron, the original name was retained in the College of Liberal Arts which was subsequently renamed the Buchtel College of Arts and Sciences. Then, and now, the liberal arts goal has been to offer broad training to the college student so that the student can prosper in life and sustain a creative appreciation of the arts and sciences.

The college is composed of the following three administrative divisions: Humanities (English, modern languages), Natural Sciences (biology, chemistry, computer science, geology, mathematics, statistics, and physics), and Social Sciences (economics, geography and planning, history, political science, public administration and urban studies, psychology, sociology).

DOCTOR OF PHILOSOPHY DEGREE

The following programs leading to the Doctor of Philosophy degrees are offered in the Buchtel College of Arts and Sciences: the Doctor of Philosophy in Chemistry, the Doctor of Philosophy in Counseling Psychology, the Doctor of Philosophy in History, and the Doctor of Philosophy in Sociology. The Doctor of Philosophy in Sociology is offered jointly with Kent State University and the Doctor of Philosophy in Urban Studies and Public Affairs with Cleveland State University.

Doctor of Philosophy in Chemistry

The Doctor of Philosophy in Chemistry is granted for high scholarly achievement in analytical, inorganic, organic, physical or biochemistry. Students with either a baccalaureate or master’s degree may be admitted to the program. They must satisfy the following requirements to receive the degree:

- Complete a course of study designed in consultation with an advisor or advisory committee. This consists of the completion of at least 90 credits beyond the baccalaureate degree, including 24 credits of appropriate coursework.
- Complete monthly cumulative exam requirement.
- Complete oral exam requirement.
- Complete seminar requirement.
- Defend dissertation in an oral examination.
- Complete all general requirements for the doctor of philosophy degree.

Interdisciplinary Option in Chemical Physics

The faculty in the Department of Chemistry and Physics jointly offer an option leading to a Ph.D. in Chemistry for students who elect the interdisciplinary field of chemical physics.

Admission Requirements

Applicants for the Chemical Physics Option may be admitted with either a baccalaureate or a master's degree, in either chemistry or physics. All applicants must have their graduate application and credentials evaluated by the Chemistry Department. All admission requirements for the Doctor of Philosophy in Chemistry, as given in this Graduate Bulletin, shall apply to applicants for admission to the Chemical Physics Option.

Graduate students in good standing in the Physics Department may apply for admission as above. Successful applicants should have some advanced chemistry course work (200-level and above) and endorsement by the chair of the Physics Department.

Degree Requirements

The applicable degree requirements for the Chemical Physics option are those of the Doctor of Philosophy in Chemistry, as stated in the Graduate Bulletin. These degree requirements consist of the following:

- Complete a course of study designed in consultation with an advisor or advisory committee, consisting of at least 90 credits beyond the baccalaureate degree, including 24 credits of appropriate chemistry coursework and approved physics electives;
- Complete the requirements of the monthly cumulative exams, the oral exam, and the seminar;
- Defend the dissertation in an oral examination;
- Complete all general requirements for the Doctor of Philosophy degree.

Students entering with the endorsement of the Physics Department must choose an advisor in the Physics Department holding a joint appointment in Chemistry, or, other students must select as research advisor a participating faculty member in the Chemistry Department. Students entering the program with principle preparation in physics may be required to audit certain undergraduate prerequisites for chemistry graduate courses, and visa versa for students whose principle preparation is in chemistry.

Doctor of Philosophy in Counseling Psychology

The University of Akron offers a doctoral program in Counseling Psychology. The program allows the student a choice of entry points through the Psychology Department of the Buchtel College of Arts and Sciences or through the Counseling and Special Education Department of the College of Education. Students in both departments are expected to attain a level of broad scientific competence in the core areas of psychology, the biological, social, cognitive-effective, and individual bases of human behavior. Practicum and internship experiences are also required of all students and range from skill building in basic psychological assessment and counseling, to actual work with clients, to a yearlong, full-time internship in an applied service setting. Pertinent information regarding the emphasis, orientation, and coursework for the Psychology Department entry point is included below. Students receive exposure to both colleges through shared coursework and faculty involvement with dissertations. The Collaborative Program in Counseling Psychology is accredited by the American Psychological Association.

The Department of Psychology offers a five-year Counseling Psychology program leading to a doctoral degree and, in general, it geared toward students who hold a B.A. in psychology. Program emphasis is strongly placed on a scientist-practitioner model of training. Beyond the basic core areas of psychology, students are expected to establish specific competencies in the areas of theory, research, and practice of Counseling Psychology. Academic preparation includes theories of psychotherapy, supervision, diversity issues in counseling psychology, vocational psychology, testing theory and practice, research and statistics, and professional issues. Research and publication are greatly encouraged. Graduates typically seek out academic teaching, research and training positions, as well as positions in counseling centers and other mental health agencies.

Admission to the Collaborative Program in Counseling Psychology is handled through the department associated with the student's chosen entry point. Students must fulfill both Departmental and Graduate School admission requirements.
Departures from the described program for Psychology Department entry may be made only with the approval of the counseling psychology program faculty.

Requirements
The curriculum reflects the interdepartmental blend of the Collaborative Program in Counseling Psychology. Electives and other classes are to be planned along with the student's advisor.

<table>
<thead>
<tr>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Psychology core courses (80, 620, 630, 640, 650)</td>
</tr>
<tr>
<td>35</td>
<td>Counseling psychology core courses (707, 710, 711, 712, 713, 714, 715, 712, 718, 780)</td>
</tr>
<tr>
<td>28</td>
<td>Practicum sequence (672 [2+2+2+2], 673 [2+2], 795 [4+4], 796 [4+4])</td>
</tr>
<tr>
<td>4</td>
<td>Advanced Psychological Tests and Measures (750)</td>
</tr>
<tr>
<td>6</td>
<td>Elective (minimum)</td>
</tr>
<tr>
<td>8</td>
<td>Statistics (601, 602)</td>
</tr>
<tr>
<td>8</td>
<td>A statistics sequence that may be substituted for the doctoral language requirement</td>
</tr>
<tr>
<td>1</td>
<td>Thesis credits (minimum)</td>
</tr>
<tr>
<td>12</td>
<td>Dissertation credits (minimum)</td>
</tr>
</tbody>
</table>

- The comprehensive written examination is prepared, administered and graded by program faculty. At least one faculty member from each department participates in the oral portion of the comprehensive examination.
- Dissertation – at least one faculty member from each department is required or the student's dissertation committee.
- Internship – 2,000 hours postmaster's with 1,600 hours over no more than two years. The internship site must be approved in advance by the Collaborative Program Internship Committee.
- Students must maintain a 3.50 GPA in their course content each year in the Department of Psychology.

Doctor of Philosophy in History

The Doctor of Philosophy in History is granted primarily for high scholarly achievement in four fields of study selected by the student and for demonstrated ability to pursue independent research. Each student must:

- Fulfill admission requirements of the School.
- The Graduate Committee of the History Department will consider an applicant for admission if a person has a Master’s degree or the equivalent and a grade-point average of 3.3 or better at the M.A. level from an accredited institution. Those holding a Master’s degree from The University of Akron or other accredited institution should not assume that they will automatically be admitted to doctoral studies. In addition to the application made to the Graduate School of The University of Akron, the student must submit to the History Department the following:
  - a personal statement of reasons for wishing to undertake doctoral study and the fields of study the student wishes to pursue;
  - three letters of recommendation from former professors;
  - a writing sample, preferably a seminar paper or other comparable scholarly work;
  - scores on the Graduate Record Examination, General Aptitude Test;
  - evidence of a reading knowledge of one foreign language or knowledge of an acceptable cognate field. Those whose native language is not English must demonstrate proficiency in English.

The History Department does not encourage applications for the doctoral program from students who have received both B.A. and M.A. degrees from The University of Akron. Special circumstances may warrant consideration, however, and the Graduate Committee reserves the right to judge applications on their own merit.

- Complete studies selected by the student in consultation with an advisory committee, including:
  - completion of 60 credits beyond master's degree requirements, including dissertation credit. Courses at the 500-level in the student's major and dissertation fields will not be counted toward the degree, and only 9 hours of 500-level courses in the student's secondary fields will be counted;
  - demonstration of competency in four fields of study selected from the following areas in which the student will be expected to pass written and oral comprehensive examinations: ancient, medieval, early modern, modern, 1789, modern Europe since 1750, America to 1877, United States since 1877, Latin America, Far East, Africa, Middle East, South Asia, and Asia, and History of Science. These four fields must include at least one each in American, European, and non-western history. The student's dissertation will fall within one of the four chosen fields;
  - satisfactory performance in written and oral comprehensive examinations;
  - defense of the dissertation in an oral examination.

- A reading knowledge of two languages will be required. With the approval of the student's doctoral committee and the Graduate Committee, the student may substitute a cognate field for one of the two required languages when it seems appropriate for the student's general program.

- Complete all general requirements for the Doctor of Philosophy degree.

Doctor of Philosophy in Psychology

The Department of Psychology offers a doctoral degree in psychology with specialization in either industrial/organizational psychology or applied cognitive aging psychology.

A degree will be awarded to a student who, besides fulfilling the general requirements, has met the following specific requirements:

- Fulfill admission requirements of the Graduate School and department requirements as follows:
  - completion of master's degree including 30 graduate credits;
  - completion of master's core courses or equivalent;
  - attainment of a graduate grade-point average (GPA) of 3.25;
  - completion of Graduate Record Examination Aptitude and Applied Psychology Test;
  - securing of three letters of recommendation;
- Major field:
  - a minimum of 90 graduate credits including 30-credit master's program. A student may be required to complete additional credits beyond the 90 minimum credit requirement;
  - completion of Ph.D. core courses in the student's specialty area: industrial/organizational or applied cognitive aging. Core courses are specified in the Department of Psychology Graduate Student Manual. The student is required to maintain at least a 3.5 GPA in core courses and overall courses;
  - completion of additional required and elective courses to be planned in conjunction with the student's faculty advisor and subject to approval by the industrial/organizational or applied cognitive aging committees.
- Written comprehensive examinations:
  - satisfactory performance on doctoral written and oral comprehensive examinations in the student's major area of industrial/organizational psychology or applied cognitive aging (refer to the department's graduate student manual);
- Dissertation research:
  - completion of 3750:889 Doctoral Dissertation; (minimum of 12 credits);
  - satisfactory performance on final examination and defense of dissertation research;
- Other requirements:
  - refer to the department's graduate student manual for other requirements or guidelines;
  - complete and fulfill general doctoral degree requirements of the Graduate School.

Doctoral language requirements or appropriate alternative research skills and techniques may be prescribed by the student's advisory committee, depending upon the career plans of the student and upon the academic or scientific requirements of the dissertation.

Doctor of Philosophy in Sociology

Akreon-Kent Joint Ph.D. Program

The University of Akron and Kent State University departments of sociology offer a joint program leading to the Ph.D. degree. Faculty and students engaged in the joint doctoral program are for all intents and purposes involved in a single graduate program. Course work is offered at both campuses and faculty and students interchange freely.

Admission to the Program

A student may apply with a completed master's degree or equivalent or after at least one year of full-time coursework or equivalent (18 credits) in the sociology master of arts program at The University of Akron. The coursework must include the master of arts core sequence. Scores from the general exam of the Graduate Record Examination (GRE) are required as part of the doctoral application. Admission is limited to students whose records clearly indicate both scholarly and research potential.
Degree Requirements (for a student admitted with the master's degree or equivalent)

In addition to meeting the general requirements of the Graduate School, a student working toward the Doctor of Philosophy in Sociology must meet the following requirements:

- Take the three following courses:
  3960:630 Social Psychology (counts toward specialization requirements)
  3850:645 Social Organization
  3850:700 College Teaching in Sociology

- Take one doctoral-level course in theory. This course to be selected from the predetermined group of courses (see Department of Sociology graduate student handbook).

- Complete a doctoral-level course in statistics from the predetermined group of courses (see the department's graduate student handbook).

- Complete a specialty of 9 to 12 credits, depending on the specialty chosen.

- Complete a minimum total of 30 credits in coursework.

- Comprehensive Examination in theory, methods and statistics, and a specialty area (medical sociology, sociology of family, social psychology, or social inequalities).

- Fulfill residency requirement of the Graduate School.

- Register for a minimum of 30 credits of dissertation credit, complete a dissertation and successfully defend it in an oral examination.

Degree Requirements (for a student admitted without the master's degree)

In addition to meeting the requirements for a student admitted with the master's degree, the student must meet the following requirements:

- Completion of the M.A. core coursework.

- Completion of a research practicum (three credits). This may be waived for the student who already has sufficient research experience.

- Completion of a minimum of 60 credits of graduate-level (600 or higher) coursework beyond the bachelor's degree.

Doctor of Philosophy in Urban Studies and Public Affairs

The Department of Public Administration and Urban Studies of The University of Akron offers a program leading to the Ph.D. in Urban Studies and Public Affairs (joint with Cleveland State University's Levin School of Urban Studies). Students admitted to the program may take courses at either campus and all doctoral committees contain members from both universities.

The program is designed to educate scholars interested in university or professional careers in the fields of public administration and urban affairs with particular emphases in urban administration, urban policy, planning, and regional planning.

Admission

Admission to the Ph.D. program involves faculty consideration of all of the following criteria which, taken together, present evidence of the likelihood of success in advanced study.

- Completion of a master's degree.

- Preference for a grade point average (GPA) from master's degree above 3.5. However, having a GPA above 3.5 is not in itself sufficient for admission.

- Submission of official test results on the verbal and quantitative portion of the Graduate Record Examination. General Test. Official results from other, equivalent standardized tests used for graduate admissions may be substituted at the discretion of the Ph.D. Coordinator.

- Three letters of recommendation from persons familiar with the applicant's recent performance and abilities.

- A sample of the student's written work. Generally, this should be a thesis or final project paper from the master's degree program. Students who do not have such a requirement in their master's program should submit several writing samples such as research papers, professional reports, or published articles.

- A personal statement from the applicant detailing the intended area of specialization and career aspirations (form in application packet). An applicant will be admitted only if faculty resources are available in the area of specialization detailed by the applicant.

- Those applicants for whom English is not their native tongue must demonstrate proficiency in the English language by scoring a minimum of 570 on the Test of English as a Foreign Language (TOEFL), submitting an acceptable score on the Test of Written English (TWE) and by scoring a minimum of 220 on the Test of Spoken English (TSE).

Applicants also will have successfully completed the following master's-level prerequisites (or equivalents) before formal admission:

<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3960:600</td>
<td>Basic Quantitative Research</td>
<td>3</td>
</tr>
<tr>
<td>3980:601</td>
<td>Advanced Research and Statistical Methods</td>
<td>3</td>
</tr>
<tr>
<td>3980:611</td>
<td>Introduction to the Profession of Public Administration</td>
<td>3</td>
</tr>
<tr>
<td>3960:620</td>
<td>Planning Theory</td>
<td>3</td>
</tr>
<tr>
<td>3980:630</td>
<td>Fiscal Analysis</td>
<td>3</td>
</tr>
<tr>
<td>3980:643</td>
<td>Introduction to Public Policy</td>
<td>3</td>
</tr>
</tbody>
</table>

An applicant may be required to appear before the Doctoral Committee before a decision is made on admission to the program.

The Doctoral Committee also may require an applicant to take an admission examination, either written or oral. An applicant may be admitted to the doctoral program subject to completion of additional "bridge-up" coursework designed to address deficiencies in previous coursework. Bridge-up coursework will not count toward doctoral degree course requirements.

Degree Requirements

A minimum of 63 credits beyond the master's degree is required, 55 hours of coursework, and 12 hours of dissertation.

Course work consists of a minimum of 30 credit hours of required core, 18 credit hours of specialization and a 3 credit hour Pro-Seminar. The Pro-Seminar cannot be taken until all coursework and examination requirements have been met and the student has achieved "Advancement to Candidacy" status.

- Core Courses:
  - 3960:700 Advanced Research Methods I
  - 3980:701 Advanced Research Methods II
  - 3980:702 Urban Theory I
  - 3980:703 Urban Theory II
  - 3960:705 Economics of Urban Policy
  - 3980:706 Urban Planning: The Historical Perspective
  - 3960:710 Quantitative Research Methods
  - 3980:711 Seminar in Public Administration
  - 3980:714 Seminar in Policy Analysis and Evaluation
  - 3980:715 Seminar in Urban and Regional Planning

- Specializations:
  - The department offers specializations in the following areas:
    - Public Administration
    - Urban Policy
    - Policy Analysis and Evaluation
    - Planning
  - Students are required to develop a field of specialization consisting of a minimum of 18 credit hours after consultation with their Program of Study Committee and the Ph.D. Coordinator. The courses recommended for inclusion in the above-designated specializations are available through the department office and the Ph.D. Coordinator.
  - Upon written approval of a doctoral student's Program of Study Committee, courses other than those listed in specializations may be used to create a specialization that is better suited to the student's research and academic interests of that student.

- Examinations:
  - To be eligible for Advancement to Candidacy and the preparation of a dissertation, a student must pass qualifying and specialization written and comprehensive examinations.
  - Students must register for 3980:795, Pro-Seminar, in the first semester after achieving Advancement to Candidacy status. Students must also successfully defend their dissertations.

- Other requirements:
  - Refer to the Departmental Graduate Student Handbook and the Ph.D. Coordinator for other requirements and guidelines. Complete general doctoral degree requirements of the Graduate School.

MASTER'S DEGREES

Programs of advanced study leading to the master's degree are offered by the departments of biology, chemistry, computer science, economics, English, geography and planning, geology (earth sciences), history, mathematics, modern languages (Spanish), physics, political science, psychology, sociology, statistics and public administration and urban studies. Before undertaking such a program, the student must show that the general requirements for admission to the Graduate School have been met, and the standard requirements for an undergraduate major in the area of the proposed graduate specialty have been met or that the student has performed work which the department approves as equivalent to an undergraduate major.
Biology

Admission Requirements

- Possess the equivalent of a biology undergraduate major with a GPA of 3.00 or higher in biology courses.
- Must have at least one semester of organic chemistry.
- Submit three letters of recommendation.
- Submit scores for Graduate Record Examination (Aptitude and Advanced Biology Test).
- Non-active speakers of English must submit a TSE score of 220 or above (minimum score of 50 on TSE, revised 1998) to be considered for a graduate assistantship.

Master of Science

Thesis Option I

The program is primarily for the student who will pursue a research career, including the student who intends to enter a doctoral program in the biological sciences.

- Course work in addition to the master's research and seminars (must be approved by the student's advisory committee) – 24 credits.
- Research and thesis – minimum of 12 credits.
- Participation in seminars – a maximum of four credits.
- The student's advisory committee may require the demonstration of reading proficiency in a foreign language appropriate to the field of study.

A minor may be taken in approved graduate courses including education, summer study at a biological station is available.

Thesis Option II

This program is intended for Medical Doctors and Doctors of Osteopathic Medicine who have graduated from an accredited U.S. medical school.

- Course work in addition to the master's research and seminars (must be approved by the graduate officer) – 16 credits (no transfer credits are allowed for this option).
- Research and thesis – minimum of 12 credits.
- Participation in seminars – a maximum of two credits.

Nonthesis Option

This program is designed exclusively for secondary school teachers for whom the M.S. probably will be a terminal degree and who do not need research experience. The program is open only to applicants possessing a teaching certificate or its equivalent.

- Course work in addition to the master's research and seminars (must be approved by the student's advisor prior to enrollment) – 24 credits.
- Research and thesis – minimum of 12 credits.
- Participation in seminars – a maximum of four credits.
- The student's advisory committee may require the demonstration of reading proficiency in a foreign language appropriate to the field of study.

A minor may be taken in approved graduate courses including education.

Chemistry

Master of Science

- Chemistry coursework – with the approval of the advisor, up to 12 credits may be taken in related areas – 24 credits.
- Research and thesis – six credits.
- Participation in departmental seminars.
- Demonstration of reading proficiency in a foreign language appropriate to the field of study prior to the last semester of enrollment.

Economics

Master of Arts

Thesis Option

A minimum of 30 credits of coursework including a thesis equivalent to six credits is required. At least 24 credits must be at the 600 level in economics. Thesis must be written in an area of specialization in which the individual has at least two courses.

Nonthesis Option

A minimum of 30 credits of coursework is required. At least 21 credits must be at the 600 level in economics. The individual must also specialize in an area.

Required Courses for both options:

- 3250:602 Microeconomic Analysis
- 3250:611 Microeconomic Theory I
- 3250:620 Applications of Mathematical Models to Economics
- 3250:656 Statistics for Econometrics

Areas of Specialization:

- Economic Development and Planning
- Economic Theory and Policy
- Industrial Organization and Public Policy
- International Economics
- Labor and Industrial Relations
- Quantitative Methods

*These courses may be waived for the student who can demonstrate, in a qualifying exam, an adequate preparation in mathematics and statistics.

Exceptional departures from these requirements may be approved with the permission of the graduate faculty and department chair. Courses taken outside the department must be approved (in writing) by the student's advisor prior to enrollment.

English

Master of Arts - Literature Track

Thesis Option

A minimum of 33 credits is required. Of the 27 credits of coursework, 18 must be at the 600 level and 12 must be in literature or literary theory (exclusive of individual reading).

Nonthesis Option

A minimum of 36 credits is required, of which 24 must be at the 600 level and 24 must be in literature or literary theory (exclusive of individual reading).

Required Courses for Both Options:

- 3300:506 Chaucer
- 3300:570 History of the English Language
- 3300:670 Modern Linguistics
- 3300:615 Shakespearean Drama
- 3300:691 Bibliography and Literary Research

At least one course in four of the following five categories is required:

<table>
<thead>
<tr>
<th>British</th>
<th>American</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1900</td>
<td>Up to 1865</td>
</tr>
<tr>
<td>1865-present</td>
<td>1865-present</td>
</tr>
</tbody>
</table>

Master of Arts – Composition Track

The Composition Track is intended for students interested in teaching English in secondary schools, two-year colleges, and four-year colleges. The degree is also appropriate for those planning to enter a doctoral program in composition and rhetoric. The program does not lead to state certification for teaching. Students should consult the Department of Curricular and Instructional Studies for requirements for state certification to teach in the public schools.

Thesis Option

A minimum of 33 credits is required. Of the 27 credits of coursework, 18 must be in composition studies (including courses in composition, rhetoric, and linguistic) and 9 credits in literature or literary theory (exclusive of individual reading). Of the 27 credits of coursework, 15 must be at the 600 level.

Nonthesis Option

A minimum of 36 credits is required, only 6 of which may be individual reading. At least 24 credits required in composition studies (including courses in composition, rhetoric, and linguistics). Of the 36 credits of coursework, 21 must be at the 600 level.

Required Courses for both options:

- 3300:673 Theories of Composition
- 3300:674 Research Methodologies in Composition
- 3300:676 Theory and Teaching of Basic Composition
- 3300:699 New Rhetorics

Students must also choose one of the following two courses:

- 3300:589 Grammar: Structures of Modern English
- 3300:670 Modern Linguistics
Any course taken outside the department must be approved in advance by the student's Graduate Advisor or the Department Chair. For the University of Akron, 2001-2002:

**Master of Arts in Geography**

**Thesis Option**
- A minimum of 45 graduate credits, to include no more than 3 credits of independent study (3350:698).
- Core Requirements (15 credits)
  - 3350:581 Research Methods in Geography and Planning
  - 3350:583 Spatial Analysis
  - 3350:586 Field Research Methods
  - 3350:587 History of Geographic Thought
  - 3350:600, 601, or 602 Seminar (3 credits)

  - Techniques Requirements (9 credits)
    - 3350:505 Geographic Information Systems
    - 3350:540 Principles of Cartography
    - 3350:547 Remote Sensing

  - Techniques Electives (at least 6 credits)
    - 3350:507 Advanced Geographic Information Systems
    - 3350:542 Thematic Cartography
    - 3350:544 Applications in Cartography and GIS
    - 3350:546 Advanced Cartography
    - 3350:549 Advanced Remote Sensing
    - 3350:680 Advanced Spatial Analysis

- Thesis
  - At least 9 credits and no more than 15 credits of 3350:699.

- Electives
  - Courses to total at least 45 credits.

Any course taken outside the department must be approved in advance by the student's Graduate Advisor or the Department Chair.

**Nonthesis Option**
- A minimum of 45 graduate credits, to include no more than 3 credits of independent study (3350:698).
- Core Requirements – (21 credits)
  - 3350:505 Geographic Information Systems
  - 3350:581 Research Methods in Geography and Planning
  - 3350:583 Spatial Analysis
  - 3350:595 Field Research Methods
  - 3350:687 History of Geographic Thought
  - 3350:600, 601, 602 Seminar (6 credits)

  - Electives – (21 credit hours)

    Seven courses with at least 4 from either the Environmental concentration or the Urban/Economic concentration.

- GIS/Remote Sensing
  - 3350:607 Advanced Geographic Information Systems
  - 3350:540 Principles of Cartography
  - 3350:542 Thematic Cartography
  - 3350:544 Applications in Cartography and GIS
  - 3350:547 Remote Sensing
  - 3350:548 Advanced Cartography
  - 3350:549 Advanced Remote Sensing
  - 3350:680 Advanced Spatial Analysis

- Environmental
  - 3350:515 Environmental Planning
  - 3350:522 Transportation Systems Planning
  - 3350:528 Industrial and Commercial Site Location
  - 3350:532 Land Use Planning Law
  - 3350:533 Practical Approaches to Planning
  - 3350:534 History of Urban Design and Planning
  - 3350:595 Soil and Water Field Studies

- Urban/Economic
  - 3350:520 Urban Geography
  - 3350:522 Transportation Systems Planning
  - 3350:528 Industrial and Commercial Site Location
  - 3350:536 Urban Land Use Analysis
  - 3350:538 History of Urban Design and Planning
  - 3350:539 Development Planning
  - 3350:533 Comparative Planning

Any course taken outside the department must be approved in advance by the student's Graduate Advisor or the Department Chair.

**Master of Arts in Geography (Geography/Urban Planning)**

**Thesis Option**
- A minimum of 45 graduate credits, plus internship (3350:685), to include no more than 3 credits of independent study (3350:698).
- Core Requirements (30 credits)
  - 3350:505 Geographic Information Systems
  - 3350:532 Land Use Planning Law
  - 3350:537 Planning Analysis and Projection Methods
  - 3350:538 Land Use Planning Methods
  - 3350:539 History of Urban Design and Planning
  - 3350:581 Research Methods in Geography and Planning
  - 3350:583 Spatial Analysis
  - 3350:530 Planning Theory
  - 3350:631 Facilities Planning
  - 3350:600, 601, 602 Seminar (3 credits)

- Electives
  - Courses to total at least 45 credits.

Any course taken outside the department must be approved in advance by the student's Graduate Advisor or the Department Chair.
• Thesis
  At least 9 credits and no more than 15 credits of 3350:699.
• Electives
  Courses to total at least 45 credits.

Any course taken outside the department must be approved in advance by the student's Graduate Advisor or the Department Chair.

**Nonthesis Option**

• A minimum of 45 graduate credits plus internship (3350:685).
• Core Requirements (30 credits)
  3350:505 Geographic Information Systems
  3350:532 Land Use Planning Law
  3350:537 Planning Analysis and Projection Methods
  3350:636 Land Use Planning Methods
  3350:639 History of Urban Design and Planning
  3350:581 Research Methods in Geography and Planning
  3350:683 Spatial Analysis
  3350:630 Planning Theory
  3350:631 Facilities Planning
  3350:600, 601, 602 Soils/Geology (3 credits)
• Electives — (15 credits)
  Five courses, with at least three in one area.

**GIS/Remote Sensing**

  3350:507 Advanced Geographic Information Systems
  3350:540 Principles of Cartography
  3350:542 Remote Sensing
  3350:544 Applications in Cartography and GIS
  3350:541 Advanced Cartography
  3350:549 Advanced Remote Sensing
  3350:680 Advanced Spatial Analysis

**Environmental**

  3350:515 Environmental Planning
  3350:533 Practical Approaches to Planning
  3350:551 Medical Geography and Health Planning
  3350:586 Soil and Water Field Studies

**Urban/Economic**

  3350:520 Urban Geography
  3350:522 Transportation Systems Planning
  3350:528 Industrial and Commercial Site Location
  3350:536 Urban Land Use Analysis
  3350:550 Development Planning
  3350:633 Comparative Planning

Any course taken outside the department must be approved in advance by the student's Graduate Advisor or the Department Chair.

**Geology**

**Master of Science**

• Complete a minimum of 30 credits of which at least 10 credits shall be at the 600 level and no more than two in research problems and six in thesis research.
• In all geology M.S. degree programs except Engineering Geology, at least 22 graduate credits shall be geology courses.
• Proficiency examination at the beginning of program to determine any weaknesses in undergraduate preparation. The student who demonstrates a lack of basic knowledge will be required to take appropriate undergraduate courses. The student may not begin formal thesis work until he/she has successfully passed the proficiency examination and has corrected deficiencies from same. (Formal thesis work includes thesis proposal and thesis research credits). Field camp can be taken for graduate credit, however, it will not count toward the 30 credits for the M.S. in the geology or geophysics options.
• Core Requirements:
  3370:680 Seminar in Geology 2
  3370:699 Master's Thesis 6
• Pass comprehensive examination after completion of 18 credits. Examination may be attempted twice.
• Oral presentation and defense of thesis.

**Degree Specialization**

The program of each individual will be adapted to his/her career objectives.

**Geology**

The minimal background for admission without deficiency should include a six-credit geology field camp course and equivalents to courses in mineralogy, petrology, structural geology, sedimentology/stratigraphy, and any two upper level geology courses.

Students should have completed the equivalent of a minimum of six semester courses in introductory chemistry, physics, biology, mathematics or equivalents; including at least one semester of calculus, physics and chemistry. All courses should be taught for science/mathematics/engineering majors.

The academic background of each incoming graduate student will be reviewed during the student's first semester by the graduate advisor, thesis advisor, and department chair to determine whether background deficiencies exist for his/her planned program of study.

**Earth Science**

Equivalents of the current geology courses for the University's B.A. in geology are required. Course program will be selected to provide the student with a well-rounded background in lithosphere, hydrosphere and atmosphere. Those who will be teachers must take 5000:780 Seminar in Curricular and Instructional Studies: Earth Sciences, or equivalent.

**Geophysics**

Equivalents of the geology, cognate science and mathematics requirements for the University's B.S. in geophysics are required.

**Engineering Geology**

This program is for the graduate engineer and geologist who wishes to broaden expertise in the other field. The entering student who has some deficiencies in other engineering or geology may have to satisfy one or more of the following requirements while proceeding with graduate studies. A committee of engineering geology faculty will determine appropriate coursework on an individual basis.

**Environmental Geology**

Equivalents of the University's B.S. degree in natural science (biology, chemistry, geology, mathematics, or physics) or an equivalent of the University's minor in geology and Geology Field Camp 1 & II are required. At least eight credits may be selected from engineering, biology, and geography with the approval of a geology advisor.

**History**

**Master of Arts**

• Students applying for admission to the M.A. program must have a minimum undergraduate grade-point average of 3.0. The applicant's average in history courses should be substantially higher. Applicants must also have completed at least 24 semester or 36 quarter hours in history courses at the undergraduate level. An application to the M.A. program consists of the following:
  - an application form;
  - a letter of intent, stating the applicant's reasons for wishing to pursue graduate work and the fields of history which the applicant intends to study;
  - scores on the Graduate Record Examination, General Aptitude Test;
  - a writing sample, preferably a research paper from a history class;
  - three letters of recommendation, preferably from faculty who know the applicant well;
  - Applicants whose native language is not English must also score at least 580 on the Test of English as a Written Language (TOEFL), at least 240 on the Test of English as a Spoken Language (TSE), and take the Test of Written English (TVE).

• Degree requirements include:
  - satisfactory completion of a minimum of 30 credits of graduate study in history, of which only six may be in individual reading.
  - Concentrated study of three fields; two of which must be chosen from the following:
    - Ancient
    - Medieval
    - Latin America
    - History of Science
    - East Asia
    - Africa

The third field must be chosen from the above history fields or from an approved cognate discipline.
The student must pass written examinations in two of the three fields. The third field requirement will be met by at least seven credits of coursework at the graduate level, completed with a GPA of 3.0.

- 3400:689 Histography
- Twenty-three hours of 600-level coursework, at least 16 credits of which must be in seminars. Seminars must be chosen to satisfy one of the following options.

**Option I**
Three reading seminars and one writing seminar, with the writing seminar paper read and approved by two faculty members.

**Option II**
Two reading and two writing seminar sequences under different professors with the writing seminar paper of the student's choice read and approved by two faculty members.

**Option III**
Two reading seminars, one writing seminar and a thesis read and approved by two faculty members.

## Mathematics and Computer Science

### Master of Science - Mathematics

**Goals:** The program is designed to give students a solid foundation in graduate-level mathematics, provide hands-on mathematics teachers to upgrade their qualifications.

**Administration:** Upon admission to the program, each student will undergo a review. Deficiencies in any mathematical area will add to the number of credits required for graduation. Core requirements already satisfied will be replaced by approved electives.

- **Core requirements:**
  - 3450:610 Advanced Linear Algebra
  - 3450:612 Abstract Algebra II
  - 3450:622 Advanced Calculus II
  - 3450:611 Topics in Algebra
  - 3450:621 Real Analysis I
  - 3450:625 Analytic Function Theory
  - 3450:626 Advanced Combinatorics and Graph Theory
  - 3450:692 Seminar in Mathematics*

A statistics course selected from:
- 3470:500 Probability
- 3470:551 Statistical Inference
- 3470:621 Advanced Probability
- 3470:651 Applied Statistics I
- 3470:652 Applied Statistics II
- 3470:655 or 3470:665

**Electives:** 9-13 credits

### Thesis Option

A minimum of 30 credits is required. All elective courses must be approved by the graduate advisor. An acceptable master's thesis must be completed for 24 credits in 3450:699 Master's Thesis. Before registering for Master's Thesis, the student will meet with an advisory committee for evaluation of the thesis topic and will present a formal plan of development.

### Nonthesis Option

A minimum of 33 credits is required. All elective courses must be approved by the graduate advisor. In addition, the student will generate a project or paper to complete the degree.

* 3450:692 Seminar in Mathematics may be repeated once, for a total of 4 credits.

## Master of Science - Applied Mathematics

Completion of a placement process prior to the beginning of classes in the student's first semester in the program. This process will consist of a review by a graduate faculty subcommittee of the student's competency in Advanced Calculus I and II (3450:621,2) and of his or her background in at least one junior-level or higher course in engineering or physics. If the student fails any part of this review, then that course will be added to the required courses for the student and the total number of credits required for the degree will reflect this.

- **Core:**
  - 3450:510 Advanced Linear Algebra
  - 3450:521 Real Analysis
  - 3450:625 Analytic Function Theory
  - 3450:627 Advanced Numerical Analysis I, II
  - 3450:633 Methods of Applied Mathematics I, II
  - 3450:692 Seminar in Mathematics

### Thesis Option (30-39 credits)

In addition to the placement, review and core requirements, 3-5 credits of approved 500/600 level courses in mathematics (3450), statistics (3470), or computer science (3460), and 2-4 credits in 3450:699 Master's Thesis must be completed. Any graduate-level course may be substituted as an elective provided that this is approved beforehand by the student's advisory committee.

### Nonthesis Option (33-42 credits)

In addition to the placement review and core requirements, 10 credits of approved 500/600 level courses in mathematics (3450), statistics (3470), or computer science (3460), must be completed. Any graduate-level course may be substituted as an elective provided that this is approved beforehand by the student's advisory committee. Additionally, the student must successfully complete a Comprehensive Examination in the courses 3450:621, 625, 627, 633, and 634.

## Master of Science - Computer Science

### Admission Requirements

All applicants for admission to the graduate program in computer science must meet the university requirements for graduate admission as published in Section 3 of the Graduate Bulletin. In addition to these requirements, the applicant must also:

- submit 3 letters of recommendation from individuals capable of evaluating the applicant's potential for success in the program;
- have earned a baccalaureate degree in computer science or a related discipline from an accredited college or university with a GPA of 3.00 or higher in computer science and related courses;
- demonstrate proficiency in the areas of differential and integral calculus, probability and statistics, discrete mathematics, and knowledge of at least one high-level general-purpose programming language, and,
- demonstrate proficiency in the areas of data structures, assembly language, computer organization, operating systems, and the theory of programming languages. A student deficient in one or more of these areas may be granted conditional admission.

The Graduate Record Examination (Apptitude and Advanced Computer Science Test(s)) is recommended.

### Degree Requirements

The curriculum has been designed to follow the guidelines and recommendations of the Association for Computing Machinery for Master's Programs in Computer Science. Most full-time degree candidates admitted into the program will complete the degree requirements in two years. The thesis option requires 30 semester hours of graduate work while the nonthesis option requires 33.

- **Core Courses** required of all students:
  - 3460:535 Analysis of Algorithms

In addition, each student must complete at least one course from each of the following three areas:

- C. Applications: 3460:657, 660, 675, 676.

### Thesis Option (30 credits of graduate work)

24 credits in approved coursework, at least 15 credits of which must be taken at the 600 level. In addition, 3 credits in 3460:698 and 3 credits in 3460:699 Master's Thesis. The thesis must be of publishable quality and must be successfully presented at a public defense moderated by three full-time Graduate Faculty (two of which must be from Computer Science).

### Nonthesis Option (33 credits of graduate work)

30 credits in approved coursework, at least 18 credits of which must be taken at the 600 level. In addition, 3 credits in 3460:698. The student shall complete an independent project supervised by a faculty advisor and approved by a committee consisting of the advisor and a faculty reader. The student must also pass a written comprehensive examination, taking the form suggested by the department.

### Coordinated Program

Coordinated Engineering Applied Mathematics program for the Doctor of Philosophy in Engineering degree between the College of Engineering and the Department of Mathematics and Computer Science

The faculty in the College of Engineering and the Department of Mathematics and Computer Science have agreed to provide a coordinated program, subject to the following conditions, for those graduate students who elect the interdisciplinary field of Engineering Applied Mathematics.

### Admission Requirements

Applicants for the Engineering Applied Mathematics Program must have their graduate application and credentials evaluated by one of the departments in the College of Engineering and the Department of Mathematics and Computer Sci-
Physics

Master of Science

• Complete a minimum of 30 graduate credits of approved courses in physics. Up to six credits of graduate-level electives outside the department may be included in the program. There is no foreign language requirement for this degree.

• A cumulative grade-point average of 3.00 or better for all graduate-level credits applicable toward the degree.

• Complete an approved program of courses which includes the following required courses:

  3650:551 Advanced Laboratory I 3
  3650:615 Electromagnetic Theory I 3
  3650:625 Quantum Mechanics I 3
  3650:641 Lagrangian Mechanics 3
  3650:665 Statistical Mechanics 3
  3650:685 Solid State Physics I 3

A student preparing for further graduate work in a physical science or for academic or industrial employment should include the following courses in the graduate program:

  3650:581,2 Methods of Mathematical Physics I, II 3
  3650:616 Electromagnetic Theory II 3
  3650:626 Quantum Mechanics II 3
  3650:552 Advanced Laboratory II 3

A student preparing for teaching secondary school science should include the following courses in the graduate program:

  3650:500 History of Physics 3
  3650:566 Digital Data Acquisition 3
  3650:600 Workshops (minimum credit) 6

A student must complete at least one of the following three options:

Option A: A written exam covering the field of physics at the advanced graduate level.

Option B: A formal report, based on an original research project, submitted in a form suitable for publication and approved by a physics faculty committee.

Option C: A master's thesis.

• Graduate research participation is strongly encouraged. Up to five credits may be earned in 3650:697 Graduate Research upon the completion of a graduate research project. One additional credit may, upon approval by the department, be permitted in 3650:659 Master's Thesis for the completion of a master's thesis based on such research. A successful thesis may thus account for up to six of the total of 30 graduate credits required.

Interdisciplinary Option: Chemical Physics

The faculties in the Departments of Physics and Chemistry offer a cooperative option leading to the Ph.D. in chemistry for those graduate students wishing to specialize in the interdisciplinary field of chemical physics.

Admission Requirements

Applicants may be admitted with either a baccalaureate or a master's degree in either chemistry or physics. Students pursuing this option are subject to all admission and degree requirements for the Ph.D. in chemistry, as outlined in page 24 of this Graduate Bulletin. The Chemical Physics option is described in detail on page 24.

Students entering the Chemistry Ph.D. program under the auspices of the Physics Department will be expected to have taken some advanced undergraduate chemistry course work (200-level and above), and must be recommended by the chair of the Physics Department. These students must select as research advisor a faculty member in the Physics Department holding a joint appointment in chemistry. Students with principle preparation in physics may be required to audit certain undergraduate prerequisites for graduate chemistry courses.

Political Science

Master of Arts

Admission

Admission is open to students who have completed a four-year undergraduate degree and who fulfill the admission requirements of the Graduate School. Two letters of recommendation at least one from a faculty member who has worked with the student in the past two years, if applicable and a personal statement outlining the expected fit between the student's skills and objectives and the department's programs and resources are required. The Graduate Record Examination (GRE) is recommended, but not required.

The Master of Arts in Political Science allows students to focus their study in one of six concentrations: American Government Institutions, American Linkage Institutions, The Politics of Criminal Justice, International Politics, Comparative Politics, or Political Theory.

Students may also work toward certificates in Applied Politics and Public Policy in conjunction with their graduate studies in Political Science.

Degree Requirements

• Complete 30 credits of graduate work, including 18 credits at the 600 level, as follows:

  Two required core courses:
  3700:600 Scope and Theory of Political Science 3
  3700:601 Research Methods in Political Science 3

  Three additional, departmental seminars, 9 credits (neither independent research, thesis, nor internship is considered a seminar).

Six credits of Topics in Master's Research (3700:698).

Nine additional credits at the graduate level.

• Pass a comprehensive written examination covering one concentration: American Government Institutions, American Linkage Institutions, The Politics of Criminal Justice, International Politics, Comparative Politics, or Political Theory.

• Complete the following writing requirement:

  An Essay of Distinction is a single, article-length, scholarly essay. This writing requirement will encourage our students to learn how to participate in the debates central to our discipline and compile the program with a superb writing sample that can serve as a foundation for continued graduate work, a conference presentation, a published article, or a deliverable policy analysis.

  To complete an Essay of Distinction, students shall take six credit hours of Topics in Master's Research with the chair of the three-member Faculty Advisory Committee. Those credits must be completed in the form of two consecutive three-credit courses (3700:698) taken in the student's third and fourth semesters. The student's Faculty Advisory Committee must approve the topic and completed essay.

Master of Applied Politics

The Master of Applied Politics, in cooperation with the Ray C. Bliss Institute of Applied Politics, is one of the few programs in the United States focusing on practical politics. It is designed for students interested in efforts to influence political decisions. This includes activities to capture elective public office in partisan contests, influencing legislation, and political organization.

Admission

Admission is open to students who have completed a four-year undergraduate degree and who fulfill the admission requirements of the Graduate School. No specific field of undergraduate major is required for admission. The Graduate Record Examination (GRE) is not required. The program is designed to accommodate students taking course work on a part-time basis.

Degree Requirements

• Complete 39 credits of graduate work, including the following:

  Core courses - 27 credits:

  3700:530 Campaign Management I 3
  3700:571 Campaign Management II 3
  3700:572 Campaign Finance 3
  3700:540 Survey Research Methods 3
  3700:600 Scope and Theory of Political Science 3
  3700:601 Research Methods in Political Science 3
  3700:620 Seminar in Comparative Politics 3
  3700:672 Seminar: Political Influences and Organizations 3
  7600:691 Advanced Communication Studies: Communication in Political Campaigns 3

  * Three credits required; additional credits will be counted toward elective credit.

  Elective courses - 12 credits: 18 credits must be at the 600-level selected from the following courses:

  3700:502 Politics and the Media 3
  3700:589 Political Behavior and Electoral Politics 3
  3700:573 Voter Contact and Elections 3
  3700:575 American Interest Groups 3
  3700:576 American Political Parties 3
  3700:620 Seminar in Comparative Politics 3
  3700:630 Seminar in National Politics 3
  3700:698 Seminar: Policy Analysis and Decisions 3
  3700:699 Special Topics in Political Science (lapped focus) 3
  3700:898 Independent Research and Readings (lapped focus) 3
  3980:614 Ethics and Public Service 3
  7800:605 Theories of Argument and Persuasion 3

  Prepare an applied politics portfolio containing:

  - At least two major papers prepared for required courses.
  - An applied politics capstone project assigned by the student's advisor.
  - Pass an oral defense of the applied politics portfolio.
Psychology

Master of Arts

• Fulfill admission requirements of the Graduate School and the following departmental requirements:
  - psychology major or minimally the equivalent of psychology undergraduate minor including a general or introductory course, statistics course, and experimenal psychology course;
  - GPA of 3.0 in psychology courses;
  - Graduate Record Examination, Aptitude and Advanced Psychology Test;
  - three letters of recommendation.

• Course requirements:
  - completion of graduate psychology courses, including the M.A. core courses or equivalents, specialty area required courses, and electives as specified in the department's graduate student manual;
  - a student is required to maintain at least a 3.0 grade-point average in M.A. content courses as well as overall.

• Other requirements:
  - refer to the Department of Psychology Graduate Student Manual for additional guidelines;
  - complete and fulfill general master's degree requirements of the Graduate School.

Thesis Option

Completion of a minimum of credits of graduate work, including thesis, as follows: Applied Cognitive Aging Program, 33 credits; Counseling program, 49 credits; and Industrial/Organizational Program, 41 credits.

Nonthesis Option

Completion of coursework, practicum and examinations (no thesis required), with a minimum of credits of graduate work for each program as follows: Applied Cognitive Aging program: 37 credits; Counseling program, 44 credits; and Industrial/Organizational program, 39 credits.

Public Administration and Urban Studies

Master of Arts in Urban Studies

Admission

Admission is open to students who have completed an undergraduate (bachelor's) degree and whose application is approved by the MA Coordinator. No specific field or undergraduate major is required for admission. The GPA requirements for consideration of full admission are an overall, four-year GPA of 2.8 or greater, or 3.05 for the last 60 credit hours (two years of course work). Provisional admission may be granted for those with an overall GPA between 2.5 and 2.79 or between 2.75 and 3.05 for the final 60 credit hours (two years) of course work. Additionally, applicants must submit the following:

• A copy of their current resume (especially important for in-service students to ascertain their professional experience).
• A personal essay stating why they are seeking admission in the MA program.

Admission will be based on the GPA and competitive evaluation of the standarized test results, essay and resume. If an applicant is deficient in one or two of the areas, he/she may be admitted on a provisional basis depending on GPA. Those admitted provisionally must take 15 credit hours of course work as specified in the department's Master's Handbook. Full admission to the program will be based upon performance in those courses in order to ensure competitive admission, applicants are encouraged to adhere to the following deadlines for receipt in the department of applications. Consideration for admission will be made following those dates depending upon available space in the program.

Basic Program

The degree consists of 33 credit hours of course work divided between an 18 credit hour core and 15 credit hours in an approved specialization. The core is as follows:

3980:600 Basic Quantitative Research 3
3980:610 Advanced Research and Statistical Methods 3
3980:612 History of Urban Development 3
3980:615 Urban Policy and Public Administration 3
3980:616 Urban Economic Growth and Development 3
3980:643 Introduction to Public Policy 3

Specializations:

- Specializations represent career and/or academic fields of interest. Those may be shaped to fit the needs and interests of the student. The specialties listed represent those which involve courses from our curricula and from fields and disciplines that students have pursued in the past. Several of the specializations are noted because they represent existing certificate programs on campus. Students who have other interests should work with their advisor to create a specialization from across the campus that suits their needs. Students should contact the department office to get a list of the courses recommended for inclusion in a specialization.

- Public Sector Management
- Social and Human Services
- Urban Planning
- Non-Profit Administration
- Applied Politics
- Lifespan and Gerontology Education and Technology

Thesis: Students are encouraged to consider the option of a thesis. A maximum of six credit hours of thesis course work can be applied to a specialization.

Master of Public Administration (MPA)

The program in Public Administration is specifically designed to prepare students for a public service career in public management and administration, as well as the management and administration of non-profit organizations.

Admission

Admission is open to students who have completed an undergraduate (bachelor's) degree and whose application is approved by the MPA Coordinator. No specific field or undergraduate major is required for admission. The GPA requirements for consideration of full admission are an overall, four-year GPA of 2.8 or greater or 3.05 for the last 60 credit hours (two years of course work). Provisional admission may be granted for those with an overall GPA between 2.5 and 2.79, or between 2.75 and 3.05 for the final 60 credit hours (two years) of course work. Additionally, applicants must submit the following:

• For students who have an overall, four-year, GPA below 3.0 a standardized test score from the GRE, GMAT, LSAT, or MAT, as appropriate for the area of undergraduate degree.
• A copy of their current resume (especially important for in-service students to ascertain their professional experience).

A personal essay stating why they are seeking admission in the MA program. Admission will be based on the GPA and competitive evaluation of the standardized test results, essay and resume. If an applicant is deficient in one or two of the areas, he/she may be admitted on a provisional basis depending on GPA. Those admitted provisionally must take 15 credit hours of course work as specified in the department's Master's Handbook and based upon the recommendation of that student's advisor. Full admission to the program will be based upon performance in those courses in order to ensure competitive admissions, applicants are encouraged to adhere to the following deadlines for receipt in the department of applications. Consideration for admission will be made following those dates depending upon available space in the program.

- Fall admissions April 15
- Spring admissions October 15
- Summer admissions February 15

Degree Requirements

The number of credit hours required to complete the MPA is 45 or 48, depending upon the background and work experience of the student. Students with little or no work experience in their chosen field of specialization are required to complete an internship. Those students who are exempted from the internship will be required to complete 45 credit hours for the degree. Those who are required to take the internship will be required to complete 48 credit hours.

Core requirements (30 credit hours):

3980:600 Basic Quantitative Research 3
3980:610 Advanced Research and Statistical Methods 3
3980:612 History of Urban Development 3
3980:615 Urban Policy and Public Administration 3
3980:616 Urban Economic Growth and Development 3
3980:643 Introduction to Public Policy 3
3980:614 Ethics and Public Service (capstone class) 3

Specializations:

- Specializations represent career and/or academic fields of interest. Those may be shaped to fit the needs and interests of the student. The specialties listed represent those which involve courses from our curricula and/or...
from fields and disciplines that students have pursued in the past. Several of the specialization are noted because they represent existing certificate programs on campus. Students who have other interests should work with their advisor to craft a specialization from across the campus that suits their needs. Students should contact the department office to get a list of the courses recommended for inclusion in a specialization.

Policy Analysis and Evaluation
Public Sector Management
Community Development
Public Health Administration
Lifespan and Gerontology, Urban Planning

Thesis: Students are encouraged to consider the option of a thesis. A maximum of six credit hours of thesis course work can be applied to a specialization.

Other: Any required course except 3860:699, Master's Thesis, may be wavered on the basis of proficiency in the area covered by the course. The criteria for waiver are as follows:

- Completion of a comparable course in another department in the University.
- Transfer of course credit in a comparable course from another university.
- Proficiency in the area demonstrated by a group of courses or other work done in the area covered by the course.

-J.D./Master of Public Administration
The University offers a joint J.D. and Public Administration program. The title is J.D./M.P.A. To be accepted into the program, a student must meet the admission requirement of the School of Law, the Graduate School, and the Department of Public Administration and Urban Studies.

Degree Requirements
Seventy-six credit hours in law and thirty credit hours in public administration. Under this program a student must take 43 credits of required law courses, 32 credits of core electives, and 30 credits of required public administration courses plus an internship of three credits. (Internship is required of any student without professional administrative experience.) This program reduces the total existing credit hours of the School of Law and Public Administration by nine credit hours (from 85 to 76), while public administration requirements are reduced by 12 credit hours (from 42 to 30).

Sociology

Master of Arts

Thesis Option
Satisfactory completion of 32 semester credits of which at least 21 must be at the 600 level or higher in sociology (excluding 3860:699, 3860:697, 3860:698, and 3860:696). In meeting these requirements the student must:

- Complete five required core courses with at least a 3.00 grade-point average:
  3850:601 Proseminar in Sociology
  3850:604 Research Design and Methods
  3860:631 Social Psychology
  or
  3860:645 Social Organization
  3850:706 Multivariate Techniques in Sociology
  3850:722 Early Sociological Thought

- Complete at least six hours of thesis work (3860:699). No more than six credits will count toward the degree.
- Completion of master's thesis and successful oral defense of thesis.

Nonthesis Option
This degree is intended for the student who wants intensive substantive training in a specialized area. Completion of 32 credits of graduate work with no more than six credits taken at the 500 level. In meeting these requirements the student must:

- Complete four required core courses with at least a 3.00 grade-point average:
  3850:601 Proseminar in Sociology
  3850:604 Research Design and Methods
  3860:631 Social Psychology
  or
  3860:645 Social Organization
  3850:722 Early Sociological Thought

- Completion of at least 15 credits in a contracted specialty area. This area must be defined in consultation with the student's advisor and approved by the Graduate Studies Committee. Courses from other departments may be taken to meet the specialty requirement.
- Pass an oral examination on the specialty area.

Research Paper Option
Satisfactory completion of 32 semester credits of which at least 21 must be at the 600 level or higher in sociology (excluding 3860:699, 3860:697, 3860:698, and 3860:696). To meet these requirements the student must:

- Complete five required core courses with at least a 3.00 grade-point average:
  3860:601 Proseminar in Sociology
  3850:604 Research Design and Methods
  3860:631 Social Psychology
  or
  3850:645 Social Organization
  3850:706 Multivariate Techniques in Sociology
  3850:722 Early Sociological Thought

- Complete at least six hours of Master's Research Paper work (3860:699). No more than six credits will count toward the degree, but a student may register for more than six (6) hours.
- Completion of Master's Research Paper and successful oral defense of paper.

Spanish

Master of Arts

- Thirty-two semester credits of graduate work, which may include a thesis amounting to four credits.

- Requirement: proficiency level in listening, comprehension, speaking, reading, and writing Spanish.

- Second language requirement: completion of 202 with a grade of at least "B" in another language; or a translation from another language. Choice of the second language will be left to the student in consultation with an advisor.

- Final comprehensive examinations: the candidate will be required to submit an essay, and pass an oral exam on the essay.

Statistics

Master of Science - Statistics

- Entrance into the program will require the initial completion of the following prerequisites:

  3460:223 Analytic Geometry-Calculus Ill, four credits, or equivalent.
  3450:312 Linear Algebra, three credits, or equivalent.
  3470:461/561 Applied Statistics I, four credits, or equivalent.

- Core curriculum:

  3470:651 Probability and Statistics
  3470:652 Advanced Mathematical Statistics
  3470:656 Linear Models
  3470:693 Experimental Design
  3470:695 Regression

  Total: 18

Statistical Computer Science option (addition to existing master's program)

- Other required courses:

  3460:501 Fundamentals of Data Structures
  3460:506 Introduction to C and UNIX
  3460:575 Data Base Management
  3470:580 Statistical Computer Applications

  Total: 12

Thesis requirements (30 credits of graduate work)

In addition to the core curriculum, 24 credits in 3470:699 Master's Thesis and 10-12 other approved elective graduate credits must be completed. Successful completion of the comprehensive examinations in the core curriculum.

Nonthesis requirements (33 credits of graduate work)

In addition to the core curriculum, 24 credits in 3470:692 Seminar in Statistics and 13-15 other approved elective graduate credits must be completed. The Statistical Computer Science option may be applied toward the elective courses.

Successful completion of the comprehensive examinations in the core curriculum.
Mission of the College

The College of Engineering at the University is committed to excellence in undergraduate and graduate education as well as excellence in innovative research. The College of Engineering was founded in 1914 and is the second oldest college at the University. The college embraces the departments of Biomedical Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, and Mechanical Engineering. The current research units include the Institute of Biomedical Engineering Research (IBER) and the Microscale Physicochemical Engineering Center (MPEC). During the academic year 1989-90, the college adopted interdisciplinary Procedures for the doctoral program in the college. This interdisciplinary program has led to two additional collaborative programs: Engineering Applied Mathematics (EAM) which is jointly run by the Applied Mathematics Division of the Department of Mathematics and Computer Science in the Buchtel College of Arts and Sciences, and the M.D./Ph.D. program with the Northeastern Ohio Universities College of Medicine (NEOUCOM). In addition, there is also a coordinated program, the Doctor of Philosophy in Engineering at The University of Akron and Youngstown State University. The doctoral program offered by the college is truly interdisciplinary in nature.

Engineering graduate programs are designed to prepare for careers in industry, governmental laboratories, colleges and universities. The current research emphases for the doctoral program is reflected by the focus areas of each of the engineering departments.

The graduate educational missions of the college are to train engineers and scientists to solve state of the art technological issues; develop theory, methodology and necessary experimental skills to address problems that are of state-wide and national interests; provide excellence in presenting their findings via theses, doctoral dissertations and research papers; and where appropriate, train students to be future educators, industrial researchers, or to work on interdisciplinary teams.

DOCTOR OF PHILOSOPHY IN ENGINEERING DEGREE

The Doctor of Philosophy in Engineering is an interdisciplinary doctoral program offered on a collegiate basis.

Admission Requirements

Applicants for the Doctor of Philosophy in Engineering must hold a bachelor's degree from a program that is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology at the time of graduation, or provide satisfactory evidence of an equivalent academic background to the Dean of the College of Engineering.

Applicants with a master of science degree must provide satisfactory evidence of an equivalent engineering baccalaureate background to the Dean of the College of Engineering.

Applicants must submit official undergraduate transcripts, undergraduate grade point average, at least two letters of recommendation, and official results of the verbal, quantitative, and analytical portions of the GRE. Personal statements or descriptions of post-baccalaureate experience that provide a rationale for the proposed graduate study may also be submitted.

Applicants with a bachelor's degree must have a cumulative grade point average of at least 3.0/4.0.

Applicants with a master's degree must have a cumulative graduate grade point average of at least 3.5/4.0.

Applicants whose native language is not English must have a TOEFL score of at least 550 (paper-based) or 213 on the computer-based TOEFL, and also must submit their score on the Test of Written English.

Applicants not satisfying the requirements for Full Admission may be classified either as a Provisional Admission or as a Deferred Admission.

Applicants with a bachelor's degree in a discipline other than engineering shall have completed undergraduate coursework in calculus, differential equations, and have one year of college physics. These students may be required to take additional bridge-up courses depending on their background. Necessary bridge-up coursework will be determined by the admitting department/program graduate committee.

Transfer Credits

A student who has a master's degree from another university or from one of the departments in the College of Engineering may, upon recommendation of the Interdisciplinary Doctoral Committee, transfer up to 24 credits of course work. The course comprising the transfer credits must be identified and itemized on the Plan of Study and must be substantiated by an official transcript from the educational institution that offered the courses.

A student who has completed a non-thesis master's degree, or has graduate credits but has not completed the degree requirements for the master's degree, can transfer a maximum of 24 credits of course work toward the doctoral course requirements.

No more than six credit hours of research or complete thesis credits can be transferred.

Degree Requirements

The University's Academic Requirements (See Academic Requirements in this Graduate Bulletin for the Doctoral Degree and the following College of Engineering's academic requirements for the Doctoral Degree must be satisfied.

• An entering doctoral student will have the chair of the Interdisciplinary Doctoral Committee (IDC) in his/her home department/program.

• Student's plan of study should include 96 credit hours and be in accordance with the guidelines established by the student's admitting department/program.

• A Plan of Study will be established by the IDC satisfying guidelines established by the home department/program.

• Identify an interdisciplinary field of study, a dissertation director, and an Interdisciplinary Doctoral Committee before completion of 18 credits of coursework.

• Pass a departmental Qualifying Examination. The purpose of the qualifying examination is to determine admissibility to the doctoral program and any technical weaknesses.

• Satisfy the language requirement specified by the Interdisciplinary Doctoral Committee.

• Pass a Candidacy Examination. The purpose of the candidacy examination is to test the student's ability to conduct independent research.

• Present an acceptable Dissertations Proposal that describes the proposed research to the Interdisciplinary Doctoral Committee.

• Present and successfully (no "fail" votes) defend the dissertation to the Interdisciplinary Doctoral Committee.

A copy of the Ph.D. in Engineering Program Procedures may be obtained from the office of the Dean of the College of Engineering.

Doctoral Student's Responsibilities

Doctoral students are completely responsible for all aspects of their graduate education. Specifically, these responsibilities include:

• Understanding, adhering to, and implementing the procedures of the Graduate School, as described in The University of Akron Graduate Bulletin, and the Interdisciplinary Doctoral Procedures of the College of Engineering.

• Selecting an interdisciplinary program, Dissertation Director, and Interdisciplinary Doctoral Committee.

• Amending, through the Dissertation Director, all Interdisciplinary Doctoral Committee meetings.

• Initiating, through the Dissertation Director, the forms that monitor their progress toward the doctoral degree.

• Proposing and executing an accepted Plan of Study.

• Proposing a Research Proposal and executing the proposed research.

• Preparing a scientifically acceptable and comprehensive dissertation whose format meets all the accepted standards of the Interdisciplinary Doctoral Committee, the College of Engineering, and the Graduate School.

Interdisciplinary Fields of Study

The proposal to establish a doctoral program in the College of Engineering, which was approved by the Board of Trustees of The University of Akron and the Ohio Board of Regents in 1967-68, defines the four undergraduate departments, Chemical, Civil, Electrical, and Mechanical, as the basic disciplines for the interdisciplinary programs in Environmental Engineering, Materials Engineering, Mechanics, Systems Engineering, and Transport Processes. The objectives of the proposal were to allow doctoral students access to the infrastructure resources of the entire college and permit the interdisciplinary programs to adapt to the changing research and funding environment. Since the approval of the proposal, the interdisciplinary areas have expanded from the original five programs to ten interdisciplinary programs. These interdisciplinary programs are broadly defined as follows:
Graduate Studies

Environmental Engineering includes the study of water and air pollution, environmental health, chemical disposal, waste management, noise control, resource engineering, and appropriate fields of urban planning.

Mechanics includes the theoretical and experimental study of the stresses, strains, and endurance of structures, machines and various materials, mechanics of solids, fluids, solid, and composite materials.

Systems Engineering include the scientific prediction, control, and evaluation of the performance of integrated operational systems, and interaction effects among the components of engineering systems. It includes system analysis and design, operations research, linear and dynamic programming.

Materials Engineering studies the materials from the physical, chemical, and engineering standpoints. Its purpose is to develop a better understanding of the composition, properties, and performance of various materials, and to develop new materials, manufacturing methods, and applications.

Transport Processes include the theoretical and experimental study of the transfer of mass, energy, and momentum to and from engineering systems and processes.

Biomedical Engineering studies the theoretical and experimental application of engineering principles to biomedical problems. Some typical areas of interest are signal and image processing, biomechanics, and biomaterials.

Polymer Engineering combines fundamental engineering principles with the structure and rheological properties of polymers to design and analyze polymer processes and equipment.

Engineering Applied Mathematics applies advanced mathematics to technologically significant engineering problems.

Chemical Reactions and Process Engineering studies chemical reactions, homogeneous chemical reactions, heterogeneous chemical reactions, and catalysis as applied to process engineering.

Microscale Physicochemical Engineering studies small particles, surface science, aggregation, and separation as applied to process engineering.

The interdisciplinary doctoral program has succeeded in providing doctoral students access to the resources of the entire college while providing an economically sound administration for a program that deals with a doctoral population that is much smaller than those for undergraduate or master's degrees.

COORDINATED AND JOINT PROGRAMS

Coordinated Engineering Applied Mathematics program for the Doctor of Philosophy in Engineering degree between the College of Engineering and the Department of Mathematics and Computer Science

Admission Requirements

Applicants for the Engineering Applied Mathematics Program must have their graduate application and credentials evaluated by the College of Engineering. The Admission Requirements for the Doctor of Philosophy in Engineering, as given in the Graduate Bulletin, shall apply to all applicants for the Engineering Applied Mathematics Program.

Degree Requirements

The applicable Degree Requirements for the Engineering Applied Mathematics Program are those given in the Graduate Bulletin under the Section Doctor of Philosophy in Engineering. These degree requirements include passing a Qualifying Examination, identifying a Dissertation Director, establishing an Interdisciplinary Doctoral Committee, completing a formal Plan of Study, satisfying the University's language and residency requirement, passing a Dissertation Examination, presenting an acceptable Dissertation Proposal, writing a dissertation, and publicly and successfully (no "fail" votes) defending the dissertation before the Interdisciplinary Doctoral Committee.

Students in the Engineering Applied Mathematics Program must pass a departmental Qualifying Examination. The participating faculty from the Department of Mathematics and Computer Science will be the student's dissertation director, although this is not necessary. The faculty member from Youngstown State University shall have adjunct status at The University of Akron and qualify for doctoral degree membership.

One-half of the coursework and one-half of the research credits may be taken at The University of Akron, and the remaining one-half of the coursework and research credits may be taken at Youngstown State University. The parity of courses is decided by the faculty on the Interdisciplinary Doctoral Committee when the student submits a proposed Plan of Study. At the Advancement to Candidacy, the Committee recommends official transfer of credits from Youngstown State University to The University of Akron.

Coordinated program for the Doctor of Philosophy in Engineering degree between The University of Akron and Youngstown State University.
The University of Akron and Youngstown State University are engaged in a coordinated program with the objective of facilitating graduate study by engineering students residing in proximity to Youngstown State University. This provides the opportunity and convenience of completing some of the requirements for the Doctor of Philosophy in Engineering at The University of Akron through joint counseling and enrollment at Youngstown State University.

Admission Requirements

When an engineering graduate student at Youngstown State University declares an interest in the joint doctoral program, the student shall prepare a letter of intent, with academic credentials, to the dean of engineering at The University of Akron. The dean of engineering at The University of Akron shall have the graduate faculty in the applicant's discipline evaluate the academic credentials and make a recommendation on the academic acceptability of the applicant. If the recommendation is favorable, the student shall be advised to apply to the Graduate School at The University of Akron for formal admission to the Doctoral Program in the College of Engineering at The University of Akron. The dean of Graduate Studies and Research at Youngstown State University shall be kept informed of the progress of the admission procedure. The applicant from Youngstown State University must satisfy the Admission Requirements for the Doctor of Philosophy in Engineering at The University of Akron.

Degree Requirements

The engineering student from Youngstown State University must satisfy the Degree Requirements for the Doctor of Philosophy in Engineering at The University of Akron subject to the following modifications.

One of the members of the Interdisciplinary Doctoral Committee for the joint doctoral program candidate shall be an engineering faculty member from Youngstown State University and normally would be the student's dissertation director, although this is not necessary. The faculty member from Youngstown State University shall have adjunct status at The University of Akron and qualify for category II graduate faculty membership.

One-half of the coursework and one-half of the research credits may be taken at The University of Akron. The parity of courses is decided by the faculty on the Interdisciplinary Doctoral Committee when the student submits a proposed Plan of Study. At the Advancement to Candidacy, the Committee recommends official transfer of credits from Youngstown State University to The University of Akron.

Joint program for the M.D. and Ph.D. in Engineering degree between the College of Engineering at The University of Akron and the Northeastern Ohio Universities College of Medicine.
The College of Engineering and NEUOCOM provide a coordinated program for those desiring both the M.D. and Ph.D. in Engineering degrees. This program integrates the knowledge and skills acquired by the student in each of the programs. Each individual coordinated degree program is tailored to suit the background and research interests of the student. Additional information may be obtained from The University of Akron Department of Biomedical Engineering or NEUOCOM.

Admission Requirements

Applicants with a bachelor's or master's degree in a discipline other than engineering or in engineering will be required to meet the Admission Requirements for the Doctor of Philosophy Degree in Engineering. Applicants will be required to have completed the following courses and to have taken the MCAT prior to admission into the coordinated M.D. and Doctor of Philosophy in Engineering program:

- Principles of Chemistry I and II
- Organic Chemistry I and II
- Principles of Biology I and II
- Classical Physics I and II
- Statics
The University's Academic Requirements

Applicants with a bachelor's degree must have an overall grade point average of 2.75 or better or meet their score on the Test of Written English (TWE). Applicants whose native language is not English must have a TOEFL score of at least 550 (paper-based) or 213 on the computer-based TOEFL, and also must submit their score on the Test of Written English (TWE).

Applicants who do not satisfy the requirements for Full Admission may be granted Provisional Admission or Deferred Admission.

Degree Requirements

The University's Academic Requirements (See Academic Requirements in this Graduate Bulletin), the following College of Engineering requirements and the department's academic requirements must all be satisfied for the master of science degrees in the College of Engineering.

- Identify a three-member Advisory Committee including a major advisor before completion of 9 credit hours of coursework.
- Complete a formal Plan of Study that is acceptable to the Advisory Committee with a minimum of 24 credit hours of coursework of which no more than 6 credits are special topics courses. The formal Plan of Study may be revised upon approval of the Advisory Committee.
- Successfully (no "fail" votes) defend the thesis before the Advisory Committee, or have the Engineering Report approved by the Advisory Committee, or successfully complete the appropriate department's nonthesis option requirements.

Master of Science in Chemical Engineering

Applicants with a bachelor's degree in a discipline other than engineering shall have completed coursework in calculus, differential equations, have one year of classical physics, and must complete:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4200:200</td>
<td>Material and Energy Balances</td>
<td>4</td>
</tr>
<tr>
<td>4200:225</td>
<td>Equilibrium Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>4200:231</td>
<td>Transport Phenomena</td>
<td>3</td>
</tr>
<tr>
<td>4200:330</td>
<td>Reaction Engineering</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 14

An overall GPA of 3.0 must be maintained for these courses. These undergraduate engineering courses may be taken prior to graduate admission, or concurrently if the student has Full Admission or Provisional Admission and is enrolled for at least 9 graduate credits.

Thesis Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4200:600</td>
<td>Transport Phenomena</td>
<td>3</td>
</tr>
<tr>
<td>4200:605</td>
<td>Chemical Reaction Engineering</td>
<td>3</td>
</tr>
<tr>
<td>4200:610</td>
<td>Chemical Engineering Electives*</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Approved Electives**</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Approved Mathematics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Master's Thesis</td>
<td>6</td>
</tr>
</tbody>
</table>

Total: 30

Ph.D.

- Dynamics
- Strength of Materials (or Material Science)
- Basic Electrical Engineering (or Circuits I & II)
- Calculus I, II, III, and Differential Equations

These departments of study may be revised upon consultation with the Advisory Committee.

Nonthesis Option

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4200:600</td>
<td>Transport Phenomena</td>
<td>3</td>
</tr>
<tr>
<td>4200:605</td>
<td>Chemical Reaction Engineering</td>
<td>3</td>
</tr>
<tr>
<td>4200:610</td>
<td>Classical Thermodynamics</td>
<td>3</td>
</tr>
<tr>
<td>4200:697</td>
<td>Chemical Engineering Report</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Chemical Engineering Electives*</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Approved Electives**</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Approved Mathematics</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 36

*Chemical Engineering students in both degree options are expected to attend and participate in the department's seminars.

**Students without 6 credits in Chemical Engineering are required to take 4200:535, 4200:541.

Five Year BS/MS Chemical Engineering Program

The five-year BS/MS program in Chemical Engineering provides superior undergraduate students with the opportunity to complete an M.S. in Chemical Engineering with one additional year of study beyond their B.S. Chemical Engineering degree at The University of Akron. The program is only available to B.S. Chemical Engineering students at The University of Akron. Applications are accepted in the spring of the junior year.

Master of Science in Civil Engineering

Applicants with a bachelor's degree in a discipline other than engineering shall have completed coursework in calculus, differential equations, have one year of classical physics, and must select and complete undergraduate coursework from one of four undergraduate disciplines. These undergraduate engineering courses may be taken prior to graduate admission, or concurrently if the student has Full Admission or Provisional Admission, and is enrolled for at least 9 graduate credits.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4300:306</td>
<td>Theory of Structures</td>
<td>3</td>
</tr>
<tr>
<td>4300:313</td>
<td>Soil Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>4600:310</td>
<td>Fluid Mechanics</td>
<td>3</td>
</tr>
<tr>
<td>4300:323</td>
<td>Water Supply and Wastewater Disposal</td>
<td>4</td>
</tr>
<tr>
<td>4300:341</td>
<td>Hydraulics</td>
<td>3</td>
</tr>
<tr>
<td>4300:361</td>
<td>Transportation Engineering</td>
<td>3</td>
</tr>
<tr>
<td>4300:401</td>
<td>Steel Design</td>
<td>3</td>
</tr>
<tr>
<td>4300:403</td>
<td>Reinforced Concrete Design</td>
<td>6</td>
</tr>
</tbody>
</table>

Total: 25

Areas of study in the department include structural mechanics, geotechnical, hydraulic, transportation, and environmental engineering.

Thesis Option

Civil Engineering Courses 15
Approved Mathematics or Science 3
Approved Electives 6
Master's Thesis 6
Total 30

Nonthesis Option

Civil Engineering Courses 15
Approved Mathematics or Sciences 3
Approved Electives 12
Engineering Report 2
Total 32

Master of Science in Electrical Engineering

Applicants with a bachelor's degree in a discipline other than engineering shall have completed coursework in calculus, differential equations, have one year of classical physics, and must select and complete undergraduate coursework from one of four undergraduate disciplines. These undergraduate engineering courses may be taken prior to graduate admission, or concurrently if the student has Full Admission or Provisional Admission, and is enrolled for at least 9 graduate credits.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>4400:360</td>
<td>Physical Electronics</td>
<td>3</td>
</tr>
<tr>
<td>4400:361</td>
<td>Electronic Design</td>
<td>3</td>
</tr>
<tr>
<td>4400:363</td>
<td>Switching and Logic</td>
<td>4</td>
</tr>
<tr>
<td>4400:384</td>
<td>Energy Conversion I</td>
<td>3</td>
</tr>
<tr>
<td>4400:385</td>
<td>Energy Conversion Lab</td>
<td>3</td>
</tr>
<tr>
<td>4400:445</td>
<td>Analog Communications</td>
<td>3</td>
</tr>
<tr>
<td>4400:453</td>
<td>Antenna Theory</td>
<td>3</td>
</tr>
<tr>
<td>4400:472</td>
<td>Control Systems II</td>
<td>4</td>
</tr>
</tbody>
</table>

Total: 26

Areas of study in the department include computer engineering, control systems engineering, power systems engineering, electromagnetics, and related areas.

Thesis Option

Electrical Engineering Courses** 16
Approved Mathematics 6
Approved Electives 3
Master's Thesis 6
Total 30

*Chemical Engineering students in both degree options are expected to attend and participate in the department's seminars.

**Students without 6 credits in Chemical Engineering are required to take 4200:535, 4200:541.
Nonthesis Option

Electrical Engineering Courses** 18
Approved Mathematics 6
Approved Electives 9
Total 33

Engineering students pursuing the nonthesis option must pass a graduate level oral comprehensive examination which may be taken after 24 credits have been completed.

*The elective chemical engineering courses may not include more than three credits of 500 level courses.
**The required electrical engineering coursework of 18 credits may not include more than six credits of 500-level courses.

Master of Science in Mechanical Engineering

Applicants with a bachelor's degree in a discipline other than engineering shall have completed coursework in calculus, differential equations, have one year of classical physics, and must select and complete undergraduate coursework from one of four undergraduate disciplines. These undergraduate engineering courses may be taken prior to graduate admission, or concurrently if the student has full or provisional admission, and is enrolled for at least 9 graduate credits.

4600:300 Thermodynamics I 4
4600:301 Thermodynamics II 3
4600:310 Fluid Mechanics 3
4600:315 Heat Transfer 3
4600:335 Analysis of Mechanical Components 3
4600:340 Systems Dynamics and Response 3
4600:380 Mechanical Metallurgy 2
4600:444 Fundamentals of Mechanical Vibrations 3
4600:441 Control System Design 3
Total 27

Main areas of graduate study in mechanical engineering include systems and controls, engineering mechanics, and thermal-fluid sciences. Students in the department are encouraged to take at least one mechanical engineering course outside the main area of interest to develop some breadth in their graduate education.

Thesis Option

Mechanical Engineering Courses* 16
Approved Mathematics 3
Approved Electives 6
Master's Thesis 6
Total 30

Nonthesis Option

Mechanical Engineering Courses* 15
Approved Mathematics 3
Approved Electives 12
Engineering Report 2
Total 32

Master of Science in Engineering

This program is intended for the student whose educational objectives cannot be met by the four departmental master of science programs or those who wish to specialize in biomedical engineering, polymer engineering, or engineering management.

Admissions

Except for students in biomedical engineering and polymer engineering, students should declare in writing to the Dean of Engineering of their intention to study toward the Master of Science in Engineering degree. Upon admission, the dean will appoint an advisory committee consisting of three faculty members who are selected from at least two different departments.

Thesis Option

Engineering Courses 12
Approved Mathematics or Science 3
Approved Electives 9
Master's Thesis 6
Total 30

The thesis must be successfully (no “fail” votes) defended before the Advisory Committee.

Nonthesis Option

Engineering Courses 18
Approved Mathematics or Science 3
Approved Electives 9
Engineering Report 2
Total 32

The engineering report must receive the approval of the Advisory Committee.

Biomedical Engineering Specialization

4600:601 Biomedical Instrumentation 4
4800:611 Biomechanics 3
3100:695 Physiology for Engineers and Lab 5
Approved Electives 15
Master's Thesis 6
Total 33

The thesis must be successfully (no “fail” votes) defended before the Advisory Committee.

Polymer Engineering Specialization*

Polymer Engineering Core 12
Polymer Engineering Electives 11
Approved Engineering and Science Elective 3
Thesis 9
Total 32

The thesis must be successfully (no “fail” votes) defended before the Advisory Committee.

Engineering Management Specialization

This is an evening program which is intended primarily for practicing engineers who are working full-time and wish to upgrade their engineering and management skills. The Engineering Management Report must be approved by the Advisory Committee, of which one member shall be from the College of Business Administration.

Engineering Courses 21
Management Courses 15
Engineering Management Report 2
Total 38

The engineering report must receive the approval of the Advisory Committee.

Required Courses

6200:601 Financial Accounting* 12
6400:602 Managerial Finance** 11
6500:600 Management and Organizational Behavior* 9
6600:600 Marketing Concepts* 6
Elective

Choose three credits of 600 level College of Business Administration courses.

*More advanced graduate business courses shall be required of students who have completed similar undergraduate courses. This determination shall be made by the Assistant Dean and Director of Graduate Business Programs, College of Business Administration. **6200:601 is a prerequisite for 6400:602.
Doctor of Philosophy Degree in the Department of Curricular and Instructional Studies

The Doctor of Philosophy degrees offered by the Department of Curricular and Instructional Studies are designed to meet the needs and interests of persons in pre-K, elementary, middle, secondary, postsecondary, higher education, and other institutions or agencies that might have educational/learning programs. A qualified student can, through consultation with an advisor and within the expertise and resources of the department, design a specialization to meet his/her career objectives.

Program Description

The program is predicated on the belief that an effective instructor evolves from a well-planned program containing exposure in three basic areas:

1. Common core foundational studies
2. A specialization
3. Professional education in Curricular and Instructional Studies
4. Other contributing disciplines (cognate)

With this philosophy in mind, the program provides study in a common core of study, a selected discipline, professional education, and cognate fields. Listed below and of particular significance are the two sequential steps necessary in the program:

1. Written and Oral Comprehensive

These Comprehensive Examinations should be taken after the completion of the first two-thirds of work and prior to the completion of three-fourths of the program with the approval of the student’s advisor. Written comprehensive examinations are offered each semester.

2. Dissertation

The dissertation proposal must receive approval of the Dissertation Committee prior to advancement to candidacy.

Admission Requirements

Admission to the Curricular and Instructional Studies Ph.D. program is limited to a select number of students each Fall or Spring Semester. More candidates apply for admission than the Department has the resources and capacity to admit. Therefore, applying for admission to the doctoral program is no guarantee of admission, and applicants to the program must recognize the possibility of denial. Criteria for admission to the Curricular and Instructional Studies Ph.D. program are as follows:

1. Graduate and undergraduate degrees from accredited universities and in programs considered to offer adequate preparation for the Ph.D. in Curricular and Instructional Studies (Ph.D., Elementary Education; Ph.D., Secondary Education).
2. Acceptable grade point averages in a completed graduate degree (at least a 3.50 GPA on a scale of 4.0).
3. Demonstration of doctoral level writing ability as evidenced by a Miller Analogies Test score of 45 or higher, or a 550 on the verbal portion of the GRE, and a prescribed and evaluated written assignment.

The following statements govern use of the Miller Analogies Test/GRE and a controlled writing sample as part of the Admissions criteria:

a. Applicants who score less than 45 on the MAT or 550 on the verbal portion of the GRE and receive three or more failing evaluations on the controlled writing assignment shall be denied admission to the program.

b. Applicants who score less than 45 on the MAT or 550 on the verbal portion of the GRE but receive passing evaluations on the writing assignment will have their application deferred pending a faculty interview and reevaluation. The MAT may be repeated subject to The Psychological Corporation's rules for repeated testing.

c. Applicants who score 45 or higher on the MAT (or 550 on the verbal portion of the GRE) and receive three or more failing evaluations on the controlled writing assignment shall have their application deferred pending a faculty interview and reevaluation.

d. All doctoral applicants must take the MAT or the GRE. This includes those persons who took the test upon entry into a master’s program.

4. Intended area of specialization is compatible with departmental resources and goals.

5. Obtain faculty sponsorship through completion of the “Agreement to Advise” form that is included with this information.
All doctoral applicants must do the following:

1. Complete all the admission materials, as specified in Requirements and Procedures of the Doctoral Programs in Education by October 1 for Fall admits or March 1 for Spring admits.

2. Complete the Miller Analogies Test or Graduate Record Exam. This includes applicants who may have taken either of their tests as a Master's level applicant.

3. Complete a controlled writing assignment offered the third Saturday in October for Fall and the second Saturday in March.

4. Complete the "Agreement to Advise" form and secure faculty signatures by October 1 for Fall and March 1 for Spring. The major advisor must be from the Department of Curricular and Instructional Studies; the minor advisor must be from the College of Education.

5. If requested by the Department, interview with committee of departmental Graduate Faculty. Candidates may also be judged on depth and breadth of knowledge, pose, thinking ability, ability to communicate verbally, relevant educational work experience, uniqueness, potential success in desired field, and motivation and commitment to a position of educational leadership.

6. In certain cases an applicant may be required to take course work on the graduate level at The University of Akron before a final decision on his/her application for admission is made.

7. Candidates must have at least three years of teaching experience. (This does not apply to postsecondary/technical adult education area candidates.)

Additional Research Competency

In addition to successfully completing the approved program of courses, the Ph.D. student must display competency in one of the following areas. Course work taken to develop the competency may not be applied to the total number of hours required in the Ph.D. program.

a. Foreign Language
   A reading knowledge of one foreign language. The Department will work cooperatively with the Department of Modern Languages to determine that the student does in fact demonstrate the ability to read in a foreign language i.e., a language other than the student's native language and excluding English.

b. Statistics/Research Methods
   Students will successfully complete a minimum of 9 hours of advanced statistics/research methods courses approved by student's advisor.

c. Professional Publication
   The preparation of a research or position paper accepted for publication by a refereed professional journal. The student may serve as senior or co-author. The advisor must file a letter of approval of the published work. This letter shall present the advisor's review of the academic integrity of the published article in terms of adequacy in meeting this requirement. A letter of acceptance for publication shall be considered as published.

Curricular and Instructional Studies Ph.D. Course Requirements

Social/Philosophical Foundations (15)
5100:600 Philosophies of Education (or 602 or 604) 3
5100:620 Psychology of Instruction for Teaching and Learning (or 624 or 5400:505) 3
5100:701 History of Education in American Society (or 703) 3
5100:705 Seminar in Social/Philosophical Foundations of Education 3
5100:723 Teaching Behavior and Instruction (or 721 or 710) 3

Research Foundations (15)
5100:640 Techniques of Research 3
5100:740 Research Design 3
5100:741 Data Collection Methods 3
5100:742 Statistics in Education 3
5100:780 Seminar I: Exploratory/Qualitative 3
5100:801 Seminar, Empirical or Seminar II: Experiential/Historical or Case Study Research or Legal Research and Writing or another approved course 3

Curricular and Instructional Studies Core (15)
5500:800 Professional Doctoral Seminar in Curricular and Instructional Studies 3
5500:890 Seminar in Curricular and Instructional Studies 3
5500:900 Concepts of Curriculum & Instruction 3
5500:905 Seminar in Trends and Issues in Curriculum & Instruction 3

Three additional hours will be selected in the area of Curricular and Instructional Studies with advisor approval.

Area of Specialization: 18 credit hours
Cognate Area Outside of Education: 6 credit hours
Dissertation: 20 credit hours
Total Program: 92 credit hours

Additional coursework taken to develop a competency area may not be applied to the total number of hours required in the Ph.D. program.

Doctoral Programs in Counseling

Collaborative Ph.D. Program in Counseling Psychology

The Collaborative Program in Counseling Psychology allows the students a choice of entry options: one through the College of Education for students with a master's degree and one through the College of Arts and Sciences for students with a baccalaureate degree. Students in both tracks are expected to attain a level of broad scientific competence in the core areas of psychology: the biological, social, cognitive-affective, and theoretical domains of human behavior. Counseling psychology coursework covers the special areas of theories of counseling and psychotherapy, supervision, vocational psychology, ethics, assessment, and research design. Practica and internship experiences are required of students in both tracks and range from skill building in basic psychological assessment and counseling, to actual work with clients, to a year-long, full-time internship in an applied service setting. Students receive exposure to both colleges through shared coursework and faculty involvement with dissertations but must formally enter through one or the other of the colleges.

The American Psychological Association (APA) has conferred accreditation on the Ph.D. Program in Counseling Psychology.

Admission to the Collaborative Program in Counseling Psychology will be handled through the department associated with the student’s chosen emphasis.

Departures from the program may be made only with the approval of the counseling psychology program faculty. Students may be considered for admission to counseling psychology if they have a master's degree in counseling, guidance, and counseling psychology, school psychology, or a related field.

- Psychology Core (3750:610, 620, 630, 640) is required of all students.
- Students register for dual listed courses (3750:5000) under their department code.
- The comprehensive written examination is prepared, administered, and graded by a Comprehensive Examination Committee composed of four faculty members, two from each track. At least one faculty member from each track participates in the oral portion of the Comprehensive Examination.
- Dissertation – at least one faculty member from each track is required on the student’s dissertation committee.
- Internship – 2,000 hours post-master's with 1,700 hours over no more than two years. The internship site must be listed in the Association of Psychology Post-Doctoral and Internship Centers (APPIC) Directory.
- Language and residency requirements are to be completed in accordance with the guidelines from the Graduate School and student’s home department.
- Counseling and Special Education Track requirements:
  - Students may be considered for admission to the Counseling Psychology program through the Department of Counseling and Special Education if they have a master’s degree in counseling, guidance and counseling, psychology, school psychology, or a related field.

Admission Requirements—Education Track Ph.D.

- Undergraduate GPA of 2.75 or above on a 4.00 scale on all undergraduate work completed as part of the baccalaureate degree, or a 3.00 or above on a 4.00 scale on all undergraduate work completed as part of the baccalaureate degree, or a 3.00 or above on a 4.00 scale must have been earned on the last 64 semester hours of undergraduate coursework completed as part of the baccalaureate degree from an accredited college or university. If, in counting back, only part of a semester, quarter, or summer session’s coursework is needed to reach 64 semester hours, courses in that grading period with the highest quality points will be used.
- A 3.25 or above on a 4.00 scale must have been earned on all graduate work completed up to the time of screening. A completed master’s degree is not required to make application, however, a minimum of 20 semester hours of graduate work must be completed prior to the application deadline. Acceptance is contingent upon completion of a master’s degree and submission of a degree conferral transcript. Workshop credits are excluded from all applications.
- Graduate Record Examination General Scores — A minimum combined score of 1100 (verbal and quantitative) is recommended. In addition, the applicant’s Graduate Record Examination Subject Score in Psychology will be considered when the applicant’s materials are evaluated.

Course Requirements
5100:640 Techniques of Research 3
5900:643 Counseling: Theory and Practice 3
5900:644 Tests and Appraisal in Counseling 4
5900:647 Career Development and Counseling Across the Lifespan 3
6000:615 Techniques of Counseling 3
3750:610 Core I: Social Psychology 2
3750:620 Core II: Cognitive Psychology 2
Ph.D. in Guidance and Counseling

The doctoral program in Guidance and Counseling is designed for students who hold a master's degree in counseling or a related field. The program allows the student to choose two specialty areas: (a) Counselor Education and Supervision, and (b) Marriage and Family Therapy. Students in each specialty are expected to attain an advanced level of competence in the core areas of counseling, research, and their specialty. Practicum and internship experiences are required in each specialty. In addition, the cognitive and elective options allow students flexibility in designing a program that is consistent with their career goals. With the proper selection of courses, the program can meet the academic requirements for a Licensed Professional Clinical Counselor in Ohio.

The Graduate Record Examination (General Test) will be used as the qualifying examination. The Ph.D. Program in Guidance and Counseling is accredited by the Council for Accreditation of Counseling and Related Education Programs (CACREP), a specialized accrediting agency recognized by the Council on Postsecondary Education (COAIP). In addition, Marriage and Family Counseling/Therapy has Candidate Status from the Commission on Marriage and Family Therapy Education (COAMFTE) of the American Association of Marriage and Family Therapy (AAMFT).

**Ph.D. in Guidance and Counseling Requirements:**

**Master's Degree**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100:720</td>
<td>Counseling Practicum</td>
<td>12</td>
</tr>
<tr>
<td>5100:785</td>
<td>Doctoral Internship</td>
<td>6</td>
</tr>
<tr>
<td>5100:707</td>
<td>Supervision in Counseling Psychology I</td>
<td>4</td>
</tr>
<tr>
<td>5100:706</td>
<td>Supervision in Counseling Psychology II</td>
<td>4</td>
</tr>
<tr>
<td>5100:710</td>
<td>Theories of Counseling and Psychotherapy</td>
<td>4</td>
</tr>
<tr>
<td>5100:725</td>
<td>Professional Development Seminar</td>
<td>2</td>
</tr>
<tr>
<td>5100:720</td>
<td>Topical Seminar: Guidance and Counseling/Ethical/Legal Issues</td>
<td>3</td>
</tr>
<tr>
<td>5100:712</td>
<td>Principles and Practice of Individual Intelligence Testing</td>
<td>4</td>
</tr>
<tr>
<td>5100:714</td>
<td>Objective Personality Evaluation</td>
<td>4</td>
</tr>
<tr>
<td>5100:755</td>
<td>Assessment Methods and Treatment Issues in Marriage/Family Therapy</td>
<td>3</td>
</tr>
<tr>
<td>5100:710</td>
<td>Topical Seminar: Guidance and Counseling/DSM/IV</td>
<td>4</td>
</tr>
</tbody>
</table>

**Cognate/Electives**
Cognate coursework must be taken outside the College of Education and approved by the major advisor.2

**Dissertation**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5600:899</td>
<td>Doctoral Dissertation</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Minimum Total Semester Credits</td>
<td>120</td>
</tr>
</tbody>
</table>

Normally, a minimum of 60 semester hours must be taken after the student is admitted into the doctoral program in guidance and counseling.

For further program details and specific admission requirements, contact the Department of Counseling and Special Education.

In order to be admitted into the doctoral program, a student must have completed a master's degree in Guidance and Counseling or a master's degree in a related field. Students must have completed graduate coursework in each of the following areas prior to enrolling in courses in the Ph.D. program of Guidance and Counseling: (1) an introductory course in school counseling, student personnel services, community counseling, or marriage and family therapy; (2) tests and appraisal; (3) counseling theories; (4) counseling, group counseling; (7) research in counseling; (8) sexuality.

A minimum of one academic year of full-time internship is required. An internship taken as part of a master's degree program may account for up to 50% of this requirement. If this is the case, the student is required to complete only three semester hours of 5600.899 after admission to the doctoral program.

Selected with the approval of the student's major and the related to the student's specialty area of: (1) Counseling Education; (2) Marriage and Family Counseling/Therapy.

Students entering Marriage and Family Counseling/Therapy are expected to have completed the standard curriculum (master's degree in marriage and family) from an AAMFT accredited program or the equivalent. Those who have not completed the standard curriculum and the accompanying client contact hours will have to complete these in addition to Ph.D. requirements.

**DOCTORATE IN EDUCATIONAL ADMINISTRATION**

The Department of Educational Foundations and Leadership bears a special responsibility for preparing school leaders to the degree that its graduates have unique opportunities to shape organizational goals, to influence the character of educational programs, and to affect institutional performance. The department's programs are based on the strengths of the total College and University. The professional skills of administration are developed as they relate to larger issues of educational policy and educational purpose. At all degree levels there is emphasis upon research and clinical inquiry as a means of enhancing administrative performance.

The curriculum in this Doctor of Education program is delivered in a sequenced, cohort model. The program is designed around four categories of standards found in the National Council for the Accreditation of Teacher Education (NCATE) Curriculum Guidelines for Advanced Programs in Educational Leadership approved by NCATE in October 1995, namely, (1) strategic leadership, (2) instructional leadership, (3) organizational leadership, and (4) political and community leadership. The courses are built upon the 21 domains outlined by the National Policy Board for Educational Administration (NPBEA).

**Behavioral, Historical, and Social-Philosophical Studies (12)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100:705</td>
<td>History of Education in American Society</td>
<td>3</td>
</tr>
<tr>
<td>5100:705</td>
<td>Seminar: Social-Philosophical Foundations of Education</td>
<td>3</td>
</tr>
<tr>
<td>5100:710</td>
<td>Adult Learning, Development and Motivation</td>
<td>3</td>
</tr>
<tr>
<td>5100:721</td>
<td>Learning Processes</td>
<td>3</td>
</tr>
</tbody>
</table>

**Research (22)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100:789</td>
<td>Doctoral Dissertation (student must take at least 10 semester dissertation hours but may count up to 20 toward the degree)</td>
<td>10</td>
</tr>
</tbody>
</table>

Students will select a combination of the following research courses for a minimum of 12 semester hours depending upon their research interests and career goals.

**Educational Administration (29)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100:704</td>
<td>Advanced Study of Educational Leadership</td>
<td>3</td>
</tr>
<tr>
<td>5100:705</td>
<td>Decision Making in Educational Leadership</td>
<td>3</td>
</tr>
<tr>
<td>5100:708</td>
<td>Economics in Education</td>
<td>3</td>
</tr>
<tr>
<td>5100:716</td>
<td>Advanced Evaluation of Educational Organizations</td>
<td>3</td>
</tr>
<tr>
<td>5100:730</td>
<td>Residency Seminar</td>
<td>3</td>
</tr>
<tr>
<td>5100:735</td>
<td>Public and Media Relations in Educational Organizations</td>
<td>3</td>
</tr>
<tr>
<td>5100:745</td>
<td>Seminar: Urban Issues</td>
<td>3</td>
</tr>
<tr>
<td>5100:746</td>
<td>Politics of Education</td>
<td>3</td>
</tr>
<tr>
<td>5100:710</td>
<td>Advanced School Law</td>
<td>3</td>
</tr>
<tr>
<td>5100:795</td>
<td>Internship</td>
<td>5</td>
</tr>
</tbody>
</table>

**Curriculum and Supervision (8)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100:780</td>
<td>Theories of Educational Supervision</td>
<td>3</td>
</tr>
<tr>
<td>5100:794</td>
<td>Advanced Principles of Curriculum</td>
<td>3</td>
</tr>
</tbody>
</table>

**Cognate (12)**
Cognate coursework outside the field of education.

**General Electives (9)**

**Total Program:** 90
Masters Degree

Programs leading to the degree of M.A. in education, M.S. in education, and M.S. in postsecondary technical education are offered.

The student who expects to earn the master's degree for advancement in the field of teaching must meet the general requirements for admission to the Graduate School and must be qualified to hold a standard teaching certificate. Exceptions to this latter requirement will be made for the qualified student who does not wish to teach or perform duties in the public schools provided the student presents or acquires an appropriate background of study or experience. The student who expects to earn the master's degree in guidance and administration also should have had successful teaching experience. A physical examination may be required if and when indicated. Any student who exhibits a deficiency in English or other skills may be required to correct it before recommendation for an advanced degree. The student must receive a pass grade on the relevant Master's Comprehensive Exam if required.

No more than six credits of workshops or institutes can be used to satisfy degree requirements.

The student must complete a minimum of nine credits in foundation studies in education.*

| 5100:600 | Philosophies of Education | 3 |
| 5100:602 | Comparative and International Education | 3 |
| 5100:604 | Topical Seminar in the Cultural Foundations of Education | 3 |
| 5100:620 | Psychology of Instruction for Teaching and Learning | 3 |
| 5100:624 | Seminar: Educational Psychology | 3 |
| 5100:640 | Techniques of Research | 3 |

*Students in some counseling programs may choose other options—see advisor.

Certification/Licensure Standards

New Teacher Education and Licensure Standards for the State of Ohio became effective January 1, 1998. However, students admitted to certification programs under the old 1987 Certification Standards may receive initial Provisional Certificates until September 2, 2002. This is the last date the Ohio Department of Education will issue initial four-year Provisional Certificates. Students failing to complete programs before that date will automatically fall under the new Licensure Standards.

Outreach Master's in Education Programs

The University of Akron's College of Education and Continuing Education and Evening Division believe that improvement in teacher education and continuing professional development is the direct result of collaboration at many different levels and sites with local school personnel. This collaboration evolves through a wide variety of cooperative activities, including master's in education cohort programs currently offered at Akron Public Schools, Medina County Schools, Nortonia City Schools, and Aurora City Schools.

The goal of the outreach master's program is to offer graduate-level courses leading to a master's degree for teachers on-site or via distance learning, specifically in the areas of elementary education, literacy, secondary education, educational administration, school counseling, special education, and instructional technology. For more information, please send e-mail to <outreach@akron.edu>.

Programs

Counseling and Special Education

Selected program offerings in the Department of Counseling and Special Education are available to a person with or without a teaching certificate. Interdisciplinary programs offered lead to certification by the Ohio State Department of Education and/or a master's degree. Program areas include counseling, school psychology, and special education. The person who meets program prerequisites and who has earned a master's degree may matriculate as a non-degree graduate student and pursue a program that leads, in selected areas, to certification.

The Graduate Record Examination (General Test) will be used as the qualifying examination in all Counseling master's programs. The Miller Analogies Test will be used as the qualifying examination in all Special Education master's programs. Admissions to the master's programs will be twice a year (application deadline of March 15 for summer and fall semesters and October 1 for spring semester). The Council for Accreditation of Counseling and Related Educational Programs (CACREP), a specialized accrediting body recognized by the Commission on Recognition of Postsecondary Accreditation (CORPA), has conferred accreditation on the Community, Marriage, and Family, and School Counseling programs. In addition, the Marriage and Family Counseling/Therapy program has Candidate Status from the Commission on Accreditation for Marriage and Family Therapy Education of the American Association of Marriage and Family Therapy.

Classroom Guidance for Teachers

This course of study leads to an expanded knowledge of how guidance and counseling services benefit students and others in public school settings. Note that numerous areas of concentration are available to students. This is not a certification program. Any changes in the agreed-upon program must be approved by the student's advisor.

- Foundations Courses (Select one course from each area)
  - Behavioral Foundations
    5100:620 Psychology of Instruction for Teaching and Learning
    5100:624 Seminar: Educational Psychology
  - Humanistic Foundations
    5600:604 Individual and Family Development Across the Lifespan
    5100:606 Philosophies of Education
  - 5100:604 Topical Seminar in the Cultural Foundations of Education
  - 5600:610 Counseling Skills for Teachers
  - 5600:633 Seminar in School Counseling
  - 5600:685 Field Experience (MUST be taken before or concurrently with 5631)
  - 5610:540 Developmental Characteristics of Exceptional Individuals

Minimum Department Hours Required

- 5610:604 Education and Management Strategies for Parents of Exceptional Individuals

Minimum Department Hours Required

- 9

Area of concentration

An area of concentration with a minimum of six (6) hours may be selected from one of the following areas (the student may, with advisor approval, propose an area of concentration not listed):

- Middle School Education
- Early Childhood Education
- School and Community Relations
- Curriculum and instruction
- Physical Fitness and Well-Being
- Special Education
- Communication in Education
- Family Ecology
- Communicative Disorders
- Outdoor Education

Total Area of Concentration Hours Required

- 6

Minimum Semester Hours Required for Graduation

- 36

Community Counseling

The course of study leads to eventual employment in community mental health centers and a wide variety of other community agencies. Note that a counselor license is usually required by most agencies. (Check counselor licensure elsewhere in this handbook.) Any changes in the agreed upon program must be approved by the student's advisor.

- Foundations (Select one course from each area)
  - Behavioral Foundations
    5600:610 Individual and Family Development
  - Humanistic Foundations
    5600:646 Multicultural Counseling
  - Research
    5100:604 Techniques of Research
    5100:741 Statistics in Education

Minimum Foundation Hours Required

- 9

Required Counseling Department Courses

- Professional Orientation
  5600:600 Seminar in Counseling
  5600:635 Community Counseling
  Subtotal

- Counseling Theory
  5600:643 Counseling Theory & Philosophy
  5600:647 Career Development and Counseling Across the Lifespan
  Subtotal

- Appraisal
  5600:645 Tests and Appraisal in Counseling (prerequisite: 5100:640)
  Subtotal

Graduate Studies 41
Counseling Process

- Counseling Process (all required)
  5600:651 Techniques of Counseling* 3
  5600:653 Group Counseling (prerequisites 5600:651 and 5600:643) 4
  5600:675 Practicum in Counseling**I (prerequisite 5600:653) 5
  Subtotal 12

- Internship
  5600:689 Internship in Counseling (prerequisite 5600:675) 6
  Subtotal 6

Minimum Department Hours Required 35

Specialized Studies (required)

- Counseling and Family Counseling/Therapy
  This course of study leads to eventual employment in family-based mental health settings. Note that in order to practice counseling in Ohio you must possess a counselor license. Any changes in the agreed upon program must be approved by the student's advisor.

- Foundations (select one course from each area)
  - Behavioral Foundations
    5600:648 Individual and Family Development 3
  - Humanistic Foundations
    5600:646 Multicultural Counseling 3
  - Research
    5100:640 Techniques of Research 3
    5100:341 Statistics in Education 3

- Minimum Foundation Hours Required
  Subtotal 9

- Required Counseling Department Courses (all required)
  - Professional Orientation
    5600:600 Seminar in Counseling*** 3
  - Counseling Process
    5600:651 Techniques of Counseling* 3
    5600:653 Group Counseling (prerequisites 5600:651 and 5600:643) 4
    5600:675 Practicum in Counseling (prerequisite 5600:653) 5
    Subtotal 12
  - Internship
    5600:685 Internship in Counseling (prerequisite 5600:675)** 6
    Subtotal 6

Minimum Department Hours Required 38

- Specialized Studies
  - Family Studies
    5600:720 Seminar/Guidance & Counseling/DSM IV 3
    5600:720 Seminar/Guidance & Counseling/Personality & Abnormal Behavior 3
    5600:755 Assessment and Treatment Issues in Marriage and Family Therapy 3
    3400:602 Family in Life-Span Perspective 3
    3400:605 Developmental Parent-Child Relationships 3
  - Sexuality (choose one)
    5600:620 Issues in Sexuality for Counselors 3
    3400:542 Human Sexuality 3
  - Human Development and Individual Differences (choose one)
    3750:620 Abnormal Psychology 4
    3750:530 Psychological Disorders of Children 4

Minimum Specialized Studies Required 13-16

Minimum Hours for Manage and Family Therapy 62-63

*Must sign up with Secretary one year in advance.
**Must sign up with Secretary before year in advance.
***Must sign up with Secretary one year in advance.

School Counseling

This course of study leads to eventual employment as a counselor in the public school system. Note that a school counselor must be certified/licensed as a teacher and possess at least two years of teaching experience. Any changes in the agreed upon program must be approved by the student’s advisor.

- Foundations (select one course from each area)
  - Behavioral Foundations
    5600:648 Individual and Family Development Across the Life Span 3
  - Humanistic Foundations
    5600:646 Multicultural Counseling 3
  - Research
    5100:640 Techniques of Research 3

Minimum Foundation Hours Required 9

- Required Counseling Department Courses
  - Professional Orientation (select one course from each area)
    5600:600 Seminar in Counseling 1
    5600:631 Elementary/Secondary School Counseling 3
    5600:659 Organization & Administration of Guidance Services 3
  - Counseling Theory
    5600:643 Counseling Theory & Philosophy* 3
    5600:647 Career Development and Counseling Across the Life Span 3
  - Appraisal
    5600:645 Tests and Appraisal in Counseling (prerequisite: 5600:640) 4
  - Counseling Process (all required)
    5600:651 Techniques of Counseling* 3
    5600:653 Group Counseling (prerequisites 5600:651 and 5600:643) 4
    5600:675 Practicum in Counseling**I (prerequisite 5600:653) 5
  - Internship
    5600:685 Internship in Counseling (prerequisite 5600:675) 6

Minimum Department Hours Required 35

- Specialized Studies (both required)
  - 5510:540 Developmental Characteristics of Exceptional Individuals 3
  - 5600:621 Counseling Youth At Risk 3

Total Semester Hours Required for Graduation 50

School Psychologist

(admissions temporarily suspended)

- College requirements:
  - 5100:640 Techniques of Research 3
  - 5600:194 Research Project 2
  - 5620:698 Master’s Problem 4-6
  - 5620:699 Master’s Thesis 4-6

- Departmental requirements:
  - 5600:643 Counseling: Theory and Philosophy 3

- Program requirements:
  - 3750:630 Psychological Disorders of Childhood 4
  - 3750:700 Survey of Projective Techniques 4
  - 3750:712 Principles and Practice of Individual Intelligence Testing 4
  - 5100:684 Topics Seminar in the Cultural Foundations of Education 3
  - 5100:624 Seminar in Human Learning 3
Sixth-Year School Psychology Master's Degree and Certification Program

- **Foundations requirements:**
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3
  - 5100:624 Seminar: Educational Psychology 3
  - 5100:640 Techniques of Research 3
  - 5100:741 Statistics in Education 3

- **Professional requirements:**
  - 3750:700 Survey of Projective Techniques 4
  - 3750:530 Psychological Disorders of Childhood 4
  - 3750:712 Principles and Practices of Individual Intelligence Testing 4
  - 5610:627 Psychometry 4
  - 5620:600 Seminar: Role and Function of School Psychology 3
  - 5620:622 Behavioral Assessment 3
  - 5620:610 Educational Diagnosis for the School Psychologist 4
  - 5620:684 Research Project in Special Area 2-3
  - 5620:698 Master's Problem 2-4
  - 5620:699 Master's Thesis 4-6

The student completing the master's program who desires Ohio certification must additionally complete the following listed certification/professional course requirements including the full academic year internship experience:

- 3750:500 Personality 4**
- 5610:543 Developmental Characteristics of Learning Disabled Individuals 4
- 5500:626 Reading Diagnosis for School Psychologists and Support Personnel 3
- 5610:540 Developmental Characteristics of Exceptional Individuals 3**
- 3750:520 Abnormal Psychology 3**
- 5610:603 Cognitive Function Models: Principles of Educational Planning 3
- 5620:600 Seminar I: Professional Topics/Issues in School Psychology 3
- 5620:691 Practicum in School Psychology 3

This course is repeated once for a total of eight credits.

The nine-month, full-time internship, and the associated seminars entail the following registration:

- 5620:630 Internship: School Psychology 3
- 5620:631 Internship: School Psychology 3
- 5620:640 Field Seminar I: Professional Topics/Issues in School Psychology 3
- 5620:641 Field Seminar II: Low Incidence/Related Inquiries 4

The student who does not hold a valid Ohio teaching certificate must additionally complete the following course pattern:

- 5200:630 Elementary School Curriculum and Instruction 2
- 5620:695/696 Field Experience: Master's 3
- 5700:631 Elementary School Administration 3
- 5170:601 Principles of Educational Administration 3

The student completing the above listed program will be recommended for Ohio certification if his/her credit pattern numbers 60 graduate semester credit hours, counting no more than 15 semester hours at the 500 level, and including the 10 hours credit for the internship and the associated intern seminars.

*Program admission is competitive, based upon state internship allocations. Selection procedures and criteria are available upon request by calling the school psychology program director in the Department of Counseling and Special Education. For recommendation for certification as a school psychologist or special education teacher, the master's student must additionally complete the program prescribed under "Certification."*

**Required as part of Special Education master's.

**Special Education**

The 36-hour graduate program in special education is designed for those individuals who currently hold an undergraduate degree in special education. The 36-hour master's program contains no electives. It is designed to provide students with advanced knowledge and skills necessary to work effectively in inclusive schools and other educational settings providing instructional services for individuals with special needs. An inclusive approach is used with emphasis on collaboration/consultation, curriculum design, evaluation/research applications, supervision, and other clinical experiences (see master program for specific courses).

**Prerequisites for professionals who do not hold an undergraduate degree in special education**

Professionals who do not hold an undergraduate degree in special education must take 30 prerequisite hours in special education courses in order to be admitted into the master's program. Individuals already possessing specific coursework will not need to retake them. A review of the individual's previous transcript and coursework will determine the precise prerequisite courses and corresponding hours. The 20 prerequisite hours include the following courses:

- 5610:540 Developmental Characteristics of Exceptional Individuals 3
- 5610:547 Developmental Characteristics of Individuals with Mild/Moderate Educational Needs 3
- 5610:640 Developmental Characteristics of Individuals with Moderate/Intensive Educational Needs 3
- 5610:550 Special Education Programming: Early Childhood 3
- 5610:552 Special Education Programming: Secondary/ Vocational 3
- 5610:553 Assessment in Special Education 3

Students lacking the above prerequisite coursework should apply for the Special Non-Degree admission (SND). Upon successful completion (B or better) of the prescribed prerequisite coursework, students may reapply for admission into the master's program. The prerequisite special education courses may be taken at the same time as the 5100 foundation core, but prior to the required 27 hours of departmental coursework.

A signed program plan specifying the student's program, the sequence of course offerings, and timeline for completion must be completed with the student's advisor upon completion of 9 hours of graduate credit. As part of the program degree requirements, the student must pass a written comprehensive examination. All degree requirements must be completed within 6 years after beginning graduate level coursework at The University of Akron or elsewhere. Completion of the master's program at The University of Akron does not lead to licensure in special education. Additional hours are necessary for teacher licensure in special education as an intervention specialist for mild/moderate educational needs or moderate/intensive educational needs. Upon request from the student, his/her advisor can assist in program planning for licensure.

**Educational Foundations and Leadership**

**Educational Administration**

The Department of Educational Foundations and Leadership offers a master's degree program in general administration which is not directed toward a particular administrative license. With the help of an advisor and approval of the Graduate School, courses may be substituted and/or waived to create specialized options. Requirements of the standard program and examples of two such special programs are listed below:

**General Administration (Standard Program)**

- **Foundation – 12 credits:**
  - 5100:600 Philosophes of Education 3
  - 5100:620 Psychology of Instruction for Teaching and Learning 3
  - 5100:640 Techniques of Research 3

- **Special Education core (27 credits):**
  - 5600:610 Counseling Skills for Teachers 3
  - 5610:691 Seminar Special Education Curriculum Planning 3
  - 5610:692 Supervision of Instruction 3
  - 5610:696 Collaboration and Consultation Skills for Special Educators 3
  - 5610:697 Instruction Models and Strategies 3
  - 5610:698 Research Applications in Special Education 3
  - 5610:699 Seminar: Special Education Issues in Special Education 3
  - 5170:720 Topical Seminar: Educational Administration (Disability Law for Educators) 3

**Total Program** 36

**Option: Student Master's Paper (select one)**

- 5610:694 Research Project in Special Area 3
- 5610:698 Master's Problem 3
- 5610:699 Master's Thesis 3
The Principalship
The Principalship is a program option in educational administration built on two components: the general administration master’s and those post-master’s courses listed below.

Master’s Degree in Educational Administration

- Foundation – 12 credits:
  - 5100:600 Philosophies of Education
  - 5100:604 Topical Seminar in the Cultural Foundations of Education
  - 5100:620 Psychology of Instruction for Teaching and Learning
  - 5100:624 Seminar: Educational Psychology
  - 5102:636 Topical Seminar in Educational Technology
  - 5100:640 Techniques of Research

- Administrative Administration – 15 credits:
  - 5170:601 Principles of Educational Administration
  - 5170:604 School-Community Relations
  - 5170:606 Evaluation in Educational Organizations
  - 5170:607 School Law
  - 5170:608 School Finance and Economics
  - 5170:610 Principles of Educational Supervision

- Educational Administration – 15 credits:
  - 5170:601 Principles of Educational Administration
  - 5170:604 School-Community Relations
  - 5170:606 Evaluation in Educational Organizations
  - 5170:607 School Law
  - 5170:608 School Finance and Economics
  - 5170:610 Principles of Educational Supervision

- Post-Master’s Requirements – 14 credits:
  - 5170:604 Advanced Principles of Educational Administration
  - 5170:606 Decision Making in Educational Administration
  - 5170:607 The Superintendent
  - 5170:795/6 Internship
  - 6900:684 Industrial Relations

Administrative Specialist: Instructional Services (Curriculum, Instruction, and Professional Development)

- Foundation Studies – 12 credits:
  - 5100:600 Philosophies of Education
  - 5100:604 Topical Seminar in the Cultural Foundations of Education
  - 5100:620 Psychology of Instruction for Teaching and Learning
  - 5100:624 Seminar: Educational Psychology
  - 5100:636 Topical Seminar in Educational Technology
  - 5100:640 Techniques of Research

- Administrative Administration – 21 credits:
  - 5170:601 Principles of Educational Administration
  - 5170:603 Management of Human Resources
  - 5170:604 School-Community Relations
  - 5170:606 Evaluation in Educational Organizations
  - 5170:607 School Law
  - 5170:608 School Finance and Economics
  - 5170:707 The Superintendent

- Post-Master’s Requirements – 13 credits:
  - 5170:609 Principles of Curriculum Development
  - 5170:610 Principles of Educational Supervision
  - 5170:613 Administration of Pupil Services
  - 5170:795/6 Internship

Administrative Specialist: Pupil Personnel Administration

- Foundation Studies – 12 credits:
  - 5100:600 Philosophies of Education
  - 5100:604 Topical Seminar in the Cultural Foundations of Education
  - 5100:620 Psychology of Instruction for Teaching and Learning
  - 5100:624 Seminar: Educational Psychology
  - 5100:636 Topical Seminar in Educational Technology
  - 5100:640 Techniques of Research

- Educational Administration – 21 credits:
  - 5170:601 Principles of Educational Administration
  - 5170:603 Management of Human Resources
  - 5170:604 School-Community Relations
  - 5170:606 Evaluation in Educational Organizations
  - 5170:607 School Law
  - 5170:608 School Finance and Economics
  - 5170:613 Administration of Pupil Services
  - 5170:707 The Superintendent

- Post-Master’s Requirements – 16 credits:
  - 5600:651 Elementary/Secondary School Counseling
  - 5600:653 Group Counseling
  - 6600:659 Organization and Administration of Guidance Services
  - 5170:795/6 Internship

Administrative Specialist: School and Community Relations

- Foundation Studies – 12 credits:
  - 5100:600 Philosophies of Education
  - 5100:604 Topical Seminar in the Cultural Foundations of Education
  - 5100:620 Psychology of Instruction for Teaching and Learning
  - 5100:624 Seminar: Educational Psychology
  - 5100:636 Topical Seminar in Educational Technology
  - 5100:640 Techniques of Research

- Educational Administration – 21 credits:
  - 5170:601 Principles of Educational Administration
  - 5170:603 Management of Human Resources
  - 5170:604 School-Community Relations
  - 5170:606 Evaluation in Educational Organizations
**Superintendent Program**

Both teaching and administrative experience is required for the superintendent certification.

- **Foundation Studies** – 12 credits:
  - 5100:600 Philosophies of Education 3
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3
  - 5100:620 Psychology of Instruction for Teaching and Learning 3
  - 5100:624 Seminar: Educational Psychology 3
  - 5100:636 Topical Seminar in Educational Technology 3
  - 5100:640 Techniques of Research 3

- **Educational Administration** – 15 credits:
  - 5100:601 Principles of Educational Administration 3
  - 5100:604 School-Community Relations 3
  - 5100:606 Evaluation in Educational Organizations 3
  - 5100:609 School Law 3
  - 5100:613 Administration of Pupil Services 3

- **Curriculum and Supervision** – 6 credits:
  - 5100:609 Principles of Curriculum Development 3
  - 5100:610 Principles of Educational Supervision 3

- **Post-Master’s Requirements** – 22 credits:
  - 5100:602 Management of Physical Resources 3
  - 5100:603 Management of Human Resources 3
  - 5100:609 School Finance and Economics 3
  - 5100:620 The Principalship 3
  - 5100:704 Advanced Principles of Educational Administration 3
  - 5100:707 The Superintendent 3
  - 5100:796 Internship 4

- **Electives (6 credits)**, to bring the program to a total of 60 graduate semester hours.

**Graduate Studies**

**Educational Foundations (M.A.)**

**Specialized Options:**

- Instructional Technology
- Educational Psychology
- Social/Philosophical Foundations of Education
- Research Methodology and Evaluation

This Master’s degree program area is designed for either the student interested in improving present educational skills or the student interested in educational or instructional positions in business, industry, and social services. The student’s program of study will be determined jointly by the student and advisor. The program consists of:

- College Core Foundation Studies (nine hours)
- Program Requirements for the specialization selected above (minimum of 15 hours)
- Outside Department (minimum of six hours except for Instructional Technology option)
- Master's Comprehensive Examination (electronic portfolio for Instructional Technology)
- Election of master’s thesis (5100:693), or master’s problem (5100:698), or an additional six semester hours of coursework. Students choosing to do a master’s thesis or master’s problem require 30 semester credits to graduate, Students choosing to do only coursework require 36 semester credits to graduate.

**Instructional Technology Option (30-36 hours)**

The graduate program in Educational Foundations emphasizing Instructional Technology has been designed to assist its students in becoming competent, employable professionals, capable of making a significant contribution to the field. The graduate curriculum provides its students with exposure to a wide range of emerging technologies, while still ensuring the basic competencies required of all practitioners. In this way, the program directly addresses the rapid acceleration of changes in the field of interactive and distance learning technologies while still recognizing its roots in instructional design, media, and computer-mediated education.

Master’s degree graduates of the Instructional Technology program have found employment as technology coordinators in school districts, technology resource personnel in K-12 educational institutions, training specialists and instructional designers in business, education, and government, as well as multimedia developers and specialists.

- **Foundation Studies (15 hours)**
  - 5100:600 Philosophies of Education 3
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3
  - 5100:637 Philosophies of Educational Technology 3
  - 5100:620 Psychology of Instruction for Teaching and Learning 3
  - 5100:624 Seminar: Educational Psychology 3
  - 5100:640 Techniques of Research 3

- **Electives (chose 21-27 hours from the following)**
  - 5100:520 Introduction to Instructional Computing 3
  - 5100:512 Design and Production of Instructional Materials 3
  - 5100:500 Workshop: Instructional Technology (may be repeated for up to 6 credits) 3
  - 5100:614 Planning for Technology 3
  - 5100:630 Topical Seminar in Computer-Based Education 3
  - 5100:631 Instructional Design 3
  - 5100:632 Web-Based Learning Systems 3
  - 5100:633 Hypermedia 3
  - 5100:634 Visual Literacy 3
  - 5100:635 Emerging Technologies 3
  - 5100:636 Topical Seminar in Educational Technology (may be repeated for up to 9 credits) 3
  - 5100:695 Field Experience Master’s 3
  - 5100:696 Master’s Technology Project 3
  - 5100:697 Independent Study: Master’s 3
  - 5100:698 Master’s Problem 3
  - 5100:699 Master’s Thesis 4-6
  - 5100:762 Statistics in Education 3
  - 5100:839 Principles of Curriculum Development 3
  - 5500:575 Instructional Technology Applications 3

**Educational Psychology Option (30-36 hours)**

The cognitive theory and research underlie much of the reform movement in education and the allied professions. The graduate program in Educational Foundations emphasizing Educational Psychology emphasizes a strong understanding of cognition, motivation, teaching, learning, and individual differences and is designed to assist students to become more competent practitioners in a wide range of contexts in education and allied professions.

- **Foundation Studies (15 credits)**
  - 5100:600 Philosophies of Education 3
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3

**Higher Education Administration**

**Specialized Option**

All applicants to the program should have previously earned a bachelor's degree. Special admission for concurrent students toward a master's degree and the higher education certificate may be allowed for persons currently employed in higher education. Students interested in admission should first meet with the program coordinator. Persons wishing to pursue a master's degree in Educational Administration-Higher Education Option must, however, also apply to the Graduate School for admission to the program. Applicants wishing to pursue only the certificate program must apply to the Graduate School for admission as a special non-degree student.

- **Foundation studies** – nine credits.

- **Required courses (25 credits):**
  - 5190:500 Introduction to the Study of Higher Education 3
  - 5190:515 Administration in Higher Education 3
  - 5190:521 Law and Higher Education 3
  - 5190:520 Finance and Higher Education 3
  - 5190:526 Student Services and Higher Education 3
  - 5190:527 The American College Student 3
  - 5190:525 Topical Seminar: Higher Education 3
  - 5190:530 Higher Education Curriculum and Program Planning 3
  - 5190:600 Advanced Administrative Colloquium in Higher Education 2
  - 5190:601 Internship in Higher Education 2
  - 5190:602 Internship in Higher Education Seminar 1

  Total Hours Required: 34.

- **Electives:**
  - 5190:628 Organizational and Policy Development in Higher Education 3
  - 5190:625 Instructional Strategies and Techniques for the College Instructor 3
  - 5190:645 Independent Study in Higher Education 1-3
  - 5190:590 Workshop 3-6

  Students must successfully complete a master's comprehensive examination for the Educational Administration-Higher Education Option.
The graduate program in Educational Foundations emphasizing Research, cultural studies in education, history of education, philosophy of education, further doctoral study in anthropology of education, comparative/international education, methodology and evaluation prepares students for careers in research methodology and evaluation.

Social/Philosophical Foundations of Education Option (30-38 hours)

This interdisciplinary graduate program is designed to facilitate professional educators' developing critical, interpretative, and normative perspectives of the interdisciplinary perspectives and other domains. This program includes the academic disciplines of anthropology of education, comparative/international education, cultural studies in education, history of education, philosophy of education, and sociology of education. Students collaborate with their advisors in selecting one or more of the above disciplines to create a graduate program tailored to their needs, interests, and professional aspirations. Students may be either encouraged or required to study with faculty in other departments or institutions to develop interdisciplinary programs and perspectives.

Graduates of the program can earn a Master of Arts in Education degree in preparation for careers in both traditional and non-traditional educational settings and for further doctoral study in anthropology of education, comparative/international education, cultural studies in education, history of education, philosophy of education, and sociology of education. Graduates are more employable in positions that require in-depth understanding of the broader social contexts of educational policy.

- **Foundation Studies (9 credits)**
  - 5100:560 Philosophies of Education 3
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3 (or 5100:620 Psychology of Instruction for Teaching and Learning 3 or 5100:634 Seminar: Educational Psychology 3)
  - 5100:640 Techniques of Research 3

- **Electives (15-21 hours)**
  - 5100:602 Comparative and International Education 3
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3 (may be repeated for up to 9 credits)
  - 5100:637 Philosophies of Educational Technology 3
  - 5100:701 History of Education in American Society 3
  - 5100:703 Seminar: History and Philosophy of Higher Education 3
  - 5100:705 Seminar: Social-Philosophical Foundations of Education 3 (may be repeated for up to 9 credits)
  - 5100:697 Independent Study: Master's 3
  - 5100:698 Master's Problem 3
  - 5100:699 Master's Thesis 46

Research Methodology and Evaluation Option (30 hours)

The graduate program in Educational Foundations emphasizing Research Methodology and Evaluation prepares students for careers in research methodology and evaluation. Employment is typically available in government, military, industry and education. These career positions may involve teaching, conducting evaluative research and consulting in a variety of fields.

- **Foundation Studies (9 credits)**
  - 5100:560 Philosophies of Education 3 (or 5100:560 Topical Seminar in the Cultural Foundations of Education 3 or 5100:604 Psychology of Instruction for Teaching and Learning 3 or 5100:624 Seminar: Educational Psychology 3 or 5100:640 Techniques of Research 3)

- **Electives (15 hours)**
  - 5100:642 Topical Seminar in Measurement and Evaluation: Introduction to Psychometric Techniques 3
  - 5100:647 Topical Seminar in Measurement and Evaluation 3
  - 5100:699 Master's Thesis 46
  - 5100:740 Research Design 3
  - 5100:742 Statistics in Education 3
  - 5100:743 Advanced Educational Statistics 3
  - 5100:798 Research Projects in Special Areas: Advanced Psychometric Techniques and Measurement 3
  - 5100:801* Research Seminar: Multiple Regression, Model Building Data Analysis Procedures 3

Elementary Education

**Elementary Education (M.A.)**

This program leading to a Master of Arts in Elementary Education is for elementary school teachers. Students complete foundation courses in education and in curriculum and instruction, and an area of concentration such as reading, multicultural, middle, or elementary education. As a culminating activity, students apply theory to practice in their area of concentration through creative critical thinking.

- **Foundation Studies – nine credits**
  - 5100:600 Philosophies of Education 3
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3
  - 5100:620 Psychology of Instruction for Teaching and Learning 3

- **Electives (30-36 hours)**
  - 5100:634 Seminar: Educational Psychology 3
  - 5100:640 Techniques of Research 3

- **Outside Department Requirements (6 hours)**
  - 5610:540 Developmental Characteristics of Exceptional Individuals 3
  - 5500:780 Seminar in Curricular and Instructional Studies (Cooperative Learning) 3

**Elementary Education with Certification (M.S.)**

This program is open to highly qualified students who hold the B.A. or B.S. degree in certain fields (see program advisor or department chair). All requirements for certification must be met including the field and clinical/diagnostic experience.

- **Foundation Studies – 10 credits**
  - 5100:600 Philosophies of Education 3
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3
  - 5100:620 Psychology of Instruction for Teaching and Learning 3
  - 5100:642 Topical Seminar in Measurement and Evaluation 3

- **Electives (16 credits)**
  - 5500:575 Instructional Technology Applications 3
  - 5500:650 Field Experience (Section 011) 6
  - 5500:699 Master's Thesis 6

- **36 total hours are required.**

- **A comprehensive exam is required.**

The reading endorsement (or additional endorsements) may be pursued as part of this degree, but coursework beyond the required 36 hours may be necessary in order to be eligible for the endorsements.

**Elementary Education with Reading Option (M.A.)**

This program leading to a Master of Arts in Elementary Education is for elementary school teachers. Students complete foundation courses in education and in curriculum and instruction, and an area of concentration such as reading, multicultural, middle, or elementary education. As a culminating activity, students apply theory to practice in their area of concentration through creative critical thinking.

- **Foundation Studies – 9 credits**
  - 5100:600 Philosophies of Education 3 (or
  - 5100:602 Comparative and International Education 3 or
  - 5100:604 Topical Seminar in the Cultural Foundations of Education 3)

- **Electives (15 hours)**
  - 5100:642 Topical Seminar in Measurement and Evaluation: Introduction to Psychometric Techniques 3
  - 5100:647 Topical Seminar in Measurement and Evaluation 3
  - 5100:699 Master's Thesis 46
  - 5100:740 Research Design 3
  - 5100:742 Statistics in Education 3
  - 5100:743 Advanced Educational Statistics 3
  - 5100:798 Research Projects in Special Areas: Advanced Psychometric Techniques and Measurement 3
  - 5100:801* Research Seminar: Multiple Regression, Model Building Data Analysis Procedures 3

- **Research Seminar: Path Analysis, Multivariate Statistical Techniques 3
- **Research Seminar: Qualitative 3
- **Research Seminar: SAS or SPSS 3
- **Research Seminar: Case Studies 3
- **Independent Study 4**

*Note: Doctoral Research Seminar may be repeated for up to 9 semester hours.*

- **Outside Department Requirements (6 hours)**

- **Concepts of Curriculum and Instruction 3
- **Curriculum and Instruction course in one’s concentration area in curriculum and instruction. 3
- **Seminar in Trends and Issues in Curriculum and Instruction 3
- **Seminar in Trends and Issues in one’s concentration area in curriculum and instruction or a course that cuts across curriculum and instruction (e.g., 5500:570 Multicultural Education in the United States, 5500:575 Instructional Technology Applications, or 5100:614 Planning for Technology). 3**

- **Area of concentration within curriculum and instruction approved by the advisor 15 credits.**

- **Field Experience (Student Teaching) – 11 credits:**
  - 5500:695 Field Experience (Section 011) 6
  - 5500:699 Master’s Thesis 6

- **36 total hours are required.**

**A comprehensive exam is required.**

The reading endorsement (or additional endorsements) may be pursued as part of this degree, but coursework beyond the required 36 hours may be necessary in order to be eligible for the endorsements.
The graduate program in physical education, requiring 33 credits, is designed for those students expecting to earn a master's degree in the Department of Sports Science and Wellness. The outdoor education program, requiring 32 credits, is designed for those students planning to enter public schools, metropolitan, state and national park programs, or private and for-profit programs. With the approval of the advisor, the student may select additional courses and/or workshops related to the graduate program.

**Curricular and Instructional Studies - 6 credits:**

- Concepts of Curriculum and Instruction (3 credits)
- Basic curriculum and instruction course in one's concentration area in curriculum and instruction (3 credits)
- Contemporary Issues in Reading Instruction (3 credits)

**Area of Concentration/Reading - 15 credits:**

- Children's Literature in the Curriculum (3 credits)
- Special Topics in Literacy Education: Teaching Young Adult Literature (3 credits)
- Developmental Reading in the Content Area (3 credits)
- Assessment of Reading Difficulties (3 credits)
- Teaching Reading to Culturally Diverse Learners (3 credits)
- Special Topics in Literacy Education (3 credits)

**Final Research Requirement:**

- Master's Project (6 credits)
- Master's Thesis (6 credits)

Minimum credit hours required: 36-42

**Students completing the Master of Arts degree are required to complete the Master's Comprehensive Examination.**

*Reading endorsement requires 18 credit hours in reading and passage of Praxis II: Introduction to the Teaching of Reading (0230).*

---

**Sports Science and Wellness Education**

The student who expects to earn a master's degree in the Department of Sports Science and Wellness Education is expected to meet the criteria for admission to the Graduate School. In addition, the criteria includes completion of the MAT or GRE prior to acceptance into the Department of Sports Science and Wellness Education.

**Outdoor Education**

The outdoor education program, requiring 32 credits, is designed for those students seeking to work in outdoor or environmental education programs. Students may be assigned an advisor who should be consulted with on a regular basis.

**Curriculum Studies - nine credits:**

- Application of Outdoor Education to the School Curriculum (4 credits)
- Resources and Resource Management for the Teaching of Outdoor Education (4 credits)
- Outdoor Pursuits (4 credits)
- Outdoor Education: Special Topics (2-4 credits)
- Outdoor Education: Rural Influences (3 credits)
- Field Experience (2-6 credits)
- Master's Project (2-4 credits)
- Master's Thesis (4-6 credits)

With the approval of the advisor, the student will select additional courses and/or workshops related to the graduate program.

**Physical Education**

The graduate program in physical education, requiring 33 credits, is designed for post-baccalaureate and in-service physical educators. The theme of the program is "Physical Educator as Decision-maker." Training received in this program comes from two (2) areas: the foundations (6 cr) and the program studies area of physical education (25 cr). The emphasis in this curriculum is to provide answers to the questions "What can I learn about teaching and what decisions do I face as a professional educator?" Successful completion of this program would meet a tenure requirement for Ohio public schools as well as for other states. Each student will be assigned an advisor who should be consulted with on a regular basis. In fact, advisor approval is required on certain course work.

**Required Foundation Courses:**

- Psychology of Instruction for Teaching and Learning (3 credits)
- Seminar: Educational Psychology (3 credits)
- Techniques of Research (3 credits)
- Topical Seminar in the Cultural Foundations of Education (3 credits)
- Psychology of Instruction for Teaching and Learning (3 credits)
- Seminar: Educational Psychology (3 credits)
- Techniques of Research (3 credits)
- Motor Behavior Applied to Sports (3 credits)
- Current Issues in Physical Education (3 credits)
- Tactics and Strategies in the Science of Coaching (3 credits)
- Physiology of Muscular Activity and Exercise (3 credits)
- Statistics: Qualitative and Quantitative Methods (3 credits)
- Motor Behavior Applied to Sports (3 credits)
- Field Experience: Master's (2 credits)
- Master's Problem (2 credits)
- Master's Thesis (2 credits)

**Total Program Credits:** 33

With the approval of an advisor, the student may select additional courses and/or workshops related to the graduate program.

**Option: Exercise Physiology/Adult Fitness**

This graduate program, requiring a minimum of 34 credits, is designed to prepare students for advanced study in exercise physiology and future employment in adult fitness, corporate fitness, and cardiac rehabilitation programs. Special attention is given to knowledge and practical skills necessary for students preparing for American College of Sports Medicine certifications.

**Required Foundation Courses:**

- Psychology of Instruction for Teaching and Learning (3 credits)
- Seminar: Educational Psychology (3 credits)
- Techniques of Research (3 credits)

**Required Department Courses:**

- Human Physiology (4 credits)
- Human Physiology (4 credits)
- Advanced Cardiovascular Physiology (3 credits)
- Physiology of Muscular Activity and Exercise (3 credits)
- Statistics: Qualitative and Quantitative Methods (3 credits)
- Special Topics in Health and Physical Education: Laboratory Instrumentation (3 credits)
- Sports Nutrition (3 credits)

At least two (2) credits from among the following:

- Field Experience: Master's (4 credits)
- Master's Project (2 credits)
- Master's Thesis (2 credits)

**Electives:** Select at least one (1) course from among the following and have advisor approval.

- Introduction to Instructional Computing (3 credits)
- Statistics: Qualitative and Quantitative Methods (3 credits)
- Advanced Education Statistics (3 credits)
- Sports Administration and Supervision (3 credits)
- Motivational Aspects of Physical Activity (3 credits)

**Option: Sport Science/Coaching**

This sport science/coaching graduate program option has been designed to meet the needs of teachers and practicing/prospective coaches. Because this program meets published NASPE National Standards, licensed educators may be able to use this sport science program to meet the master's degree requirement for the second renewal of their professional license; however, these individuals must seek renewal from their local professional development committee.

**Required Foundation Courses:**

- Psychology of Instruction for Teaching and Learning (3 credits)
- Techniques of Research (3 credits)
Secondary Education

Secondary Education (M.A.)

This program leading to a Master of Arts in Secondary Education is for secondary school teachers. Students design their own programs in curriculum and instruction, and an area of concentration such as English, mathematics, or a secondary education area. As a culminating activity, students apply theory to practice in their area of concentration through creative critical thinking.

- Foundation studies – nine credits.
  - 5500:600 Concepts of Curriculum and Instruction or basic curriculum and instruction course in one’s concentration area in curriculum and instruction.
  - 5500:605 Seminar in Trends and Issues in Curriculum and Instruction or seminar in trends and issues in one’s concentration area in curriculum and instruction or a course that cuts across curriculum and instruction (e.g., 5600:570 Multicultural Education in the United States, 5500:575 Instructional Technology Applications, or 5100:614 Planning for Technology).
  - Area of concentration within curriculum and instruction approved by the advisor – 15 credits.
  - 5500:696 Master’s Project or 5500:699 Master’s Thesis – 6 credits.
  - 36 total hours are required.
  - A comprehensive exam is required.

Secondary Education with Licensure (M.S.)

This program, which leads to a Master’s of Science with Licensure, is open to highly qualified students who hold the B.A. or B.S. degree. All requirements for licensure must be met including the 600 hours of field and clinical/clinical experience.

- Foundation Courses (10 credits):
  - 5100:604 Topical Seminar in the Cultural Foundations of Education
  - 5100:620 Psychology of Instruction for Teaching and Learning
  - 5100:642 Topical Seminar in Measurement and Evaluation
  - 5100:695 Field Experience: Master’s

- Curricular and Instructional Studies (19):
  - 5500:575 Instructional Technology Applications
  - 5500:617 Elementary and Secondary Licensure Seminar
  - 5500:618 Advanced Instructional Techniques
  - 5500:619 Instructional and Management Practices
  - 5500:629 Reading Programs in Secondary Schools
  - 5600:780 Seminar: Curricular/Instr. Studies (Reading in K-12 Programs [Mulf-Hagel])
  - 5600:693 Field Experience: Master’s with Licensure
  - 5600:693 Field Experience: Master’s with Licensure
  - 5500:xxx Elective in curriculum or teaching practice approved by advisor – 2 credits.

- Area of Concentration (9):
  - Select 9 credits at 500-level or above.
  - Field Experience (Student Teaching) (7 credits):
  - 5500:694 Field Experience: Classroom Teaching
  - 5500:692 Field Experience: Colloquium

  - A comprehensive examination is required.
  - Total Program: 45 credits.

Postsecondary Technical Education

The major objective of the postsecondary technical education program is to prepare the instructor and other educational personnel for postsecondary educational institutions, industry, and public and private agencies engaged in the education and training of technicians and middle-level workers.

Program

- Foundation Studies – 12 credits:
  - 5100:520 Introduction to Instructional Computing
  - 5100:602 Comparative and International Education

- Topical Seminar in Cultural Foundations
  - 5100:619 Instructional and Management Practices

- 5100:642 Topical Seminar in Measurement and Evaluation

- Professional Technical Education Courses – 16 credits:
  - 5400:501 Learning with Technology (Prerequisite for all courses)
  - 5400:606 Workforce Education for Youth and Adults
  - 5400:520 Systematic Curriculum Design for Postsecondary Instruction
College of Business Administration

Stephen F. Hallam, Ph.D., Dean
James T. Strong, Ph.D., Associate Dean
James R. Emore, D.B.A., Assistant Dean and Director of Undergraduate Programs
James J. Divoky, D.B.A., Assistant Dean and Director of Graduate Programs

Mission Statement

The MBA program is the principle graduate program of UA's College of Business Administration. The objective of the MBA program is to provide a diverse group of men and women with the skills, leadership, vision, and innovative spirit needed to rise to positions of organizational leadership in a global business environment characterized by intense competition and rapid rates of technological change. Graduates of UA's MBA program should possess:

- The analytical and conceptual abilities needed to identify and cope successfully with ambiguous and unstructured business problems;
- A solid grounding in the basic business functions, with an emphasis on the integration of those functions and an understanding of how those functions are linked in the formulation and execution of business strategy;
- A strong ethical perspective, an appreciation of cultural diversity, and an ability to communicate in an effective, persuasive manner;
- An understanding of the legal, political, regulatory, economic and technological environment; and,
- An awareness of the global economy in which business operates and an understanding of the forces that shape competitiveness in that economy.

In order to accomplish these goals, the graduate faculty of the College of Business Administration commits itself to providing a quality graduate business experience. That experience will have a strong professional focus, characterized by team work among students. The faculty is dedicated to creating an intense and stimulating environment that emphasizes the application of theory to real managerial problems and that is permeated by the basic concepts of globalization, ethics, leadership, and planned change.

We recognize that there are many skills students need to acquire in their MBA program in addition to technical competencies in their field of concentration. These include communication and interpersonal skills, analytical reasoning and leadership skills. Eight of these "expanded" competencies to be intertwined throughout the program are as follows:

**Communication**
1. Ability to present views and concepts clearly in writing;
2. Ability to read, critique, and judge the value of written work;
3. Ability to present views and concepts clearly through oral communication.

**Group work and people skills**
4. Ability to understand group dynamics and work effectively with people from diverse backgrounds;
5. Ability to manage conflict;
6. Ability to organize and delegate tasks.

**Critical thinking and creative and effective problem solving**
7. Ability to solve diverse, structured and unstructured problems;
8. Ability to deal effectively with imposed pressures and deadlines.

The basics for most of these skills may be taught in prior bachelor degree programs and are taught in the foundation core courses. Experiences are provided to students throughout the program in a variety of ways to develop these skills. A student's progress is to be documented and evaluated by self evaluation, peer evaluation, and faculty evaluation.

**MASTER'S DEGREE**

The College of Business Administration (CBA) offers graduate programs which lead to the degrees of Master of Business Administration, Master of Science in Management, Master of Taxation, and Master of Science in Accounting. The University has offered programs of study in business since 1939, initially through the Department of Commerce and since 1963 through the College of Business Administration. In 1958, graduate studies in business were begun. Both the under-
graduate and master's programs are accredited by the Association to Advance Collegiate Schools of Business (AACSB).

During its long tradition, the college has sought to fulfill the educational and professional needs of its 450 graduate students, the community and regional business organizations. To meet its urban objectives, the college offers most graduate courses only between 5:20 p.m. and 10:40 p.m. The master's programs are designed to serve those who work full-time and wish to pursue a master's program on a part-time basis. However, many students enroll full-time to complete the master's program in a shorter period.

**Admission**

**Policy**
The applicant must meet one (1) of the following eligibility requirements which are in conformity with the Graduate School and the college's accrediting agency (AACSB):

- Hold a domestic baccalaureate degree from a regionally accredited college or university and have a total index score of 1,000 or more points based upon the overall undergraduate grade-point average (GPA=A=4.0) times 200 plus the Graduate Management Admissions Test (GMAT) score.
- Hold a domestic baccalaureate degree from a regionally accredited college or university and have a total index score of 1,050 or more points based on the junsenior (i.e., last 64 semester or 96 quarter credits) GPA (A=4.0) times 200 plus the GMAT score.
- Hold a degree from outside the United States and have an academic standing of first or high second class, satisfactory evidence of competence in English (i.e., TOEFL score of 550 or above) and a score of at least 450 on the GMAT.

Even though an applicant is eligible for consideration, an offer of admission is not guaranteed. Since staff, facilities and resources are limited; a determination must be made as to the number of applicants who can be adequately served among those eligible. As a result, offers of admission may be limited to only the most qualified. They are as determined by the CBA Graduate Admissions Committee. The committee will consider the following in making decisions: the difficulty of the applicant's undergraduate program; the length of time and activities since graduation; and the percentile ranking on the GMAT. For example, students admitted into the graduate business programs since January 1, 1999, had an average GMAT of 592 and an average point index of 1224.

In rare instances, the applicant who has taken the GMAT but does not meet requirements may be considered for admission. Also, those who have previously been denied admission may, upon presentation of new information, be reconsidered. In either case, the applicant must petition, in writing, the CBA Graduate Admissions Committee giving those reasons relevant to the situation which demonstrate the likelihood of success—the burden of proof is on the applicant.

Under the regulations of the Graduate School, eligible applicants who have been extended an offer of admission by the CBA Graduate Admissions Committee are recommended to the dean of the Graduate School for either "full" or "provisional" graduate status. Those admitted with the classification "provisional" status, who have not attained an overall 3.00 GPA upon the completion of 12 graduate credits will be dismissed from the program.

**Procedure**

GMAT scores should be sent to the Director of Graduate Programs in Business, College of Business Administration, The University of Akron, Akron OH 44325–4805 (Institution code 8239). The GMAT test is administered world-wide and the applicant should register for it sufficiently in advance to the filing of the graduate application. An admission decision will be delayed. GMAT registration deadlines may be obtained from the Graduate Programs in Business Office or the Educational Testing Service, Box 966-R, Princeton, NJ 08560. Those who have taken the GMAT more than five years ago are normally required to retake it.

All applications and accompanying documentation are evaluated simultaneously by the Graduate Admissions Committee (GAC). The GAC meets monthly and the applicant will be informed in writing of the GAC's decision within one week of the meeting.

**Requirements**

To be awarded any master's degree from the College of Business Administration, a student must:

- Meet the time and grade-point requirements of the Graduate School.
- Complete the minimum credits in each of the degree descriptions.
- Complete all course requirements of applicable master's program.

Questions regarding these Policies, Procedures, and Requirements may be sent via email to gradcba@uakron.edu. Further information may be found at the College of Business Administration website: http://www.uakron.edu/cba.

**Transfer Policy**
The College of Business Administration will permit nine credits of comparable graduate credits to be transferred into any of the graduate business programs (10 law school credits into the J.D./M.Taxation program). These credits must be pre-approved by the director of graduate programs in the C.B.A. This nine credit policy also applies to second degree applicants.

**Second Degree**
For a student who has already obtained one master's degree in business, it is possible to pursue another degree in the college provided that:

1. (1) no second M.B.A. is to be obtained; (2) the degree sought is not in the same functional discipline; and (3) the desired program (degree curriculum) is specifically approved in advance by the graduate director of graduate programs in business; and (4) not fewer than 21 new credits are earned for the second degree.

**Master of Business Administration**
The Master of Business Administration program is designed to give the student a general knowledge of the functional areas of business and permit the concentration of study in one of the 13 following areas: accounting, electronic business, entrepreneurship, finance, global sales management, health care management, international business, international finance, management, management of technology, marketing, quality management, or supply chain management. The program consists of 58 graduate credits. Foundation courses may be waived for those who have had recent study in the areas. Foundation and advanced courses can be taken concurrently provided that all prerequisites have been met. Beginning with the Fall 1999 semester, all foundation level courses are available over the World Wide Web. Students should contact the graduate programs office for more information about web-based courses.

- Foundation Courses:
  All are required unless waived at the time of admission. Foundation courses may not be used as concentration or elective courses.
  - 3250:600 Foundation of Economic Analysis
  - 6200:601 Financial Accounting
  - 6400:602 Managerial Finance
  - 6400:655 Government and Business
  - 6500:600 Management and Organizational Behavior
  - 6500:601 Quantitative Decision Making
  - 6500:602 Computer Techniques for Management
  - 6600:600 Marketing Concepts
  - Functional Core (16 credits):
    - 6200:610 Process Analysis and Cost Management
    - 6400:614 Strategic Financial Decision Making
    - 6500:674 Managerial Finance
    - 6600:620 Strategic Marketing Management
    - 6700:696 Special Topics in Professional Development: Leadership
    - 6800:605 International Business Environments
  - Concentration (12 credits):
    - The student must select 12 credits in a field of concentration: accounting, electronic business, entrepreneurship, finance, global sales management, health care management, international business, international finance, management, management of technology, marketing, quality management, or supply chain management.
  - Free Electives (3 credits):
    - The student must select 3 credits of free electives outside the area of concentration. 500-level courses may be used but the student may not count more than 6 credits of 500-level courses in total toward the fulfillment of degree requirements. Approval of Director is required.
  - Integrative (3 credits)
    - 6500:695 Business Strategy and Policy: Domestic and International
  - Program Summary
    - Foundation Core
    - Functional Core
    - Concentration
    - Free Electives
    - Integrative
    - Total Program

If the Foundation Core Courses are all waived, the program is 34 credits in length.

**Concentration in Accounting**
The MBA (Accounting Concentration) consists of 12 graduate credit hours of accounting course work. The School of Accountancy recommends that students select courses that allow them to focus on their concentration in one of the three broad areas of accounting: financial reporting, taxation, or accounting information systems.

**Concentration in Electronic Business (E-Business)**
- Required:
  - 6600:620 E-Business Foundations (3)
  - 6600:622 E-Business Technologies (3)
• Choose 6 credits from the following:
  6200:658 E-Business Risks, Controls and Assurance Services 3
  6400:685 E-Business Legal Issues 3
  6400:686 E-Business Financial Strategy and Planning 3
  6600:636 E-Business Marketing Strategies and Tactics 3

• Recommended free elective (3 credits): select additional course from the list above

Concentration in Entrepreneurship

This program prepares potential entrepreneurs. It provides students with exposure to entrepreneurial activities and builds critical skills needed for entrepreneurial initiatives.

• Required:
  6500:663 Data Analysis for Managers 3
  6500:506 Entrepreneurship 3
  6300:640 Financing the Entrepreneurial Venture 3
  6300:670 Managing Entrepreneurial Growth 3

Concentration in Finance

Choose 12 graduate credits from 6400.

Concentration in Global Sales Management

• Required (complete all 6 credits):
  6600:580 Sales Management 3
  6600:585 Global Sales Strategy 3

• Electives (choose 6 credits from the following):
  6500:656 Management of International Operations 3
  6600:655 Marketing Communications 3
  6600:630 International Marketing Policies 3

Concentration in Health Care Management

• Required:
  6500:683 Health Services Systems Management 3
  6500:685 Data Analysis for Managers 3

• Choose 6 credits from the following:
  6500:582 Health Services Operations Management 3
  6500:588 Special Topics in Health Services Administration 1-3
  6500:686 Health Services Research Project 3
  6500:688 Independent Study in Health Services Administration 1-3
  3000:690 Interdisciplinary Seminar in Life-Span Development and Gerontology 3
  3200:540 Special Topics: Economics (Medical) 3
  3850:615 Epistemological Methods in Health Research 3
  3850:656 Sociology of Health Care 3
  3980:622 Urban Planning and Health Care 3
  4800:630 Biomedical Computing 3
  8200:632 Fiscal Management in Nursing Administration or three graduate credits approved by the Director.

Concentration in International Business

• Required (choose one of the following courses):
  6200:654 Research and Quantitative Methods in Accounting 3
  6400:650 Techniques of Financial Analysis 3
  6500:662 Applied Operations Research 3
  6500:683 Data Analysis for Managers 3
  6600:640 Business Research Methods 3

• Plus any 9 credits in International Business:
  6800:630 International Marketing Policies 3
  6800:685 Multinational Corporations 3
  6800:680 Seminar in International Business 3
  6900:697 Independent Study in International Business 1-3
  6200:680 International Accounting 3
  6400:681 Multinational Corporate Finance 3
  6400:691 International Markets and Investments 3
  6500:686 Management of International Operations 3
  6500:655 International Human Resource Management 3
  6500:661 Comparative Systems of Employee and Labor Relations 3

International Business students must ALSO select one of the following options:

1. Foreign Language Option: demonstrate reading and conversational proficiency in a language other than English.

2. Cross-Cultural Option: select one course (3 credits) from the following courses.*
  3250:550 Comparative Economic Systems 3
  3250:590 Economic Development and Planning for Underdeveloped Countries 3
  3260:670 International Monetary Economics 3
  3260:671 International Trade 3
  3260:530 Development Planning 3
  3260:633 Comparative Planning 3
  3400:516 Modern India 3
  3400:573 Latin America: The Twentieth Century 3
  3400:576 Mexico 3
  3700:505 Politics in the Middle East 3
  3700:512 Global Environment Politics 3

*Cross-cultural courses may be used for free elective credits.

Concentration in International Finance

This program prepares students for careers in international finance with emphasis in corporate, banking or investment areas. With the globalization of business, international finance has emerged as a major program for students interested in international business operations.

• Required (9 credits)
  6400:681 Multinational Corporate Finance 3
  6400:691 International Markets and Investments 3
  6400:536 International Banking 3

• Choose three credits from the following:
  6400:633 Management of Financial Institutions 3
  6400:645 Investment Analysis 3
  6400:647 Derivatives 3
  6400:649 Portfolio Management 3
  6400:676 Management of Financial Structure 3
  6400:678 Capital Budgeting 3
  6400:650 Techniques of Financial Analysis 3

Concentration in Management

• Required:
  8500:682 Applied Operations Research 3
  6500:693 Data Analysis for Managers 3

• Choose 9 graduate credits from 6500. No more than 6 credits at the 500 level.

Concentration in Management of Technology and Innovation

This program focuses on enterprise-wide management of technology and innovation in organizations. Value is added by a holistic integration of intellectual capital, manufacturing agility, new product development, knowledge management, and other competencies.

• Required:
  6500:656 Management of International Operations 3
  6500:692 Applied Operations Research 3
  6500:663 Data Analysis for Managers 3
  6500:665 Management of Technology 3
  6500:669 Policy Management Decisions 3
  6500:540 Product and Brand Management 3

• Recommended free elective (3 credits):
  Select one course from the following courses:
  6500:608 Entrepreneurship 3
  6500:575 Business Negotiation 3
  6500:640 Management Information Systems 3
  6500:650 Fundamentals of Human Resource Administration 3
  6500:678 Project Management 3

Concentration in Marketing

• Required:
  6600:640 Business Research Methods 3

• Choose 9 credits from the following:
  6600:640 Product and Brand Management 3
  6600:550 Strategic Retail Management 3
  6600:630 Marketing of Services 3
  6600:650 Consumer Behavior 3
  6600:655 Marketing Communications 3
  6600:670 Competitive Business Strategy 3
  6600:680 Applications of Marketing Theory 3
  6600:630 International Marketing Policies 3

Concentration in Supply Chain Management

• Required:
  6500:675 Supply Chain Management 3
  6500:662 Applied Operations Research 3

• Choose 6 credits from the following:
  6500:676 Management of Production and Operations 3
  6600:678 Project Management 3
  6600:673 Quality and Productivity Techniques 3
  6500:651 Productivity and Quality of Workforce Issues 3
  6500:642 Systems Simulation 3
  6500:641 Data Management and Communication 3

or three graduate credits approved by the Director.
Master of Science in Accountancy

The Master of Science in Accountancy (MSA) program allows students to concentrate their study in one of two areas: Professional Accounting or Accounting Information Systems. The Professional Accounting option is designed to provide students with the background that will enable them to sit for the Uniform CPA Examination under the Ohio 150-Hour Legislation. The Professional Accounting option allows students without an undergraduate degree in accounting to combine their undergraduate interests with professional accounting credentials. The Accounting Information Systems option is designed to provide students, who have an undergraduate background in accounting or equivalent, with substantive knowledge and skills in the area of information systems risk assessment, control, and assurance services. Given the rapid diffusion and ease of use of computer technologies, knowledgeable and well-educated accountants and information systems auditors are needed to ensure that effective controls are in place to maintain integrity and minimize risks in information systems.

- Foundation Courses:
  - 6200:600 Marketing Concepts 3
  - 6400:602 Managerial Finance 3
  - 6500:600 Management and Organizational Behavior 3
  - 6200:601 Financial Accounting 3
  - 6200:603 Business Systems with Processing Applications 3
  - 6500:601 Quantitative Decision Making 3
  - 6400:623 Legal Aspects of Business Transactions 3
  - 3250:600 Foundations of Economic Analysis 3

*Foundation courses will be waived for students with recent study in the subject areas.

- Required of all MSA Students:
  - 6200:655 Advanced Information Systems 3
  - 3300:675 Writing for MBAs 3
  - 6200:660 Information Systems Audit and Control Project** 3

**Students who elect the AIS option must choose 6200:660.

MSA Students will select either the Professional Accounting option or the Accounting Information Systems option.

Professional Accounting (PA) Option

- Required of MSA (PA) students without undergraduate degrees in Accounting:
  - 6200:621 Corporate Accounting and Financial Reporting I 3
  - 6200:622 Corporate Accounting and Financial Reporting II 3
  - 6200:610 Process Analysis and Cost Management 3
  - 6200:627 Survey of Federal Taxation 3
  - 6200:620 Advanced Accounting I 3
  - 6200:531 Taxation II 3
  - 6200:540 Auditing 3
  - Electives: two 600-level non-accounting courses 6

The advanced program for students with non-accounting undergraduate degrees consists of 33 hours, of which 27 are required and 6 are elective. For a student entering with no business background the total program, including foundation course work, is 57 hours.

- Required of MSA (PA) students with undergraduate degrees in Accounting:
  - 6200:637 Advanced Accounting Theory 3
  - 6200:531 Taxation II** 3
  - 6200:520 Advanced Accounting 3
  - 6200:540 Advanced Auditing 3
  - Electives: one 600-level accounting courses 3
  - Electives: three, not more than one of which may be at the 500 level 9

*Students who have taken 6200:431 as undergraduates will select another 600-level tax class.

**Students who have taken 6200:420 as undergraduates will select another 500- or 600-level accounting elective. The Advanced program for undergraduate accounting majors consists of 30 hours of which 18 are required and 12 are electives.

Accounting Information Systems (AIS) Option

An undergraduate degree in accounting or equivalent from an accredited college or university is required to pursue this option. Students who are admitted into this option will have completed prior course work in the following areas in their undergraduate accounting or equivalent programs:

- Accounting Information Systems (at least 3 credits)
  - Intermediate Accounting
  - Auditing (at least 3 credits)
  - Cost and Management Accounting (at least 3 credits beyond principles)

- Required of MSA (AIS) students:
  - 6200:606 Applications Development for Financial Systems 3
  - 6200:607 Financial Data Communications and Enterprise Integration 3
  - 6200:615 Enterprise Resource Planning and Financial Systems 3
  - 6200:658 E-Business Risks, Controls, and Assurance Services 3
  - 6200:659 Assurance Services with Data Warehousing and Data Mining 3
  - 6500:620 E-Business Foundations 3
  - 6500:622 E-Business Technologies 3
  - 6500:605 Business Applications Development 3

Including the 6 credits of required courses for all MSA students, students with an undergraduate degree in accounting or equivalent will complete the AIS option in 33 credits.

Master of Taxation

The Master of Taxation Program is a professional degree designed to provide intensive training for individuals planning to enter the field and for experienced accountants and attorneys.

The program provides a framework of conceptual, technical and professional knowledge that will assist students in developing expertise needed to examine and understand many aspects of the tax structure. Through an integrated curriculum with emphasis on tax concepts, substantive knowledge of federal and state taxation, tax research, communication skills, and tax planning, students develop an ability to identify and solve tax problems.

The Master of Taxation curriculum consists of a set of foundation courses and a set of required taxation courses. A minimum of 30 semester credits is required for the degree. Foundation courses may be waived for those who have had recent study in the subject areas.

- Foundation Courses:
  - 6200:601 Financial Accounting 3
  - 6200:621 Corporate Accounting and Financial Reporting I 3
  - 6200:622 Corporate Accounting and Financial Reporting II 3
  - 6200:623 Legal Aspects of Business Transactions 3
  - 6200:530 Taxation I 3
  - 6200:531 Taxation II 3
  - 6200:628 Basic Tax Research 2
  - 6200:631 Corporate Taxation I 3
  - 6200:632 Taxation of Transactions in Property 3
  - 6200:633 Estate and Gift Taxation 3

- Electives: 19 credits of graduate taxation courses, selected from the list below:
  - 6200:641 Taxation of Partnerships 3
  - 6200:642 Corporate Taxation II 3
  - 6200:643 Tax Accounting 2
  - 6200:644 Income Taxation of Decedents, Trusts, and Estates 3
  - 6200:645 Advanced Individual Taxation 3
  - 6200:646 Consolidated Tax Returns 2
  - 6200:647 Qualified Pension and Profit-Sharing Plans 3
  - 6200:648 Tax Practice and Procedure 2
  - 6200:649 State and Local Taxation 3
  - 6200:650 Estate Planning 2
  - 6200:651 United States Taxation and Transnational Operations 2
  - 6200:652 Tax Exempt Organizations 2
  - 6200:653 Business Planning 2
  - 6200:654 Independent Study in Taxation 1-3
  - 6200:656 Nonqualified Executive Compensation 2
  - 6200:661 Advanced Tax Research and Policy 3
  - 6200:660 Seminar in Taxation 3
  - 6200:693 Selected Topics in Taxation: Limited Liability Companies 3
  - 6500:602 S Corporations 3
  - 6500:603 Mergers and Acquisitions 2
  - 6500:604 Advanced Partnership Tax Planning 2

Total Required Taxation Courses 30-48

In exceptional situations, subject to the approval of the Chair of the G.W. Dave­rio School of Accountancy, up to six credits of approved graduate College of Business Administration courses may be allowed as electives.

Master of Science in Management

The Master of Science in Management program allows students to concentrate their advanced study in one of the two areas: human resource management or information systems management. Because of the complex nature of these specialties, they are not normally offered as options in traditional MBA programs. They are designed for individuals who know what they want to do or to help them apply what they already know more effectively. For example, computer science majors may choose to concentrate in information systems while psychology majors would benefit from the human resource management option. The introductory coursework for this program is termed a foundation core and consists of 24 credits which may be waived if the student has completed prior study in the area. The remaining 33 credits of coursework consists of 12 credits of general management coursework, 18 credits of specialization courses and one 3-credit free elective. If all foundation courses are waived, the program is 33 credits in length.

- Foundation Core:
  - All are required unless waived at time of admission:
    - 3250:600 Foundations of Economic Analysis 3
    - 6200:601 Financial Accounting 3
    - 6400:602 Managerial Finance 3
    - 6400:605 Government and Business 3
    - 6500:600 Management and Organizational Behavior 3
Joint Programs
The School of Law and the College of Business Administration (CBA) offer a joint program in legal and administrative studies (J.D./M.B.A.), a joint program in legal and taxation studies (J.D./M.Tax), and a joint program in legal and human resource studies (J.D./M.S.M.). These combinations are open to the student preparing for a career in such areas as corporate law, tax accounting, human resource management or legal practice in government. The amount of time required to complete a joint degree program is shorter than the required to complete both programs independently. To pursue either one of these cooperative programs, the student must apply to and be accepted by both the School of Law and the Graduate School. The student should contact each school independently for information concerning admission criteria and procedures for further information on School of Law admissions, write: Director of Admissions, School of Law, The University of Akron, Akron, OH 44325-2901. A baccalaureate degree is required.

Degree Requirements
A student is required to fulfill the requirements of the School of Law, 87 credits, which includes 10 credits transferred from the CBA. The requirements of the CBA may be met by fulfilling the requirements previously listed which include the common body of knowledge (foundation) courses (unless waived by degree of prior undergraduate credits earned), and 25 credits for M.B.A. (24 for the M.S.M.-HR) of advanced courses in the CBA plus nine credits transferred from the School of Law. The Master of Taxation program consists of 20-24 credits of advanced courses in the CBA plus 10 credits transferred from the School of Law. The reciprocal acceptance of course credits by each school is the essence of the joint programs. All law courses used to fulfill CBA requirements must be approved by the director of Graduate Programs in Business prior to completion. To earn both degrees, a total of 97 (J.D./M.Tax), 102 (J.D./M.B.A.), or 101 (J.D./M.S.M.-HR) credits is required, depending on the master's program pursued. More credits may be required for the master's degree if foundation courses are required.

Upon the approval of the director of Graduate Programs in Business, 12 credits of School of Law courses may be applied toward the Master's of Taxation degree. No more than six credits from the School of Law may be in non-tax courses. The other four credits taken in the School of Law must be in tax courses which substitute for equivalent tax courses in the CBA.

J.D./M.B.A. students may transfer nine credits of School of Law courses into the M.B.A. program. Six credits must be in their area of concentration and must be selected from the courses listed below. Related courses not listed under concentrations may transfer with approval of the director of graduate programs in Business Administration. Three credits of free electives may be chosen from other business-related law courses and must be approved by the director of graduate programs in Business Administration.

J.D./M.S.M.-HR students may transfer nine credits of School of Law courses into the M.S.M. program. Six credits must be in their area of concentration and must be selected from the courses listed below. Three credits of free electives may be chosen from other business-related law courses and must be approved by the director of graduate programs in Business Administration.

Law Courses to be used as MBA Concentration Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>9200:639</td>
<td>Estate and Gift Taxation</td>
<td>3</td>
</tr>
<tr>
<td>9200:640</td>
<td>Individual taxation</td>
<td>3</td>
</tr>
<tr>
<td>9200:641</td>
<td>Corporative Taxation</td>
<td>3</td>
</tr>
<tr>
<td>9200:642</td>
<td>Taxation of Partnerships</td>
<td>3</td>
</tr>
<tr>
<td>9200:643</td>
<td>Qualified Pensions and Profit Sharing</td>
<td>3</td>
</tr>
<tr>
<td>9200:644</td>
<td>Wills, Trusts and Estates I, II</td>
<td>3</td>
</tr>
</tbody>
</table>

Finance (Choose 6 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>9200:629</td>
<td>Commercial Law I</td>
<td>3</td>
</tr>
<tr>
<td>9200:630</td>
<td>Bankruptcy Law</td>
<td>3</td>
</tr>
<tr>
<td>9200:631</td>
<td>Estate and Gift Taxation</td>
<td>3</td>
</tr>
<tr>
<td>9200:632</td>
<td>Land Use Planning</td>
<td>3</td>
</tr>
<tr>
<td>9200:633</td>
<td>Securities Regulation</td>
<td>3</td>
</tr>
<tr>
<td>9200:634</td>
<td>Special Problems in Estate Planning</td>
<td>3</td>
</tr>
<tr>
<td>9200:635</td>
<td>Qualified Pensions and Profit Sharing</td>
<td>3</td>
</tr>
<tr>
<td>9200:636</td>
<td>Wills, Trusts and Estates I, II</td>
<td>3</td>
</tr>
<tr>
<td>9200:637</td>
<td>International Investments</td>
<td>3</td>
</tr>
</tbody>
</table>

International Business (Choose 6 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>9200:649</td>
<td>International Law</td>
<td>3</td>
</tr>
<tr>
<td>9200:650</td>
<td>International Trade</td>
<td>3</td>
</tr>
<tr>
<td>9200:651</td>
<td>International Investments and Commercial Transactions</td>
<td>3</td>
</tr>
</tbody>
</table>

Management (Choose 6 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>9200:652</td>
<td>Equal Opportunity Law</td>
<td>3</td>
</tr>
<tr>
<td>9200:653</td>
<td>Labor Law and Collective Bargaining</td>
<td>3</td>
</tr>
<tr>
<td>9200:654</td>
<td>Employment Law</td>
<td>3</td>
</tr>
<tr>
<td>9200:655</td>
<td>Lawyer as Negotiator</td>
<td>3</td>
</tr>
<tr>
<td>9200:656</td>
<td>Wills' Compensation</td>
<td>3</td>
</tr>
<tr>
<td>9200:657</td>
<td>Seminar in Business Planning</td>
<td>3</td>
</tr>
<tr>
<td>9200:658</td>
<td>Labor Law</td>
<td>3</td>
</tr>
</tbody>
</table>

Marketing (Choose 6 credits)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>9200:659</td>
<td>Commercial Law I</td>
<td>3</td>
</tr>
<tr>
<td>9200:660</td>
<td>Lawyer as Negotiator</td>
<td>3</td>
</tr>
<tr>
<td>9200:661</td>
<td>Media Law</td>
<td>3</td>
</tr>
<tr>
<td>9200:662</td>
<td>Parent Law</td>
<td>3</td>
</tr>
<tr>
<td>9200:663</td>
<td>Seminar in Product Liability</td>
<td>3</td>
</tr>
<tr>
<td>9200:664</td>
<td>Sports and Entertainment Law</td>
<td>3</td>
</tr>
</tbody>
</table>

Law Courses to be used as MSM-HR Concentration Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>9200:657</td>
<td>Equal Opportunity Law</td>
<td>3</td>
</tr>
<tr>
<td>9200:658</td>
<td>Labor Law and Collective Bargaining</td>
<td>3</td>
</tr>
<tr>
<td>9200:659</td>
<td>Employment Law</td>
<td>3</td>
</tr>
<tr>
<td>9200:660</td>
<td>Lawyer as Negotiator</td>
<td>3</td>
</tr>
<tr>
<td>9200:661</td>
<td>Seminar in Workers' Compensation</td>
<td>3</td>
</tr>
<tr>
<td>9200:662</td>
<td>Labor Law</td>
<td>3</td>
</tr>
</tbody>
</table>

Graduate Studies

53

6600:601 Quantitative Decision Making 3
6600:602 Computer Techniques for Management 3
6600:603 Marketing Concepts 3

• Management Core Courses (12 credits):
6600:640 Management Information Systems 3
6600:643 Data Analysis for Managers 3
6600:652 Organizational Behavior 3
6600:653 Organizational Theory 3
6600:662 Applied Operations Research 3
6600:670 Operations Management 3

• Free Elective (3 credits):
The student must select 3 credits of free electives from outside the area of concentration. A 500 level course may be used but the student may not count more than 6 credits of 500 level courses in total toward the fulfillment of degree requirements. Approval of Director is required.

Options:
Choose a concentration from the following:

Information Systems Management (ISM)

• ISM Required Concentration Courses (12 credits)
6600:641 Business Database Systems 3
6600:643 Analysis and Design of Business Systems 3
6600:648 Management of Telecommunications 3
6600:646 Advanced Management Information Systems 3

• ISM Restricted Electives (6 credits)
6600:665 Business Applications Development* 3
6600:666 E-Business Foundation 3
6600:667 E-Business Technologies 3
6600:668 Systems Simulation 3
6600:669 Knowledge Management 3
6600:670 Process Redesign with Enterprise Resource Planning 3
6600:671 Management of Organizational Transformation 3
6700:665 Management of Technology 3
6700:678 Project Management 3

Human Resource Option (HRM)

• HRM Required Concentration Courses (12 credits)
6500:650 Fundamentals of Human Resource Administration 3
6500:655 Strategic Human Resource Management 3
6500:656 Employment Regulation 3
6500:657 Organizational Behavior 3
6500:658 Organizational Theory 3

• HRM Restricted Electives (select 6 credits)
6500:651 Management of Organizational Transformation 3
6500:654 Labor Management Relations 3
6500:655 Compensation Administration 3
6500:656 International Human Resource Management 3
6500:657 Comparative Systems of Employee and Labor Relations 3

Total concentration 18
Total program 33**
College of Fine and Applied Arts

Mark S. Auburn, Ph.D., Dean
James M. Lynn, Ph.D., Associate Dean
Philip G. Thomson, M.M., Acting Assistant Dean

Mission Statement
The College of Fine and Applied Arts is dedicated to enhancing the quality of life of the individual, the University, and the community. Through instruction, research, creative activity, and outreach programs, the College fosters artistic and social inquiry and direct application of knowledge to self, family, and society. Students are supported in their quest for knowledge of their chosen fields and encouraged to shape their artistic and social environments.

MASTER'S DEGREE

Family and Consumer Sciences
A program of study is offered leading to the Master of Arts in Family and Consumer Sciences. The graduate degree offers options in child development; child life; clothing, textiles, and interiors; family development; and food science. Students must meet the following requirements for acceptance in the program:

- Minimum GPA of 2.75 for four years of undergraduate study or 3.00 for the last two years of undergraduate study.
- Completion of general Graduate Record Examination within five years of preceeding application, with a minimum total score of 1200 on the three parts of the GRE.
- Submission of a letter of personal career goals, sent to the director of graduate studies.

Two letters of recommendation may be submitted, if desired.

The graduate faculty of the School of Family and Consumer Sciences may require an interview with any applicant.

Accepted students will be expected to comply with the following requirements:

- Complete the course of study in one of the five options, with a minimum of 40 credits.

These credits will include:

- Foundation courses to prepare for research in family and consumer sciences as an interdisciplinary field;
- Core courses in the area of specialty;
- Option electives and cognate electives, selected in consultation with academic advisor from within the School or in another discipline. These are chosen to strengthen student's professional goals.
- Pass a written comprehensive examination over major and minor areas after the completion of at least 24 credits of graduate work.
- Complete a master's thesis or a master's project. The thesis option involves the design and evaluation of original research in an appropriately related area commensurate with the student's background and area of pursuit. The project option involves the design, development, implementation, and evaluation of original and creative programs and/or resource materials. A written proposal for the thesis or project cannot be submitted until successful completion of the comprehensive examination.
- Apply for advancement to candidacy upon successful completion of 24 credits of graduate study, the written comprehensive examination, and an approved prospectus or proposal for a thesis or project.
- Pass an oral examination covering the thesis or project report.

Foundation Courses
- Required by all program options:
  7400:604 Orientation to Graduate Study in Family and Consumer Sciences 1
  7400:689 Historical and Conceptual Bases of Family and Consumer Sciences 3
  7400:685 Research Methods in Family and Consumer Sciences 3

Child Development Option
- Core Courses:
  7400:605 Developmental Parent-Child Interactions 3
  7400:610 Child Development Theories 3
  7400:665 Development in Infancy and Early Childhood 3

Option Electives
Select 12 credits from the following courses with approval of advisor (if a course has been taken at the undergraduate level, other courses must be selected):

- 7400:501 Family-Life Patterns in the Economically Deprived Home 2
- 7400:504 Adolescence in the Family Context 3
- 7400:542 Human Sexuality 3
- 7400:548 Before and After School Child Care 2
- 7400:560 Organization and Supervision of Child Care Centers 3
- 7400:596 Parent Education 3
- 7400:607 Family Dynamics 3
- 7400:616 Infant and Child Nutrition 3
- 7400:651 Family and Consumer Law 3
- 7400:660 Programming for Child Care Centers 3
- 7400:668 Practicum in Family and Consumer Sciences 3

Cognate Electives
Select 7 credits with approval of advisor from within the School of Family and Consumer Sciences or from a cognate area outside the School, OR from a combination of the two.

- Thesis or Project (select one):
  7400:694 Master's Project 5
  7400:699 Master's Thesis 5
  Total 40

Child Life Option
- Core Courses:
  7400:551 Child in the Hospital 4
  7400:555 Practicum Experience in a Child Life Program 3
  7400:585 Orientation to the Hospital Setting 2
  7400:695 Child Life Internship 5

Option Electives
Select 10 credits with approval of advisor from among the following (if a course has been taken at the undergraduate level, other courses must be selected):

- 7400:501 Family-Life Patterns in the Economically Deprived Home 2
- 7400:504 Adolescence in the Family Context 3
- 7400:542 Human Sexuality 3
- 7400:560 Organization and Supervision of Child Care Centers 3
- 7400:565 Supervision in Family and Consumer Sciences (Child Life topic) 3
- 7400:596 Parent Education 3
- 7400:605 Developmental Parent-Child Interactions 3
- 7400:610 Child Development Theories 3
- 7400:616 Infant and Child Nutrition 2
- 7400:660 Programming for Child Care Centers 2
- 7400:665 Development in Infancy and Early Childhood 3

- Cognate Electives
Select 6 credits with approval of advisor from within the School of Family and Consumer Sciences OR from a cognate area outside the School, OR from a combination of the two.

- Thesis or Project (select one):
  7400:694 Master's Project 5
  7400:699 Master's Thesis 5
  Total 40

Clothing, Textiles and Interiors Option
- Core Courses:
  7400:634 Material Culture Studies 3
  7400:639 Theories of Fashion 3
  7400:677 Social Psychology of Dress and the Near Environment 3

Options Electives
Select 10 credits from the following courses (if a course has been taken at the undergraduate level, other courses must be selected):

- 7400:518 History of Interior Design I 4
- 7400:519 History of Interior Design II 4
- 7400:523 Professional Image Analysis 3
- 7400:525 Advanced Textiles 3
- 7400:527 Global Issues in Textiles and Apparel 3
- 7400:525 Principles and Practices Interior Design 3
- 7400:536 Textile Conservation 3
- 7400:537 Historic Costume 3
- 7400:536 History of Fashion 3
- 7400:631 Problems in Design 16
- 7400:688 Practicum in Family and Consumer Sciences 3
- 7400:698 Individual Investigation in Family and Consumer Sciences 16

Cognate Electives
Select 6 credits with approval of advisor from courses within the School of Family and Consumer Sciences OR from a cognate area outside the School, OR from a combination of the two.

- Thesis or Project (select one):
  7400:694 Master's Project 5
  7400:699 Master's Thesis 5
  Total 40
Family Development Option

• Core Courses:
  3400:650 Family in Life-Span Perspective 3
  3400:667 Family Dynamics 3
  3400:651 Family and Consumer Law 3

• Option Electives
  Select 12 credits from the following courses with approval of advisor (if a course has been taken at the undergraduate level, other courses must be selected):
  3400:501 Family Life Patterns in the Economically Deprived Home 2
  3400:504 Adolescence in the Family Context 3
  3400:506 Family Financial Management 3
  3400:540 Family Crisis 3
  3400:542 Human Sexuality 3
  3400:546 Culture, Ethnicity and the Family 3
  3400:556 Parent Education 3
  3400:620 Family Relationships in Middle and Later Years 3
  3400:605 Developmental Parent-Child Interactions 3
  3400:610 Child Development Theories 3
  3400:698 Practicum in Family and Consumer Sciences 3

• Electives:
  Select 7 credits with the approval of advisor from within the School of Family and Consumer Sciences OR from a cognate area outside the School OR a combination of the two.

Thesis or Project (select one):
  3400:694 Master's Project 5
  3400:699 Master's Thesis 5
  Total 40

Food Science Option (admissions temporarily suspended)

• Core Courses:
  3400:575 Analysis of Food 3
  3400:576 Developments in Food Science 3
  3400:520 Experimental Foods (if taken at the undergraduate level, choose 3 additional credits from option electives) 3

• Option Electives
  Select 9-12 credit hours with the approval of advisor from among the following courses with approval of advisor (if a course has been taken at the undergraduate level, other courses must be selected):
  3100:500 Food Plastics 2
  3250:540 Special Topics: EconomicsWorld Food Problems 4
  3400:575 Cultural Dimensions of Food 3
  3400:585 Seminar in Family and Consumer Sciences (Food Science topic) 2-3
  3400:570 The Food Industry: Analysis and Field Study 3
  3400:503 Advanced Food Preparation 3
  3400:524 Nutrition in the Life Cycle 3
  3400:504 Advanced Human Nutrition I 3
  3400:625 Advanced Human Nutrition II 3
  3400:688 Practicum in Family and Consumer Sciences 3

• Electives
  Select 5-8 credits with approval of advisor from among the following courses with approval of advisor (if a course has been taken at the undergraduate level, other courses must be selected):

Thesis or Project (select one):
  3400:694 Master's Project 5
  3400:699 Master's Thesis 5
  Total 40

Note: Students in all of the options who are working on a master's thesis may elect to take the course 7400:690 Thesis Research/Reading. This course will not, however, count as part of the required 40-42 credits in the program.

Nutrition and Dietetics

A program of study is offered leading to the Master of Science in Nutrition and Dietetics. Students must meet the following admission requirements for acceptance in the program:

• Meet the minimum GPA of 2.75 for four years of undergraduate study or 3.00 for the last two years of undergraduate study.
• Have completed the general Graduate Record Examination within the five years preceding the application and achieved a minimum total score of 1200 on the three parts of the GRE.
• Submit a letter of personal career goals.
• Offer two letters of recommendation if desired.

The Graduate Faculty of the School of Family and Consumer Sciences may require an interview with any applicant. In addition to the above, the student will be expected to comply with the following requirements:

• Complete the course of study with a minimum of 40 credits. These credits will include:
  - Foundation courses to prepare the student for research in family and consumer sciences as a discipline;
  - Core courses in the area of specialty;
  - Electives selected from within the department or from another discipline to strengthen the student's professional goals. These courses will be selected in consultation with and approval from the student's graduate faculty advisor.
• Pass a written comprehensive examination over major and minor areas after the completion of at least 24 credits of graduate work.
• Apply for advancement to candidacy upon successful completion of 25 credits of graduate study, the written comprehensive examination, and an approved prospectus for a thesis or project.
• Complete a thesis or a project. The thesis option involves the design and evaluation of original research in an appropriately related area commensurate with the student's background and area of pursuit. The project option involves the design, development, implementation and evaluation of original and creative programs and/or resource materials. A written proposal for the thesis or project option cannot be submitted until the successful completion of a comprehensive examination.
• Pass an oral examination covering the thesis or project.

Foundation Courses

• Required by all program options:
  3400:604 Orientation to Graduate Studies in Family and Consumer Sciences 1
  3400:688 Historical and Conceptual Bases of Family and Consumer Sciences 3
  7400:685 Research Methods in Family and Consumer Sciences 3
• Core Courses:
  4300:625 Advanced Human Nutrition I 3
  4300:626 Advanced Human Nutrition II 3

Electives (9 to 12 credits required)

Select 9-12 credits from among the following courses with approval of advisor (if a course has been taken at the undergraduate level, it may not be used at the graduate level).

Note: The M.S. in Nutrition and Dietetics is not a route to becoming a Registered Dietitian (R.D.). Students interested in becoming R.D.s should contact the School for proper career selection, some of which can be done at the graduate level.

Music

The degree Master of Music is offered by the School of Music with options in music education, performance, composition, theory, music history and literature, and accompanying. Entrance requirements for each program are as follows:

• The standard requirements for an undergraduate major in the area of proposed graduate specialty or performance which the school director approves as equivalent to an undergraduate major.
• The Graduate School's requirements for admission.
• The performance and accompanying options require an audition on the student's major instrument/voice. Please contact the coordinator of Graduate Studies for an audition time.
Music Education Option: Instrumental Emphasis

Thesis Option – 32 credits

- Required Music Education Core Courses – 13-15 credits
  7500:611 Foundations of Music Education (summer) 3
  7500:612 Practices and Trends in Music Education (fall) 3
  7500:614 Measurement and Evaluation in Music Education (spring) 3
  7500:699 Master’s Thesis/Project 46

- Additional music/education courses – select 23 credits with approval of music education and graduate advisors. Choices may include the following:
  7500:675 Seminar in Music Education* 9
  7500:697 Advanced Problems in Music Education* 4
  7500:590 Music Workshops* 6
  7520:5-5-6— Applied 8
  7510:5—6— Ensemble 2
  7500:5-5-6— Other music courses 6
  5100:5—5-6— Educational Foundations and Leadership 4
  5170:5—6— General Administration 4
  5190:5—6— Curricular and Instructional Studies 4

* Topics related to instrumental music.

Non-Thesis Option – 34 credits

- Required Music Education Core Courses – 9 credits
  7500:611 Foundations of Music Education (summer) 3
  7500:612 Practices and Trends in Music Education (fall) 3
  7500:614 Measurement and Evaluation in Music Education (spring) 3

- Additional music/education courses – select 25 credits with approval of music education and graduate advisors. Choices may include the following:
  7500:675 Seminar in Music Education* 9
  7500:697 Advanced Problems in Music Education* 4
  7500:590 Music Workshops* 6
  7520:5-5-6— Applied 8
  7510:5—6— Ensemble 2
  7500:5-5-6— Other music courses 6
  5100:5—5-6— Educational Foundations and Leadership 4
  5170:5—6— General Administration 4
  5190:5—6— Curricular and Instructional Studies 4

* Topics related to instrumental music.

Music Education Option: General Music Emphasis

Thesis Option – 32 credits

- Required Music Education Core Courses – 13-15 credits
  7500:611 Foundations of Music Education (summer) 3
  7500:612 Practices and Trends in Music Education (fall) 3
  7500:614 Measurement and Evaluation in Music Education (spring) 3
  7500:699 Master’s Thesis/Project 46

- Additional music/education courses – select 23 credits with approval of music education and graduate advisors. Choices may include the following:
  7500:675 Seminar in Music Education* 9
  7500:697 Advanced Problems in Music Education* 4
  7500:590 Music Workshops* 6
  7520:5-5-6— Applied 8
  7510:5—6— Ensemble 2
  7500:5-5-6— Other music courses 6
  5100:5—5-6— Educational Foundations and Leadership 4
  5170:5—6— General Administration 4
  5190:5—6— Curricular and Instructional Studies 4

* Topics related to general music.

Non-Thesis Option – 34 credits

- Required Music Education Core Courses – 9 credits
  7500:611 Foundations of Music Education (summer) 3
  7500:612 Practices and Trends in Music Education (fall) 3
  7500:614 Measurement and Evaluation in Music Education (spring) 3

- Additional music/education courses – select 25 credits with approval of music education and graduate advisors. Choices may include the following:
  7500:675 Seminar in Music Education* 9
  7500:697 Advanced Problems in Music Education* 4
  7500:590 Music Workshops* 6
  7520:5-5-6— Applied 8
  7510:5—6— Ensemble 2
  7500:5-5-6— Other music courses 6
  5100:5—5-6— Educational Foundations and Leadership 4
  5170:5—6— General Administration 4
  5190:5—6— Curricular and Instructional Studies 4

* Topics related to general music.
Music Education Option: Choral Emphasis

Thesis Option – 32 credits

- Required Music Education Core Courses – 13-15 credits
  - 7500:611 Foundations of Music Education (summer) 3
  - 7500:612 Practices and Trends in Music Education (fall) 3
  - 7500:614 Measurement and Evaluation in Music Education (spring) 3
  - 7500:699 Master’s Thesis/Project 46

- Additional music/education courses – select 23 credits with approval of music education and graduate advisors. Choices may include the following:
  - 7500:675 Seminar in Music Education* 9
  - 7500:697 Advanced Problems in Music Education* 4
  - 7500:698 Music Workshops* 6
  - 7520:4–6− Ensemble 9
  - 7500:5−6− Other music courses 6
  - 5105:4−5− Educational Foundations and Leadership 4
  - 5170:5−6− General Administration 4
  - 5500:5−6− Curricular and Instructional Studies 4

- * Topics related to choral music.

Non-Thesis Option – 34 credits

- Required Music Education Core Courses – 9 credits
  - 7500:611 Foundations of Music Education 3
  - 7500:612 Practices and Trends in Music Education 3
  - 7500:614 Measurement and Evaluation in Music Education 3

- Additional music/education courses – select 25 credits with approval of music education and graduate advisors. Choices may include the following:
  - 7500:675 Seminar in Music Education* 9
  - 7500:697 Advanced Problems in Music Education* 4
  - 7500:698 Music Workshops* 6
  - 7520:4–6− Ensemble 9
  - 7500:5−6− Other music courses 6
  - 5105:4−5− Educational Foundations and Leadership 4
  - 5170:5−6− General Administration 4
  - 5500:5−6− Curricular and Instructional Studies 4

- * Topics related to choral music.

Music Education Option: Choral Conducting

- Required Music Education Core (13 credits)
  - 7500:611 Foundations of Music Education 3
  - 7500:612 Practices and Trends in Music Education 3
  - 7500:614 Measurement and Evaluation in Music Education 3
  - 7500:699 Master’s Thesis/Performance* 4

- Required Choral Options (17 credits)
  - 7500:556 Advanced Choral Conducting 3
  - 7500:573 Choral Literature (20th Century) 2
  - 7500:574 Integrative Conducting Workshop 2
  - 7500:676 Workshop in Choral Music Education 2
  - 7510:620-621 Choral Ensemble 4
  - 7500:624 Applied Voice 2

- Electives (6 credits)
  - 7500:570 Studies in Choral Literature I (MedRen) 2
  - 7500:571 Studies in Choral Literature II (Baroque) 2
  - 7500:572 Studies in Choral Literature III (Class/Rom) 2
  - 7500:615 Music Styles and Analysis I 2
  - 7500:616 Music Styles and Analysis II 2
  - 7500:617 Music Styles and Analysis III 2
  - 7500:618 Music Styles and Analysis IV 2

- Total credits 36

**Performance option may be exercised (conducting a choral concert) along with a major research paper which focuses on the repertoire to be performed in lieu of a thesis.

Music History and Literature Option

- Music core courses – eight credits (to be selected):
  - 7500:555 Advanced Conducting: Instrumental 2
  - 7500:566 Advanced Conducting: Choral 2
  - 7500:615 Musical Styles and Analysis I (Chant through Palestrina) 2
  - 7500:616 Musical Styles and Analysis II (Baroque through early Beethoven) 2
  - 7500:617 Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss) 2
  - 7500:618 Musical Styles and Analysis IV (20th Century) 2
  - 7500:621 Music History Survey: Middle Ages and Renaissance 2
  - 7500:622 Music History Survey: Baroque 2
  - 7500:623 Music History Survey: Classic and Romantic 2
  - 7500:624 Music History Survey: Music Since 1900 2

- Major required courses – 20-22 credits:
  - 7500:551 Introduction to Musicology 2
  - 7500:621 Music History Survey: Middle Ages and Renaissance 2
  - 7500:622 Music History Survey: Baroque 2
  - 7500:623 Music History Survey: Classic and Romantic 2
  - 7500:624 Music History Survey: Music Since 1900 2
  - 7500:625 Graduate Bibliography and Research in Music 2
  - 7500:697 Advanced Problems in Music 4
  - 7500:699 Master’s Thesis/Project 4-6

- Additional music courses – two to three credits.

Graduate-level (music) courses, advanced problems, workshops, and/or applied lessons, to be selected by the student and advisor.

Note: A minimum pronunciation proficiency is required in Italian, German, and French. If the student lacks background in any of these language requirements, completion of undergraduate courses is required.

All candidates for this degree must accompany a minimum of three solo ensemble recitals (instrumental and vocal). These can be done as part of 7500:697

**Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

Music Technology Option

The Master of Music, Music Technology Option is designed to give the student additional exposure to the functional areas of music plus an advanced concentration in music technology and related business. The program provides a framework of conceptual, technical and professional knowledge which will assist the student in career opportunities of fields related to music technology. Students will leave the program with a portfolio of tutorials, recorded works, and/or computer software.

- Music core courses – six credits (to be selected):
  - 7500:555 Advanced Conducting: Instrumental 2
  - 7500:566 Advanced Conducting: Choral 2
  - 7500:615 Musical Styles and Analysis I (Chant through Palestrina) 2
  - 7500:616 Musical Styles and Analysis II (Baroque through early Beethoven) 2
  - 7500:617 Musical Styles and Analysis III (Late Beethoven through Mahler/Strauss) 2
  - 7500:618 Musical Styles and Analysis IV (20th Century) 2

- Major required courses – 26-28 credits:
  - 7500:625 Graduate Bibliography and Research in Music 2
  - 7500:627 Computer Studio Design 2

- Electives – 9-2 credits. To be selected by the student and advisor.

Degree Total: 32-36 credits.
Elective – two credits.
Areas may include graduate-level courses in other disciplines, such as theatre arts, for which the student obtains permission of instructor, or additional music courses, as determined by the student and advisor.

Degree total: 34-36 credits

Performance Option in Winds, String Percussion

Music core courses: eight credits to be selected:
- 7500:556 Advanced Conducting: Instrumental
- 7500:565 Advanced Conducting: Choral
- 7500:615 Musical Styles and Analysis I (Chant through Palestine)
- 7500:616 Musical Styles and Analysis II (Baroque through early Beethoven)
- 7500:617 Musical Styles and Analysis III (Late Beethoven through Mahler/Straus)
- 7500:621 Music History Survey: Middle Ages and Renaissance
- 7500:622 Music History Survey: Baroque
- 7500:623 Music History Survey: Classic and Romantic
- 7500:624 Music History Survey: Music Since 1900

Major required courses – 16-18 credits:
- 7500:618 Musical Styles and Analysis IV (20th Century) – 2
- 7510:616 — Ensemble participation in two ensembles required** – 2
- 7520:620 — Applied Music (piano, organ and/or harpsichord) – 8

Select one of the following as appropriate to major instrument:
- 7500:630 Teaching and Literature: Brass Instruments
- 7500:631 Teaching and Literature: Woodwind Instruments
- 7500:632 Teaching and Literature: Percussion Instruments
- 7500:634 Teaching and Literature: String Instruments
- 7500:699 Graduate Recital

Additional music courses – six credits.*
Graduate-level (music) workshops, applied lessons, advanced problems and/or courses to be selected by student and advisor.

Electives – four credits.*
Areas may include graduate-level courses in other disciplines, such as theatre arts, for which the student obtains permission of instructor, or additional music courses, as determined by the student and advisor.

Degree total: 34-36 credits.

*It is recommended that each student's graduate committee select from the appropriate elective courses.

**Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.

Performance Option: Choral Conducting

Major Required Courses (22 credits)
- 7500:556 Advanced Choral Conducting
- 7500:621 Music History Survey: Baroque
- 7500:624 Music History Survey: Music Since 1900

Electives (6 credits)
- 7500:650 Foundations of Music Education
- 7500:672 Measurement and Evaluation in Music Education
- 7500:615 Master's Thesis/Performance*
- 7500:616 Music Styles and Analysis II
- 7500:617 Music Styles and Analysis III
- 7500:697 Advanced Problems

Electives (3 credits)
- Graduate Recital
- Graduate Recital

Total credits: 36

Theory Option

Music core courses – six credits to be selected:
- 7500:555 Advanced Conducting: Instrumental
- 7500:565 Advanced Conducting: Choral
- 7500:621 Music History Survey: Middle Ages and Renaissance
- 7500:622 Music History Survey: Classic and Romantic
- 7500:624 Music History Survey: Music Since 1900

Major required courses – 26-28 credits:
- 7500:615 Musical Styles and Analysis I (Chant through Palestine)
- 7500:616 Musical Styles and Analysis II (Baroque through early Beethoven)
- 7500:617 Musical Styles and Analysis III (Late Beethoven through Mahler/Straus)
- 7500:618 Musical Styles and Analysis IV (20th Century)
- 7500:699 Master's Thesis/Project
- 7510:616 — Ensemble participation in two ensembles required**
- 7520:642 Applied Composition

Additional music courses – zero to two credits.
Graduate-level (music) workshops, applied music (other than composition), advanced problems, and/or courses to be selected by student and advisor.
• Electives – zero to two credits.
To be selected by student and advisor. Areas include graduate-level courses in other disciplines in which student obtains permission of instructor or 7800:642 Applied Composition.
Degree total: 34-36 credits.

**Two semesters ensemble participation required for degrees completed in two semesters. Four semesters ensemble participation required for degrees completed in four semesters.**

**Communication**
The School of Communication offers the master of arts degree in a coordinated program of communication arts.

**Entrance requirements:**
• Meet the general requirements for admission to the Graduate School.
• Possess an undergraduate major in communication, journalism or a related field; or, complete at least 15 semester credits of undergraduate communication coursework approved by the department.

**Program requirements:**
• Complete 36 credits, distributed as follows:
  - School core courses – 12 credits:
    7600:600 Introduction to Graduate Study in Communication 3
    7600:603 Empirical Research in Communication 3
    7600:624 Survey of Communication Theory or 3
    7600:625 Theories of Mass Communication 3
    7600:670 Communication Criticism 3
  - School coursework – 12 credits.
  - Graduate electives – 6 credits.
  - Thesis (699) or Project/Production (698) – 6 credits.
  - Total – 36 credits.
• Comprehensive examination required for students not pursuing a thesis, project, or production after 24 credits of coursework, including all core courses.
• Advancement to candidacy. Registration for six (6) credits of Thesis (699) or Project/Production (698).
• Presentation and defense of a thesis/project/production.

The thesis, project, or production requirement is designed to be the culmination of the student's academic program and involves the conceptualization, design and execution of an academic, practical, or aesthetic problem in a manner which requires a high level of substantive, methodological, technical, and written skills. These skills may be demonstrated in any of the three types of activities, depending on the student's background and career orientation.

**Theatre Arts**
The School of Dance, Theatre, and Arts Administration offers a master of arts degree. The following will qualify the student in the field of theatre.
• Complete the general requirements for admission to the Graduate School.
• Complete an undergraduate major in the area of proposed graduate work or equivalent work as approved by the coordinator of the graduate theatre program.
• Complete an oral defense of the thesis or thesis project.

**Arts Administration Option**
• Complete a minimum of 45 credits.
• Required theatre arts courses (30-33) credits:
  7600:600 Introduction to Graduate Studies in Theatre Arts 3
  7600:605 Colloquium in the Arts 3
  7600:607 Audience Development 3
  7600:606 Principles of Arts Management 3
  7600:682 Fund Raising and Grantmanship in the Arts 3
  7600:697 Arts Administration Practices and Policies 3
  7600:693 Legal Aspects of Arts Administration 3
  7600:698 Internship 3
  7600:699 Master's Thesis 3
• Required business courses (9 credits):
  6200:590 Special Topics in Accounting 3
  6300:600 Management and Organizational Behavior 3
  6000:600 Marketing Concepts 3
  6000:630 Marketing of Services 3
• Electives in related fields (3-6 credits):
  Options here include course work in business, computer science, urban studies, art, music, and theatre and dance.
• Complete an oral defense of the thesis.
• General electives 0-3

**Theatre Option**
Complete a minimum of 36 credits distributed as follows:
• School core courses - 24 credits:
  7800:600 Introduction to Graduate Studies 3
  7800:641 Problems in Directing 3
  7800:645 Seminar in Dramatic Literature 3
  7800:648 Graduate Acting: Techniques 3
  7800:658 History of Theatre 3
  7800:692 Seminar in Scenic Design 3
  7800:699 Master's Thesis 1

• Graduate electives:
  12 credits to be selected from Theatre Arts, English, Communication, Music, etc., in consultation with the student's advisor or the graduate program coordinator.

**Speech-Language Pathology and Audiology**
This program, leading to the M.A. in either speech-language pathology or audiology, is designed to lead to professional certification by the American Speech-Language-Hearing Association (ASHA) in speech-language pathology and/or audiology and licensure by the State of Ohio Board of Speech-Language Pathology and Audiology. To enter the program:
• Complete requirements for admission to the Graduate School.
• Hold an undergraduate major in the area of proposed graduate study. The School of Speech-Language Pathology and Audiology offers a one-year postbaccalaureate program for students who have completed an undergraduate degree in a different field. Students enrolled in the postbaccalaureate program can apply for admission to the Graduate School for the following year.
• Complete the department requirements for admission which include submission of three letters of recommendation and the Graduate Record Examination Aptitude Test results.
• Declare intent to major in either speech-language pathology or audiology.

Applications for admission are accepted and considered only once per year. Applications for admission should be received by February 15th.

**Degree Requirements**
• The master's thesis is optional for students in speech-language pathology and audiology. All students will successfully complete a course of study with a minimum of 38 credits, two of which may be thesis credits for students electing the thesis option. Students in the non-thesis option also will write comprehensive examinations during their final semester. Academic requirements within the school include:

<table>
<thead>
<tr>
<th>For speech-language pathology majors:</th>
<th>For audiology majors:</th>
</tr>
</thead>
<tbody>
<tr>
<td>7700:640 Augmentative Communication</td>
<td>7700:611 Research Methods in Communicative Disorders I</td>
</tr>
<tr>
<td>7700:650 Early Intervention for Preschoolers</td>
<td>7700:612 Research Methods in Communicative Disorders II</td>
</tr>
<tr>
<td>7700:655 Teaching and Learning Strategies in SLP</td>
<td>7700:620 Articulation</td>
</tr>
<tr>
<td>7700:611 Research Methods in Communicative Disorders I</td>
<td>7700:623 Support Systems for Indiv and Families with Communicative Disorders</td>
</tr>
<tr>
<td>7700:620 Articulation</td>
<td>7700:634 Neurogenic Speech and Language Disorders</td>
</tr>
<tr>
<td>7700:624 Voice and Clf Falseness</td>
<td>7700:625 Stuttering: Theories and Therapies</td>
</tr>
<tr>
<td>7700:625 Stuttering: Theories and Therapies</td>
<td>7700:626 Topics in Differential Diagnosis of Speech and Language Disorders</td>
</tr>
<tr>
<td>7700:630 Clinical Issues in Child Language</td>
<td>7700:631 Acquired Brain Injury</td>
</tr>
<tr>
<td>7700:631 Acquired Brain Injury</td>
<td>7700:632 Dysphagia</td>
</tr>
<tr>
<td>7700:632 Dysphagia</td>
<td>7700:633 Professional Issues</td>
</tr>
<tr>
<td>7700:633 Professional Issues</td>
<td>7700:650 Advanced Clinical Practicum: Speech-Language Pathology</td>
</tr>
<tr>
<td>7700:650 Advanced Clinical Practicum: Speech-Language Pathology</td>
<td>7700:656 Extensive: Speech Pathology and Audiology (student must register twice)</td>
</tr>
<tr>
<td>7700:656 Extensive: Speech Pathology and Audiology (student must register twice)</td>
<td>7700:659 Research and Thesis</td>
</tr>
<tr>
<td>7700:659 Research and Thesis</td>
<td>7700:664 Advanced Clinical Practicum: Audiology (minimum)</td>
</tr>
<tr>
<td>7700:664 Advanced Clinical Practicum: Audiology (minimum)</td>
<td>7700:665 Extensive: Speech Pathology and Audiology (student must register twice)</td>
</tr>
</tbody>
</table>

Completion of 5610:693 Student Teaching in Speech Pathology or 5610:692 Student Teaching in Audiology may be substituted for one 7700:665 registration. The audiology student must take 4 credits in speech-language pathology, and the speech-language pathology student must take 4 credits in audiology. It is recommended that the speech-language pathology major elect 7700:638 Advanced Clinical Testing to fulfill this requirement.

• The following limitations on work toward the degree may be exceeded only with the approval of two-thirds of the school's graduate faculty.
Social Work

The Master of Social Work Program is a joint degree program administered by Cleveland State University and The University of Akron. The two-year program began in January 1995 with a new class beginning each Fall Semester on both campuses. Distance learning technology, which utilizes interactive video and audio systems, links faculty and students at the two institutions. The degree program is accredited by the Council on Social Work Education.

Students accepted into the graduate program leading to a master's degree in social work must register only for 600 level courses. Graduate courses taken at the 500 level are not applicable for the graduate degree program in social work, but can be used (with approval) as an elective for other University of Akron graduate programs.

Admission Requirements:

• Meet the general Graduate School requirements for admission.
• An undergraduate major in social work or a related field.
• Have a minimum grade point average of 3.00 in social work and behavioral science courses taken prior to application for admission. A minimum of 8 courses is required in this area (24 semester or 36 quarter credit hours completed in the social, behavioral and biological sciences, including one human biology course, and the humanities).
• Submit 3 letters of reference.
• Submit an essay of 3-5 typed pages explaining:
  a) why he/she wants to be a social worker;
  b) why a graduate degree is felt to be necessary to fulfill his/her personal or professional objectives;
  c) his/her views regarding diversity in society;
  d) a situation in which he/she was the recipient/provider of help, emotionally, socially, or economically.

A description of any social work/human service work experience must be submitted.

Program Requirements:

• Complete a minimum of 60 graduate credits of approved courses in social work. Up to 9 credits of graduate-level electives outside the department may be included in the program. There is no foreign language requirement.
• Complete an approved program of courses which include the following required courses:

First Year Professional Foundation:

- Fall Semester
  7750:601 Foundation Field Practicum 3
  7750:609 Social Work Practice with Small Systems 3
  7750:622 Fundamentals of Research I 3
  7750:631 Human Behavior and Social Environment: Small Social Systems 3
  7750:646 Social Welfare Policy I 3

- Spring Semester
  7500:602 Foundation Field Practicum 3
  7750:605 Social Work Practice with Large Systems 3
  7750:611 Dynamics of Racism and Discrimination 3
  7750:623 Fundamentals of Research II 3
  7750:632 Human Behavior and Social Environment: Large Systems 3

Second Year Concentrations (Direct Practice):

- Fall Semester
  7750:603 Advanced Field Practicum 3
  7750:607 Advanced Practice with Small Systems I 3
  7750:647 Social Welfare Policy II 3
  7750:693 Psychopathology and Social Work 3
  One elective 3

- Spring Semester
  7750:604 Advanced Field Practicum 3
  7750:608 Advanced Practice with Small Systems II 3
  7750:664 Direct Practice Research 3
  Two electives 6

Second Year Concentrations (Macro Practice):

- Fall Semester
  7750:623 Advanced Field Practicum 3
  7750:647 Social Welfare Policy II 3
  7750:674 Community, Economic Systems and Social Policy Analysis 3
  7750:673 Community Organization and Planning 3
  One elective 3

- Spring Semester
  7750:604 Advanced Field Practicum 3
  7750:671 Social Work Administration 3
  7750:672 Strategies of Community Organization 3
  7750:675 Program Evaluation 3
  One elective 3
College of Nursing

Cynthia F. Capers, R.N., Ph.D., Dean
Eline Nichols, R.N., Ed.D., Associate Dean of Academic Affairs
Judith H. Lewis, R.N., Ed.D., Director, Nursing Education
Kathleen M. Bosso-Anelmolok, R.N., Ph.D., Coordinator, Master of Science in Nursing Program
N. Margaret Wineman, R.N., Ph.D., Coordinator, Joint Ph.D. in Nursing Program

Mission Statement
As an integral part of The University of Akron, the College of Nursing promotes the general mission of The University of Akron. The college offers diverse and comprehensive nursing education programs at the undergraduate and graduate levels. The programs of study, based on professional standards, prepare individuals to provide nursing care in a variety of settings. The College of Nursing supports nursing research that contributes to the health and well-being of society. The college is committed to serving culturally, socially, and economically diverse populations. Through academic and community collaboration, the college promotes excellence in nursing education, research, practice, and service.

Goals
• Prepare generalist and advanced practice nurses who are eligible for initial licensure and for certification.
• Prepare scholars in nursing at the doctoral level, focusing on the conduct of nursing research and the dissemination of research findings with their implications for nursing practice and health care policy.
• Provide a foundation for lifelong commitment to professional development and scholarship through continuing education and advanced study at the master's and doctoral levels.
• Prepare nurses who are sensitive in caring for diverse populations in a variety of settings.
• Prepare professional practitioners who integrate leadership roles and ethical standards in a continuously changing health care arena and society.

Philosophy
The College of Nursing faculty believe that the focus of professional nursing is individuals, families, and communities.
The individual is seen as a complex whole whose existence involves patterns, dynamic change, transaction and interdependence. The individual interacts within the environment in biological, psychological, social, spiritual, cultural and other dimensions. The individual is unique and universal. The individual is a thinking, feeling, interacting, evolving, creating, valuing being.
Families are individuals dynamically connected with each other over time in traditional and nontraditional family configurations.
Communities are groups of people with one or more common characteristics who are in relationship to one another and may or may not interact.
Health is comparative, dynamic, multidimensional and has personal meaning. It includes disease, randdisease and quality of life. People have the right to participate in decisions affecting and effecting personal health.
Environment includes all living and nonliving dimensions with which the individual, family and community have interrelationships. The dynamic environmental interactions define and establish rules for health and modes of action.
Nursing is an art and a science. The discipline of nursing is concerned with individuals, families and communities and their responses to health within the context of the changing health care environment. Professional nursing includes the appraisal and the enhancement of health. Personal meanings of health are understood in the nursing situation within the context of familial, societal and cultural meanings. The professional nurse uses knowledge from theories and research in nursing and other disciplines in providing nursing care. The role of the nurse involves the exercise of social, cultural, and political responsibilities, including accountability for professional actions, provision of quality nursing care, and community involvement.
Education is an individualized, life-long process. Learning includes the individual's interactions with the environment, knowledge and skill acquisition, development of critical thinking, and self-awareness. Self-expression enables the student to respond to clients who have unique human values and cultural heritage. Each nursing student brings attitudes, beliefs, values, feelings, knowledge and experience into the learning environment. These variables influence learning that occurs through continual construction and reconstruction of experience in relation to environmental influences.

Nursing education at the baccalaureate level synthesizes knowledge from nursing, humanities, social, cultural, physical and natural sciences to operationalize clinical decision-making. The student is trained to function as a nurse generalist in a variety of settings. Faculty and student continually seek to refine the commitment to and understanding of the relationship between theory and practice. Students are encouraged to become self-directed, collaborative, interdependent and independent. These variables are the foundation for life-long learning and professional development.

Nursing education at the master's level builds upon baccalaureate nursing education and provides a foundation for doctoral study. Graduate education at this level prepares advanced practice nurses with expertise in critical thinking and decision making, effective communication, and therapeutic interventions. Through the variety of learning experiences, master of science in nursing students analyze and use theoretical formulations and research findings in advanced practice.

Nursing education at the doctoral level prepares nurses for full participation in the discipline as scholars and researchers. Emphasis is placed on the development of nurses who are informed about the many dimensions of scholarship, including research, practice and teaching, and the integration of the three. Through various didactic, collaborative and research opportunities, doctoral students learn how to develop and test knowledge about health, illness and nursing care, and how to use this knowledge to enhance teaching, improve patient care, and influence health care policy.

JOINT PROGRAM FOR THE DOCTOR OF PHILOSOPHY IN NURSING
Kent State University and The University of Akron offer the Joint Ph.D. in Nursing (JPDN), a single doctoral program with a single, unified doctoral nursing faculty and doctoral student body. Students may choose which university will grant their degree. The diploma will be issued from the student's university of record and will recognize the Joint Doctor of Philosophy program. JPDN courses will be cross listed and scheduled at each university.

Program Purpose and Description: Preparation of Scholars in Nursing
The JPDN program is characterized by excellence through scholarship, integrity, and caring. The primary purpose of the JPDN is to produce nurse scholars. This purpose will be realized through the development and testing of theories and models of nursing science and nursing practice, the consideration of the social, political, legal, and economic implications of health care policies and practices, and the dissemination of knowledge.
Graduates will be characterized by their leadership and their ability to conduct and apply research, to integrate and extend knowledge through teaching, and to develop and implement health care policy. Interdisciplinary collaboration and community outreach will be emphasized throughout the program.

Admission, Progression, and Graduation
Students may apply to the joint program through the Graduate Colleges of the Colleges of Nursing of either Kent State University or The University of Akron. Completed applications should be returned to the addresses indicated on the application forms. Applications will be reviewed by the JPDN admissions committee with a single set of JPDN admission criteria.
Each applicant for admission into the Ph.D. in Nursing Program must meet the following criteria:
• Evidence of successful completion of a master's degree in nursing at an accredited program with a minimum grade point average of 3.0 on a 4.0 scale.
• Evidence of current licensure, or eligibility for licensure, by the Ohio Board of Nursing.
• Official evidence of scores on the Graduate Record Examination.
• A clear and succinct statement about the applicant's need for the doctorate and its application toward clearly defined career goals.
• A sample of written work that indicates the logic and writing skills of the applicant, for example, by an essay, term paper, thesis, published article, or professional report.
• Three (3) letters of reference from professionals or professors who can adequately evaluate the applicant and the applicant's previous work or potential for success.
At the request of the JPDN admission committee, successfully complete a personal interview with a graduate faculty member which will assess research interests and motivation for successful completion of doctoral study in the JPDN program.
• Register for courses within two (2) years of acceptance into the JPDN, or otherwise the acceptance is void.

Students wishing to transfer into the Ph.D. in Nursing Program must comply with the university standards for acceptance and are referred elsewhere in this catalog for that information.

International students will be considered for admission. In addition to the above admission criteria, international students must demonstrate a high level of competence in English, a minimum score of 550 on the Test of English as a Foreign Language (TOEFL). International students must comply with university procedures for accepting international students.

Students will be assigned an academic advisor based on mentoring and mutual research interests. Advisor and student will develop an academic program plan customized to student interest, subject to advisor approval. Target dates for successfully completing the qualifying examination and the completion of the dissertation will be developed in the program plan. Students may change advisors for academic or dissertation purposes, subject to the approval of the JPDN directors.

For progression and graduation, students must meet the following degree requirements:

• maintain an overall grade point average of 3.0 on a four-point scale (or be liable to dismissal according to University policies);
• adhere to criteria concerning enrollment, residency, and leaves of absence;
• complete degree requirements within 9 years of enrollment;
• complete 42 semester hours of required course work;
• successfully complete the qualifying examination and dissertation requirements;
• successfully complete and orally defend a dissertation based upon original investigation and critical scholarship.

Students who do not meet the criteria for successful progression and graduation will be notified in writing.

Program Description and Curriculum

The JPDN is a post master’s degree, requiring 72 semester credit hours including the dissertation. It consists of five components, with selected customization to student interests. The nursing knowledge component examines knowledge and theory development as well as courses in selected domains of nursing knowledge related to student interest and faculty expertise. Research methods, designs, and statistics examines approaches to both qualitative and quantitative research. Students must select at least one advanced research methods course to promote their research agenda; i.e., program evaluation, advanced qualitative or quantitative methods, or grantsmanship. Cognates will be chosen from courses outside nursing which support the student’s research interest. Health care policy courses focus on health care and nursing issues. These four components culminate in the fifth component, the dissertation, which follows the successful completion of the qualifying examination. The course work in each of these five components follows:

Structure and content of nursing knowledge:

Five required courses (15 credits)

8200:810 History and Philosophy of Nursing Science
8200:815 Theory Construction and Development in Nursing
8200:820 Introduction to Nursing Knowledge Domains
8200:840 Nursing Science Seminar I
8200:850 Nursing Science Seminar II

Research methods, designs, and statistics:

Three required methods/design courses (9 credits)

8200:825 Quantitative Research Methods
8200:830 Qualitative Research Methods
8200:845 Advanced Methods for Research

Three advanced research methods courses selected with the approval of the student’s academic advisor

Two required statistics courses (6 credits)

8200:827 Advanced Health Care Statistics I
8200:837 Advanced Health Care Statistics II

Cognates:

Three required courses (9 credits)

Cognates

(Three courses are selected with the approval of the student’s academic advisor from a discipline outside of nursing to support the student’s research interest.)

Electives:

8200:892 Field Experience in Nursing
8200:895 Special Topics in Nursing
8200:896 Individual Investigation in Nursing
8200:898 Research in Nursing

Qualifying for Candidacy for the Doctoral Dissertation

All students in the JPDN Program are required to successfully complete a qualifying examination before proceeding to conduct dissertation research. To be eligible for candidacy for the dissertation, students must have completed 42 hours of required courses, have maintained a minimum GPA of 3.0 on a 4.0 scale in the doctoral program, have successfully completed the qualifying examination, and have been approved by the appropriate administrative bodies of the program.

Dissertation Prospectus. The dissertation prospectus is a written document that includes an outline of the parameters of the projected dissertation topic with a rationale and statement of the problem to be researched, the methodology and design of the study, a preliminary review of the literature substantiating the need for the study, and the principle sources of information for the dissertation. Approval of the prospectus permits the student to proceed with the dissertation.

Dissertation. The dissertation is based upon original investigation and demonstration of mature scholarship and critical judgment in the theoretical and methodological approaches to development of nursing knowledge. The dissertation is expected to be the first step in the development of a program of research and scholarly activity. A minimum of 30 dissertation credit hours are required.

Oral defense. When the dissertation is completed a meeting will be scheduled for the student’s defense of the dissertation. The candidate is expected to respond to substantive and methodological questions related to the dissertation.

Dissertation committee. A four person doctoral dissertation committee will guide and approve the acceptability of the dissertation. The Chair must be a member of the JPDN faculty, as must be two committee members. The remaining member must be selected from outside the program. Other qualifications of members will be consistent with the student’s area of research and with the requirements for doctoral committees as stated in the policies and general catalogs of both universities.

MASTER OF SCIENCE IN NURSING

Accreditation

The master’s degree programs are fully accredited by the National League for Nursing Accreditation Commission (NLNAC) and has preliminary approval from the Committee on Collegiate Nursing Education (CCNE). NLNAC is a resource of information regarding tuition, fees, and length of program and can be contacted at: 350 Hudson Street, New York, New York 10014, 1-888-669-9565 extension 153. CCNE can be contacted at One Dupont Circle, N.W., Suite 530, Washington, D.C., 20036

Characteristics of the Graduate*

Upon completion of the program graduates will be able to:

• Incorporate theories and advanced knowledge into nursing practice.
• Demonstrate competence in selected roles(s).
• Identify researchable nursing problems and participate in research studies in advanced nursing practice.
• Use leadership, management, and teaching knowledge and competencies to influence nursing practice.
• Assume responsibility for contributing to improvement in the delivery of health care and influencing health policy.
• Assume responsibility for contributing to the advancement of the nursing profession.

Health Care and nursing policy:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8200:835</td>
<td>3</td>
<td>Nursing and Health Care Policy</td>
</tr>
</tbody>
</table>

Doctoral dissertation

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8200:899</td>
<td>30</td>
<td>Doctoral Dissertation I</td>
</tr>
<tr>
<td>8200:800</td>
<td>1</td>
<td>Doctoral Dissertation II</td>
</tr>
</tbody>
</table>

*The directions for the degree programs are fully accredited by the National League for Nursing Accreditation Commission (NLNAC) and has preliminary approval from the Committee on Collegiate Nursing Education (CCNE). NLNAC is a resource of information regarding tuition, fees, and length of program and can be contacted at: 350 Hudson Street, New York, New York 10014, 1-888-669-9565 extension 153. CCNE can be contacted at One Dupont Circle, N.W., Suite 530, Washington, D.C., 20036.
Admission
- Baccalaureate degree in nursing from an NLNAC or CCNE accredited nursing program.
- 3.00 GPA on a 4.00 scale for all previous college work.
- Miller Analogies Test taken within the last five years with a minimum score of 50 or GRE taken within the last five years. During the past three years, the mean of GRE scores has been: verbal 400-640, quantitative 400-695, and analytical 400-640.
- Three (4) letters of reference from a recent employer; a member of the nursing profession; a former faculty member.
- 300-word essay describing professional goals.
- Interview prior to admission to the program.
- Current state of Ohio license to practice nursing and evidence of malpractice insurance.
- Prerequisite course requirements: Undergraduate Statistics, Nursing Research, Basic Health Assessment and Computer Skills, Graduate Level Statistics.

A one year experience in an area where critical care and emergencies occur is required for all students admitted to the nurse anesthesia specialty.

Applicants who are certified nurse practitioners will be evaluated and have their program planned on an individual basis.

Admission Procedures
The student secures application for Graduate School from the Office of the Dean of the Graduate School. The University of Akron, or the Office of Student Affairs, College of Nursing. Criteria specific for admission to the Graduate Nursing Program may be secured from the Coordinator of the Graduate Program in Nursing or the Office of Student Affairs.

A graduate admissions committee of the College of Nursing will review all applications and make recommendations to the Coordinator of the Graduate Program regarding the applicant’s status. The Coordinator will send a recommendation to the dean of the Graduate School, who will notify the student of admission status.

Applications received in the graduate office of the College of Nursing will be reviewed when the file is complete to facilitate the admission process.

Instructional Program
The Master of Science in Nursing curriculum includes a minimum of 36 credit hours of study depending on the specialty track. The advanced practice tracks include Adult/Gerontological Health Nursing, Behavioral Health Nursing, Child and Adolescent Health Nursing, and Nurse Anesthesia. Graduates are prepared for advanced practice as clinical nurse specialists, nurse practitioners, or nurse anesthetists, or for roles as administrators or educators. The curriculum is based on theory and research both in nursing and in related disciplines. It provides the foundation for doctoral study and for ongoing professional development.

The Master of Science in Nursing with a focus on Nurse Anesthesia prepares the graduates to sit for the national certification examination that upon successful completion allows the individual to use the title of Certified Registered Nurse Anesthetist (CRNA).

Nursing Core
The curriculum consists of a core of 17 credit hours. These courses encompass advanced theory, research, computers in nursing, health policy, and pathophysiological concepts.

Nursing Research
All students enroll in a research core for a total of 7 credits: 8200:618, Nursing Inquiry I and 8200:699, Master’s Thesis or 8200:618, Nursing Inquiry II.

Advanced Practice Options
Options are provided for advanced practice as a clinical nurse specialist, nurse practitioner, or nurse anesthetist, or for advanced roles as an administrator. Requirements for admission include at least one year of practice in the area of interest.

The Master of Science in Nursing curriculum requires from 36 to 60 credits, depending on the Advanced Practice option selected by the student.

Core courses required of all students:
8200:608 Pathophysiological Concepts of Nursing Care I
8200:603 Theoretical Basis for Nursing
8200:605 Computer Applications in Nursing
8200:637 Policy Issues in Nursing
8200:613 Nursing Inquiry

Advanced Practice Option
- 3.00 GPA
- Interview
- Current state of Ohio license to practice nursing and evidence of malpractice insurance.

Within the Master of Science in Nursing curriculum, advanced practice options are available.

Nurse Anesthesia
- The Anesthesia Track (60 credit hours) is accredited by the Council on Accreditation of Nurse Anesthesia Programs.
- Admission 36 credits
- 8200:618 Nursing Inquiry II
- 8200:699 Master’s Thesis
- Functional role courses selected by students based upon area of specialty.

Nurse Practitioner
- The Child and Adolescent Health Nurse Practitioner Track is 45 credit hours and meets eligibility requirements for certification through ANCC or PCCNP.
- Admission 36 credits
- CRNA-MSN Anesthesia Option
- Exhibits the knowledge and skill to provide comprehensive nursing care in the perioperative setting.
- Admission 36 credits
- Fiscal Management in Nursing Administration
- Resource Management in Nursing Settings
- Fiscal Management in Nursing Administration
- Resource Management in Nursing Settings
R.N.-M.S.N. PROGRAM

Admission Policies
The R.N.-M.S.N. Program is a graduate program, and as such, applicants must meet the following admissions requirements:

• Current Ohio State license as a registered nurse and evidence of malpractice insurance.
• Grade-point average of 3.00 on a 4.00 scale for all previous college work.
• Three (3) letters of reference from a recent employer, a member of the nursing profession, a former faculty member.
• Miller Analogies Test taken within the last five years with a minimum score of 50 or Graduate Record Exam (GRE) taken within the last five years. During the past three years, the range of GRE scores has been: verbal 400-614, quantitative 400-695, and analytical 400-640.
• 300-word essay describing professional goals.
• Interview with selected faculty members.
• Computer skills.

Curriculum
The R.N.-M.S.N. Sequence is designed for those registered nurses holding a diploma or associate degree in nursing who aspire to the Master of Science in Nursing degree. Students must complete 67 hours of prerequisite undergraduate coursework prior to acceptance into the Sequence. The R.N.-M.S.N. Sequence consists of bridge courses totaling 21 hours of upper-division baccalaureate coursework and a minimum of 36 hours of graduate coursework. Students will receive 46 hours of undergraduate by-passed credit after successful completion of all undergraduate course requirements. This is in accordance with the current University policy for by-passed credit. Upon successful completion of all program requirements, the student will receive the B.S.N. and M.S.N. degrees.

• R.N.-M.S.N. Bridge Courses:
  8200:225 Health Assessment 3
  8200:435 Nursing Research 3
  8200:460 Issues and Roles of the Profession of Nursing 3
  8200:465 Concepts and Theories of Professional Nursing 3
  8200:470 Community Health Nursing 4
  8200:485 Leadership Roles of Professional Nursing 5

MASTER OF PUBLIC HEALTH
The Northeastern Ohio Universities Master of Public Health (NEOUMPH) program is a multidisciplinary, interdepartmental, and inter-institutional organization that provides opportunities for graduate studies in public health. As a consortium-based program, the Master in Public Health degree is awarded by The University of Akron and utilizes faculty at The University of Akron, Kent State University, Northeastern Ohio Universities College of Medicine, and Youngstown State University. This program focuses on enabling public health and health care practitioners to better serve the community.

Students take core courses as a cohort at distance learning sites on participating campuses using interactive videoconferencing. Core courses are scheduled on Saturdays from 9:00 a.m. to 4:00 p.m. (including an hour for lunch). Electives are taken on the campus where they are being offered and may be taken at any time during the program.

Admission
Applications are sent to Northeastern Ohio Universities Master of Public Health, Division of Community Health Sciences, Northeastern Ohio Universities College of Medicine, 4209 State Route, P.O. Box 98, Rootstown, Ohio 44272.

Students must meet the following admission requirements:
• submit completed application by the required date
• possess a bachelor's degree from an accredited college or university
• provide official transcripts from each institution of higher education attended
• a minimum undergraduate GPA of 2.75
• three letters of recommendation from individuals familiar with applicant's academic or professional background, submitted to: NEOUMPH Admissions Committee, Division of Community Health Sciences, NEOUCOM, 4209 State Route, P.O. Box 98, Rootstown, Ohio 44272-6096. Letters should include assessments of the applicant's work quality and estimation of her/his ability to succeed in the program.
• successful completion of a college-level mathematics or statistics course and a college-level social or natural science course
• acceptable GRE taken within the last five years (may be waived if applicant has a professional degree [master's or doctoral] in a relevant area)
• international candidates for whom English was not the language of instruction must achieve a minimum score of 550 on the TOEFL
• two years work experience in a relevant field is highly recommended
• cover letter (maximum two pages) explaining candidate's educational and professional history, area of interest in public health, interest and motivation for seeking the MPH, and professional or academic career plans upon completion of the program
• $35 non-refundable application fee

Admitted students are assigned to an "enrollment university" based on preference. Questions may be directed in writing to the above address or applicants may contact the Program Director by telephone (330) 972-8299.

Curriculum
The MPH program contains five core areas basic to public health: biostatistics, epidemiology, environmental health sciences, health services administration, and social and behavioral sciences.

• Core courses:
  8300:601 Public Health Concepts 3
  8300:602 Social and Behavioral Sciences in Public Health 3
  8300:603 Epidemiology in Public Health 3
  8300:604 Biostatistics in Public Health 3
  8300:605 Health Services Administration in Public Health 3
  8300:606 Environmental Health Sciences in Public Health 3
  Subtotal 18

• Additional program requirements:
  8300:697 Capstone Project 3-4
    Electives 15-18
    Total 39

A "grant" project, capstone project, portfolio, and exit presentation is required of each student.
College of Polymer Science and Polymer Engineering

Frank N. Kelley, Ph.D., Dean
Ernst D. von Meerwall, Ph.D., Associate Dean

HISTORY
The University of Akron has been a focus for education and research in polymer science since 1910, when Professor Charles M. Knight began offering courses in rubber chemistry. Master's theses treating rubber chemistry on the University library shelves date to 1920. The University began developing major laboratories in 1942 under the leadership of Professor G.S. Whitby, and the UA program played a significant role in the synthetic rubber industry of the U.S. government during World War II. An Institute of Rubber Research under the direction of Professor Maurice Morton was created in 1956, which became an Institute of Polymer Science in 1964. A Polymer Chemistry was introduced in 1966. In 1967, a Department of Polymer Science in the College of Arts and Sciences was formed which awarded M.S. and Ph.D. degrees in Polymer Science.

A Center for Polymer Engineering was created in 1983 and a Department of Polymer Engineering in the College of Engineering in January 1984 with Professor James L. White as director and department chair to give thrust to polymer processing and engineering applications.

In 1988 the College of Polymer Science and Polymer Engineering was established to consolidate the administration of the two academic departments, the Institute of Polymer Science and the renamed Institute of Polymer Engineering.

MISSION STATEMENT
The mission of the College of Polymer Science and Polymer Engineering is to serve its students through a high quality educational experience, incorporating both classroom and laboratory learning, as well as a stimulating research environment. Its graduates and former research associates provide a well-trained workforce for employers throughout the world, but especially for the State of Ohio. With the generation of new knowledge from research and the application of that knowledge, the College serves society with benefits to both the economy and the environment.

- The primary purpose of the College is to educate its students in the science and engineering of polymers. Since the College is involved principally in graduate level education (M.S. and Ph.D.), its students are taught the skills of research by the faculty, occasionally assisted by visiting scientists, and post-doctoral associates.
- The involvement of the College faculty, students and associated staff in research provides a further purpose, i.e., to develop new knowledge concerning polymeric materials and processes, and to disseminate that knowledge to the broader community of researchers, technologists, and manufacturers who employ that knowledge to their own aims.
- The College provides a variety of services through its institutes and centers to aid the economic and cultural development of our society. Individual faculty members provide services as consultants to industry, government, and civic institutions, concerning the developments in knowledge and applications of polymers.
- An additional function of the College is to provide training for those individuals who wish to improve their skills and knowledge concerning various types of polymers, their properties, processes and uses. Undergraduate students from other colleges within the University participate in specialized courses taught by the College faculty as they pursue their traditional degree programs. Also, a variety of non-credit offerings are presented as continuing education, intensive short courses, and seminars.

DESCRIPTION
The College of Polymer Science and Polymer Engineering carries out a program of research and education, primarily at the graduate level, and serves as a major intellectual resource for the scientific and technological development of polymers and related materials and processes. The college consists of the Department of Polymer Science, the Department of Polymer Engineering, the Maurice Morton Institute of Polymer Science and the Institute of Polymer Engineering.

The Department of Polymer Science and The Institute of Polymer Science, emphasize polymer synthesis, the physical chemistry, physics and mechanical behavior and technology of polymers, and many of their applications. The Department of Polymer Engineering and the Institute of Polymer Engineering, emphasize polymer processing (including reactive processing), solid state structure/ morphology and properties of polymers as related to process history as well as engineering analysis and design. Collaborative research among the faculty in the two departments is common and provides a unique environment and capability for solving modern-day problems. This provides a fertile environment for students to obtain multidisciplinary training.

ADMISSION REQUIREMENTS
Admissions to the graduate program in the college are competitive. The departmental admission committees carefully consider each applicant. Early application is suggested.

DEPARTMENT OF POLYMER SCIENCE
Students with an undergraduate degree in chemistry, physics, or engineering and a grade point average of 2.75/4.0 or better are admissible. Students holding a degree in biology or natural sciences usually need additional courses on the undergraduate level in physics, physical and analytical chemistry. For such students, a special non-degree admission may be given for one or two semesters, followed by a full admission upon a student's successful completion of the remedial undergraduate courses. All applications must be supported by at least one letter of recommendation from a teacher or supervisor that the candidate is able to handle independent scientific research. GRE scores are recommended with each application.

A student with a M.S. in the sciences from another university can be admitted to the Ph.D. program. Two letters of recommendation are required in such cases to be certain that the student is likely to be successful in doctoral research.

DEPARTMENT OF POLYMER ENGINEERING
Students with an undergraduate degree in Chemical Engineering, Mechanical Engineering or related degrees with a grade point average of 2.75/4.0 or better are admissible. Students holding a degree in the natural sciences usually need additional undergraduate engineering courses, which are required prerequisites for core courses. For such students, depending upon their background, a special non-degree admission may be given followed by full admission upon successful completion of a series of required remedial courses.

A student with a M.S. in Mechanical or Chemical Engineering from another university can be admitted to the Ph.D. program. Two letters of recommendation are required in such cases to be certain that the student is likely to be successful in doctoral research.

DOCTOR OF PHILOSOPHY
Students may pursue the Doctor of Philosophy degree in either Polymer Science or Polymer Engineering.

Doctor of Philosophy in Polymer Science
An interdisciplinary program leading to the Doctor of Philosophy in Polymer Science is administered by the Department of Polymer Science. Graduates from the three main disciplines (chemistry, physics and engineering) are guided into the appropriate courses of study and research in that field under the supervision of a faculty member. Research facilities of the Institute of Polymer Science are available for dissertation research. Students may be admitted directly to the Ph.D. program upon screening of their qualifications and recommendation by the department chair and dean.

In addition to satisfying the general requirements of the Graduate School, a student working toward the Doctor of Philosophy in Polymer Science must meet the following requirements:

- Complete a course of study prescribed by the student's advisory committee based on the committee's judgment of the student's background and on the result of any special examinations it might impose. This course will consist of a minimum of, but usually more than, 36 credits in graduate courses, or their equivalent, plus sufficient Ph.D. research credits to make a total of 24 credits (exclusive of Master of Science thesis credit). Credits for participation in either Polymer Science of Polymer Engineering seminars do not apply toward the degree. At least 16 credits of graduate course work and all dissertation credits must be completed at the University.
- There is a university minimum residence time requiring one year, although graduate students starting with a B.S. or B.A. typically spend 4 years in residence.
- Completion of 18 credits among the following core courses (2 credits each) in polymer science:

Graduate Studies
MASTER’S DEGREE

Students may pursue Master of Science degrees in either Polymer Science or Polymer Engineering.

Master of Science in Polymer Science

- A minimum of 24 credits in appropriate courses in biology, chemistry, mathematics, physics, polymer science and engineering as prescribed by the advisory committee.
- Completion of 11 of credits in the following required core courses in polymer science: 9871:601 Polymer Concepts; 631 Polymer Science Laboratory; 633 Physical Properties of Polymers I; 674 Polymer Structure and Characterization; 701 Polymer Technology.
- Completion of 13 credit hours of elective courses appropriate to each student’s area of interest.
- Completion of a research project (9871:699) and the resulting 6 credits.
- Attendance at and participation in seminar-type discussions scheduled by the department. Credits for participation in either polymer science or polymer engineering seminars do not apply toward the degree.
- Demonstrated competence in computer skills.
- At least 12 credits of graduate coursework and all theses credits must be completed at the University.

Master of Science in Polymer Engineering

The major emphases of the graduate program in polymer engineering are in polymer processing, engineering performance and structural and rheological characterization of polymers.

The academic program requires the completion of 33 credits: 12 credits of core courses, 3 credits of approved mathematics courses, 6 thesis credits, and 12 credits of approved electives.

- Polymer engineering core:
  9841:611 Structural Characterization of Polymers with Electromagnetic Radiation 2
  9841:621 Rheology of Polymeric Fluids 3
  9841:622 Analysis and Design of Polymer Processing Operations I 3
  9841:631 Engineering Properties of Solid Polymers 2
  9841:641 Polymeric Materials Engineering Science 2
  Total 12

- Polymer engineering elective:
  9841:601 Polymer Engineering Seminar 1
  9841:623 Analysis and Design of Polymer Processing Operations II 3
  9841:642 Engineering Aspects of Polymer Colloids 2
  9841:651 Polymer Engineering Laboratory 3
  9841:661 Polymerization Reactor Engineering 3

- Approved engineering and science elective (a minimum of 3 credits of approved science or mathematics required):
  3450: Approved Mathematics 3
  4300:681 Advanced Engineering Materials 3
  4600:622 Continuum Mechanics 3
  9871:613 Polymer Science Laboratory 3
  9871:634 Polymer Structure and Characterization 2
  9871:676 Polymer Thermodynamics 2
  Total 12

- Thesis:
  9841:699 Master’s Thesis 6

- Requirements:
  9841:601 Polymer Engineering Seminar 12
  Approved electives 12
  Approved mathematics 3
  Thesis 6
  Total 33

- Attendance at and participation in department seminars as directed by the advisory committee is required.

Doctor of Philosophy in Engineering (Polymer Engineering)

The Department of Polymer Engineering administers a graduate program in which students, with primarily engineering backgrounds, are guided through a course of study and research under the supervision of a faculty member. Students may be admitted directly to the Ph.D. program upon screening of their qualifications and recommendation by the department chair and dean.

Students in Polymer Engineering will earn the degree of Doctor of Philosophy in Engineering. Requirements in the interdisciplinary field of Polymer Engineering for that degree are as follows:

- Successfully complete a qualifying examination within three semesters after admission into the program. The examination shall cover graduate courses that the student has completed and basic undergraduate topics.
- Develop a plan of study approved by the student’s advisory committee.
- Complete courses in the plan of study developed by the student advisory committee on the basis of the qualifying examination. A minimum of 96 credits of graduate work must be earned. A total of 48 credit hours of lecture courses and 48 credit hours of research must be completed. Twelve credit hours must be dissertation research.
- A student receiving a Master of Science degree from The University of Akron in Polymer Engineering may use all lecture course credits toward the 48 lecture course credit requirement.
- A student entering with a master’s degree or graduate credits from another institution may be given up to 24 credit hours toward the lecture course requirement.
- All doctoral students must complete the Polymer Engineering core requirements for the Master of Science degree.
- Each candidate must pass a candidacy exam and must present his/her research proposal for approval by the advisory committee and taken after 90% of the course work specified in the plan of study has been completed. The candidacy exam may be based on the research proposal.
- Each candidate must pass an oral examination in defense of the dissertation.

The University of Akron 2001-2002
Interdisciplinary and Certificate Programs of Study

Overview
To add to the dimensions of the traditional disciplines, the University has established interdisciplinary and interdepartmental programs of study. In addition to a major, the student may elect to pursue one of these programs.

Interdisciplinary Studies programs feature courses which integrate and analyze issues and concepts from more than one field. The goal of this type of study is to place knowledge into a greater perspective than would be possible through any one traditional field. This is accomplished by taking courses from a variety of departments as well as courses which may be team taught.

Upon completion of any of these programs, a statement will be placed on the student’s permanent record indicating the area of concentration. The certificate indicating the area of concentration will be awarded when the student completes requirements for a degree unless the program specifies that it is free-standing and does not require participation in a degree program.

ACUTE CARE NURSE PRACTITIONER – POST-MASTER’S

The Post-Master’s Acute Care Nurse Practitioner certificate program prepares acute care nurse practitioners to provide advanced practice nursing care to acutely and/or critically ill adults. The program requires one calendar year of intense study including advanced clinical practice and theory. The program is built upon a core of advanced assessment, pathophysiology, and pharmacology. Acute Care Nurse Practitioners are prepared to conduct comprehensive physical assessments, appraise health risks and promote health behaviors, order and interpret diagnostic tests, diagnose and manage commonly occurring health problems and diseases. The program consists of 16 credits of graduate level course work and 525 hours of clinical practice.

Admission Criteria
Hold an MSN degree from a professionally accredited nursing program.
Minimum of a 3.0 GPA on a 4.0 scale for the master’s degree program.
Recent acute/critical care experience (within the past three years).
A 300 word essay describing professional goals.
Completion of the following prerequisite courses: graduate level pharmacology, pathophysiology and advanced assessment.
Completion of an interview with the selection committee.
Advanced Cardiac Life Support (ACLS) Certification.

Program of Study

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>8200:690</td>
<td>Acute Care Nurse Practitioner I</td>
<td>4</td>
</tr>
<tr>
<td>8200:692</td>
<td>Clinical Management I</td>
<td>3</td>
</tr>
<tr>
<td>8200:693</td>
<td>Acute Care Nurse Practitioner II</td>
<td>4</td>
</tr>
<tr>
<td>8200:696</td>
<td>Acute Care Nurse Practitioner III</td>
<td>4</td>
</tr>
<tr>
<td>8200:698</td>
<td>Clinical Reasoning I</td>
<td>1</td>
</tr>
</tbody>
</table>

Total: 16 credits

ADDITIONAL STUDIES PROGRAMS

Addiction Counseling
Robert C. Schwartz, Ph.D., Coordinator
(Admissions temporarily suspended.)

The Addiction Counseling certificate program prepares master’s-level practitioners to assess, diagnose, and treat persons with addictive disorders using various counseling strategies. Trainees will complete coursework related to theory, assessment, treatment planning, and treatment of addicted clientele. Trainees will then gain supervised clinical experience specifically related to counseling clients with addictive disorders. Licensed mental health practitioners may list addiction counseling under their identified scope of practice after completion of this certificate program.

Admission

Persons are eligible for admission to the Certificate Program in Addiction Counseling if they are currently enrolled in a master’s degree program in counseling or a related field or currently hold a master’s degree in counseling or a closely related field. To participate in the program the student should:

- Be formally admitted to The University of Akron as a degree seeking or a special non-degree graduate student.
- Make written application to the program to the Counselor Education Admissions Committee in the Department of Counseling and Special Education.
- Receive written notification for admission from the Counselor Education Admissions Committee.
- Consult with the Counselor Education Internship Coordinator to plan for an internship in an appropriate addictions counseling setting.

Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>8200:732</td>
<td>Addiction Counseling I: Theory and Assessment</td>
<td>3</td>
</tr>
<tr>
<td>8200:734</td>
<td>Addiction Counseling II: Treatment Planning and Intervention Strategies</td>
<td>3</td>
</tr>
<tr>
<td>8200:685</td>
<td>Internship in Counseling</td>
<td>6</td>
</tr>
</tbody>
</table>

Total credit hours: 12

ADULT/GERONTOLOGICAL NURSE PRACTITIONER – POST-MSN

The Post-MSN certificate program is designed to prepare Adult/Gerontological Nurse Practitioners to complete additional course work required to sit for Nurse Practitioner certification. The Post-MSN Adult/Gerontological Nurse Practitioner Certification Program prepares graduates to assume advanced practice positions as providers of primary health care to adults and older adults.

Admission Criteria

Ohio RN licensure.
Hold an MSN degree from a professionally accredited nursing program (clinical master’s preferred).
Have a minimum GPA of 3.0 on a 4.0 scale for MSN program.
Minimum of 2-3 years recent clinical experience in adult or gerontological health care.
Complete an application to The University of Akron Graduate School.
Submit an essay describing professional goals.
Submit a resume outlining prior education and work related experiences.
Complete the following prerequisite courses: graduate level pharmacology, advanced assessment, advanced clinical pharmacology.
Completion of an interview with the selection committee.

Program of Study

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>8200:624</td>
<td>Post-MSN NP Adult/Gerontological Practicum I</td>
<td>3</td>
</tr>
<tr>
<td>8200:625</td>
<td>Post-MSN NP Adult/Gerontological Practicum II</td>
<td>3</td>
</tr>
<tr>
<td>8200:626</td>
<td>Post-MSN NP Adult/Gerontological Practicum III</td>
<td>3</td>
</tr>
<tr>
<td>8200:690</td>
<td>Clinical Management I</td>
<td>3</td>
</tr>
<tr>
<td>8200:692</td>
<td>Clinical Management II</td>
<td>3</td>
</tr>
<tr>
<td>8200:694</td>
<td>Clinical Management III</td>
<td>3</td>
</tr>
</tbody>
</table>

Total: 18 credits

APPLIED POLITICS

John C. Green, Ph.D., Director

The Ray C. Bliss Institute and the Department of Political Science have combined to offer a Certificate Program in Applied Politics for graduate students. The Certificate Program in Applied Politics offers course work in the history, organization and management of campaigns intended to influence the outcome of political decisions. Working from a set of core courses, students are allowed to concentrate in the area of applied politics of greatest interest—campaigns, communications, lobbying, political parties, etc. Believing that democracy is best served by having active and informed citizens, the certificate is designed for all students, no matter what their degree program as long as they have a deep interest in practical politics.

Requirements

Persons are eligible for admission to the Certificate Program in Applied Politics if they have been admitted to study as full-time students, special, or non-degree in any department of the University. Students who are pursuing a graduate degree in other departments at the University may be admitted to the Master’s level certificate program upon the recommendation of the chair/director of the department/school in which they are enrolled. Students shall seek admission to this program by filing an application with the Bliss Institute. The student shall schedule courses with the assistance of an advisor at the earliest possible time.

Core Courses (required – 12 credits):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3700:570</td>
<td>Campaign Management I</td>
<td>3</td>
</tr>
<tr>
<td>3700:571</td>
<td>Campaign Management II</td>
<td>3</td>
</tr>
<tr>
<td>3700:672</td>
<td>Seminar: Political Influences and Organizations</td>
<td>3</td>
</tr>
<tr>
<td>3700:695</td>
<td>Internship in Government and Politics</td>
<td>3</td>
</tr>
</tbody>
</table>
Electives:
Six credits selected from the following (at least 3 credits must be from 3700:502, 540, 572, 573, 574, 575, 576 or 630):
3700:502 Politics and the Media 3
3700:540 Race, Class, and Gender 3
3700:572 Campaign Finance 3
3700:573 Voter Contact and Elections 3
3700:574 Political Opinion, Behavior and Electoral Parties 3
3700:575 American Interest Groups 3
3700:576 American Political Parties 3
3700:630 Seminar in National Politics 3
3800:614 Ethics and Public Service 3
Additional 3 credits from approved courses in Political Science, Communication or other departments. Students must maintain at least a 3.0 average in their course work for the certificate.

Certificate
Political science majors will, upon completion of the program, be awarded an M.A. degree in Political Science with a Certificate in Applied Politics. Majors in other disciplines will have the Certificate noted on their permanent record.

BEHAVIORAL HEALTH NURSE PRACTITIONER - POST-MSN

Requirements
The Post-MSN Behavioral Health Nurse Practitioner certificate program is designed for those nurses who hold the Master's degree in Psychiatric Mental Health Nursing and are seeking preparation for the role of the psychiatric nurse practitioner. Upon completion of the 17 credit hour program, the students are eligible to sit for the psychiatric nurse practitioner certification examination.

Admission
Admission criteria include the following:
1. Hold an MSN degree from a professionally accredited nursing program.
2. Minimum of one year of experience in a psychiatric setting.
3. Complete an interview with the program coordinator.

Program
The program consists of five courses for a total of 16 credit hours. Students must complete a minimum of 600 practice hours in conjunction with the Child and Adolescent Health Nurse Practitioner certificate program.

Required Courses
8200:651 Pathophysiological Concepts 3
8200:652 Advanced Adult/Gerontological Assessment 3
8200:655 Child and Adolescent Health Nursing I 5
8200:656 Pharmacology for Child and Adolescent Health Nursing 3
8200:658 Child and Adolescent NP Internship (required 4 credits) 14
Total 16

CASE MANAGEMENT FOR CHILDREN AND FAMILIES

Helen K. Clemintshaw, Ph.D., Coordinator

Program
This certificate program is a special course of study which can be added to any graduate degree program. It may also be completed by a non-degree graduate student with special permission from the director of the Center for Family Studies. This certificate represents a concentration in theoretical and practical knowledge in collaborative case management for children and families in the context of community-based services. This course of study promotes collaboration among disciplines and services.

Admission
To participate in the program the student should:
Be formally admitted to The University of Akron as a postbaccalaureate, graduate or non-degree graduate student.
Make written application to the program and receive written notification of admission from The Center for Family Studies.

Requirements
Core:
Students should successfully complete all three of the core courses listed below. However, the first two courses plus three hours of electives must be completed prior to the student's enrollment in the practicum course.
7400:561 Case Management for Children and Families I
7400:562 Case Management for Children and Families II
7400:563 Practicum in Cross-Systems Case Management for Children and Families

Electives:
Students must successfully complete six credits of coursework selected from the various departmental courses listed below.

- Family and Consumer Sciences
  7400:501 Family Life Patterns in the Economically Deprived Home 2
  7400:504 Adolescence in the Family Context 3
  7400:540 Family Crisis 3
  7400:546 Culture, Ethnicity and the Family 3
  7400:602 Family in Life-Span Perspective 3
  7400:607 Family Dynamics 3
  7400:670 Child Development Theories 3
  7400:681 Family and Consumer Law 3
  7400:685 Development in Infancy and Early Childhood 3

- Home-Based Intervention
  1820:508 Home-Based Intervention Theory 3
  1820:509 Home-Based Intervention Techniques and Practice 3

CHILD AND ADOLESCENT HEALTH NURSE PRACTITIONER - POST-MSN

Requirements
The Post-MSN Child and Adolescent Health Nurse Practitioner certificate program is designed for those nurses who hold the Master of Science in Nursing degree and are seeking preparation for the role of the pediatric nurse practitioner. Upon completion of the 17 credit hour program, the students are eligible to sit for the pediatric nurse practitioner certification examination.

Admission
Admission criteria include the following:
Hold an MSN degree from a professionally accredited nursing program.
Minimum of a 3.0 GPA on a 4.0 scale for the master's degree program.
A minimum of one year of clinical experience in a pediatric setting.
Complete an interview with the program coordinator.

Program
The program consists of four courses for a total of 17 credits. Students are required to complete a minimum of 800 clinical practice hours in conjunction with the Child and Adolescent Health Nursing courses.

Required Courses
8200:651 Child and Adolescent Health Nursing I 5
8200:655 Child and Adolescent Health Nursing II 5
8200:656 Pharmacology for Child and Adolescent Health Nursing 3
8200:658 Child and Adolescent NP Internship (required 4 credits) 14
Total 17

COMPOSITION

Requirements
To be eligible for the certificate in composition, a person must be admitted to the University as a graduate student (with either full or provisional status). An eligible person interested in the program should contact the program director. Five courses in composition and linguistics are required. Other appropriate English courses in composition or linguistics may be substituted as optional courses with the permission of the director.

Required Courses:
3300:676 Theory and Teaching of Basic Composition 3
3300:673 Theory of Composition 3
3300:674 Research Methodologies in Composition 3

Optional Courses:
3300:570 History of English Language 3
3300:571 U.S. Dialects: Black and White 3
3300:589 Seminar in English: Grammatical Structures of Modern English 3
3300:575 Theory of Rhetoric 3
3300:589 Seminar in English: Sociolinguistic 3
3300:670 Modern Linguistics 3
3300:689 Seminar in English: Stylistics 3
3300:689 Seminar in English: Contextual Linguistics 3
DIVORCE MEDIATION

Helen Cleminshaw, Ph.D., Coordinator

Requirements

This graduate certificate program in divorce mediation requires a minimum of 15 graduate credits dependent upon previous educational background. The program has been designed to serve the practicing or prospective divorce mediator.

All applicants to the program should have previously earned a law degree or a master's degree at minimum in the behavioral sciences, such as psychology, social work, counseling, and marriage and family therapy, or child and family development. Applicants planning to pursue the certificate must apply to the Center for Family Studies and the Graduate School for admission as non-degree students. Persons currently working toward a doctorate or Juris Doctor at the University may participate in the certificate program as a cognate or minor. In this case, students must receive permission from their academic department as well as admission from the Center for Family Studies. Since the educational preparation prior to entry to this program will be quite diverse, the selection of courses within the certificate will vary among the participants. However, all students are expected to complete the core courses in addition to 10 credit hours selected from among several disciplines related to divorce mediation.

Core:

1800:601 Divorce Mediation 3
1800:602 Divorce Mediation Practicum 2

Select at least one from each area:

- Law
  9200:638 Family Law 3
  9400:551 Family Consumer Law 3

- Accounting
  6200:601 Financial Accounting 3
  9200:621 Accounting for Lawyers 3

- Family
  5600:665 Marriage and Family Therapy Theory and Techniques 3
  5600:667 Mental Therapy 3
  7400:607 Family Dynamics 3

Electives:

Students who have already completed coursework in Law, Accounting or Family may select from courses listed below:

5600:641 Career Counseling 3
5600:669 Systems Theory in Family Therapy 3
7400:540 Family Crisis 3
7400:550 Family and Divorce 2
7400:552 Family in Life-Span Perspective 2
9200:684 Alternate Dispute Resolution 3

E-BUSINESS

B. S. Vijayaraman, Ph.D., Director

A new model for business (e-Business) is taking shape that is built on the world's largest communications network, the Internet. The Internet has opened up new possibilities for operating and running a business and is changing the way businesses transact goods and services. The Internet creates a global platform for buying and selling goods and is used for redesigning business processes within organizations. As businesses invest in the commercialization of the Internet/WWW, there is an enormous need from a variety of fronts to understand the implications for strategic initiatives, marketing and advertising, financial markets, information systems strategy, human resource management, supply chain management and legal issues. A certificate program in e-Business is designed for students to learn how organizations can use Internet technology to create new business opportunities and how they can transform an existing business into an e-Business.

Persons are eligible for admission to the graduate certificate program in e-Business if they have been admitted to Graduate School at The University of Akron.

Required Courses:

6500:620 E-Business Foundations 3
6500:622 E-Business Technologies 3
6500:625 E-Business: Legal Issues 3
6500:658 E-Business Risks, Controls, and Assurance Services 3

ENVIRONMENTAL STUDIES

Ina D. Sasowsky, Ph.D., Director

Program

This graduate certificate program is designed for environmental professionals who wish to broaden their background or update their skills. In order to satisfy the course prerequisites, it is recommended that students have an undergraduate degree in one of the natural sciences, engineering, or a strong background in mathematics and science.

Admission

To participate in the program the student should:

- Be formally admitted to The University of Akron as a graduate or non-degree graduate student.
- Make a written application to the program and receive written notification of admission from the Center for Environmental Studies.

Requirements

A plan of study will be developed in consultation with the director of the Center for Environmental Studies. Students must complete the core requirement and a minimum of 14 credits from the list of electives or other courses approved by the director. Electives must be selected from a minimum of three different departments.

Core (required):

3010:501 Seminar in Environmental Studies (may be repeated as an elective) 2

Electives (minimum of 14 credits):

3010:501 Seminar in Environmental Studies 2
3010:502 Workshop in Environmental Studies 14
3100:621 Tropical Field Biology 3
3100:626 Freshwater Ecology Field and Laboratory Studies 3
3100:628 Wetland Ecology 4
3100:660 Environmental Phyiology 3
3350:505 Geographic Information Systems 3
3350:507 Advanced Geographic Information Systems 3
3550:544 Remote Sensing 3
3550:546 Advanced Remote Sensing 3
3550:554 Geology of Water 3
3570:570 Geochemistry 3
3570:614 Groundwater Hydrology 3
3570:561 Geologic Record of Past Global Change 3
3570:574 Advanced Groundwater Hydrology 3
3570:678 Urban Ecology 3
3400:571 American Environmental History 3
3470:561 Applied Statistics I 4
3570:512 Global Environmental Politics 3
3590:566 Population 3
4200:534 Ecology Field Workshop 3
4200:540 Advanced Pollution Control 3
4300:520 Environmental Engineering Design 3
4300:526 Water Quality Modeling and Management 3
4300:528 Hazardous and Solid Waste Management 3
4300:529 Inland Water Quality Management 3
4300:531 Soil Remediation 3
9200:681 Bioremediation 3
9200:661 Environmental Law 3

GERONTOLOGY

Harvey Sterns, Ph.D., Director

Requirements

This certificate program is a special course of study in gerontology that compli­ments graduate degree programs in various departments and colleges throughout the University. The graduate certificate is to be received with either a master's or doctoral degree. Individuals who already hold a graduate degree may also pursue the certificate. The program represents a concentration involving current knowledge and research in gerontology. It adds another dimension to the knowledge and skills a student is able to offer in the many professions that are becoming specialized in research and service to adults and older adults. This course of study coordinates multidisciplinary training of personnel in adult development and aging and helps to meet the critical shortage of trained individuals in the field of gerontology.

The undergraduate and graduate curriculum committees of the Institute for Life Span Development and Gerontology will oversee this certificate program and certify, through the director of the Institute, that all requirements of the certificate have been completed.
GLOBAL SALES MANAGEMENT

Scott Widmier, Ph.D., Coordinator

Program

The Global Sales Management Certificate is a special course of study which prepares an individual for a career in managing a global sales force. The program takes into account the complexities of culture as far as doing business in foreign countries.

Admission

To participate in the program, the student must be formally admitted to The University of Akron as a graduate or non-degree graduate student, and complete at least 15 credits. Students should visit the Director of Graduate Studies in Business Administration to request that notation of the certificate be included on the student’s transcript as soon as the course of study is completed.

Requirements (complete all 6 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>6600:580 Sales Management</td>
<td>3</td>
</tr>
<tr>
<td>6600:585 Global Sales Strategy</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives (complete at least 9 credits):

<table>
<thead>
<tr>
<th>Course</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>3250:661 Principles of International Economics</td>
<td>3</td>
</tr>
<tr>
<td>3250:671 International Trade</td>
<td>3</td>
</tr>
<tr>
<td>6500:670 Marketing and Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>6500:652 Organizational Behavior</td>
<td>3</td>
</tr>
<tr>
<td>6500:656 Management of International Operations</td>
<td>3</td>
</tr>
<tr>
<td>6600:600 Marketing Concepts</td>
<td>3</td>
</tr>
<tr>
<td>6600:650 Consumer Behavior</td>
<td>3</td>
</tr>
<tr>
<td>6800:605 International Business Environments</td>
<td>3</td>
</tr>
<tr>
<td>6800:630 International Marketing Policies</td>
<td>3</td>
</tr>
<tr>
<td>7600:645 Intercultural Communication Theory</td>
<td>3</td>
</tr>
</tbody>
</table>

HOME-BASED INTERVENTION THERAPY

Helen Cleminshaw, Ph.D., Coordinator

Program

This certificate program is a special course of study along with undergraduate and graduate degree programs in various departments and colleges throughout the University. Undergraduate students will earn the certificate upon graduation in their degree program. Individuals who already hold undergraduate or graduate degrees may also pursue the certificate. Students with an undergraduate degree who do not seek a graduate degree may pursue the certificate in the postbaccalaureate program. Students who already hold a graduate degree may be admitted to the program as non-degree graduate students. Students pursuing graduate degrees will receive their graduate certificate upon completion of the requirements for their graduate degree. The program represents a concentration in current theoretical knowledge and practice in home-based intervention. It adds another dimension to the knowledge and skills a student is able to offer in the many professions that relate to services to at-risk children and their families. This course of study coordinates multidisciplinary training of personnel in home-based intervention and helps to meet the need for trained professionals in home-based intervention.

The undergraduate and graduate curriculum committees of the Center for Family Studies will oversee the certificate program and certify through the Director of the Certificate Programs in Home-Based Intervention that all requirements for the certificate have been completed.
Admission
To participate in the program at the graduate level, the student should:

- Be formally admitted to The University of Akron Graduate School.
- Make written application to the program countersigned by the student’s major academic advisor (if applicable).
- Have an interview with the Director of the Certificate Programs in Home-Based Intervention.
- Receive written notification for admission from the Director of the Certificate Programs in Home-Based Intervention.
- Consult with the Director of the Certificate Programs in Home-Based Intervention to formulate a program of study.

All students enrolled in the home-based certificate programs will enroll in the core course in Home-Based Intervention. Students enrolled in the undergraduate and postbaccalaureate program will enroll in the courses at the undergraduate level. Students admitted to the Graduate School as degree seeking or non-degree students will enroll in graduate courses. Graduate students enrolled in the core courses at the 500 level will have an additional graduate level project.

Students will complete a minimum of 18 hours of graduate credits in core and elective coursework. In order to earn the interdisciplinary certificate in Home-Based Intervention, the student must complete the following requirements within six years after beginning the program.

Requirements
Core Courses:

- 1620:503 Home-Based Intervention Theory 3
- 1620:504 Home-Based Intervention Techniques and Practice 3
- 1620:505 Home-Based Intervention Internship 3-5

Eligibility Courses:

Students must have completed at least 9 credits of coursework in theoretical frameworks from their discipline or related areas as follows:

Theoretical Frameworks:

- Systems Theory
  - 3850:620 General Systems Theory 3
  - 5600:643 Theories and Philosophy of Counseling 3
  - 5600:655 Marriage and Family Therapy: Theory and Techniques 3
  - 7400:607 Family Dynamics 3
- Developmental Theory
  - 3850:612 Socialization: Child to Adult 3
  - 7400:602 Family in Life-Span Perspective 3
  - 7400:603 Developmental Parent-Child Interactions 3
  - 7400:610 Child Development Theories 3
- Therapeutic Theory
  - 5600:651 Techniques in Counseling 3
  - 5600:665 Mental Therapy 3
  - 5600:669 Systems Theory in Family Therapy 3

Elective Courses (9 credits):

Select one course from three different disciplines. (Must be outside student's major degree area.)

Specific Skill Areas:

- Psychology
  - 3750:530 Psychological Disorders of Children 3
  - 3750:704 Theories of Personality 4
- Sociology
  - 3850:550 Sociology of Mental Illness 3
  - 3850:668 Human Ecology 3
  - 3850:753 Family and Health (Special Topics) 1-3
- Counseling
  - 5600:550 Counseling Problems Related to Life-Threatening Illness and Death 3
  - 5600:620 Issues in Sexuality for Counselors 3
- Special Education
  - 5610:450 Developmental Characteristics of Exceptional Individuals 3
  - 5610:560 Family Dynamics and Communication in the Educational Process 3
  - 5610:594 Collaboration and Consultation Skills for Special Educators 3
- Multicultural Education (Curricular and Instructional Studies)
  - 5500:571 Characteristics of Culturally Diverse Populations 3
- Family and Consumer Sciences
  - 7400:501 Family-Life Patterns in the Economically Dependent Home 3
  - 7400:504 Adolescence in the Family Context 3
  - 7400:506 Family Financial Management 3
  - 7400:540 Family Crisis 3
  - 7400:542 Human Sexuality 3
  - 7400:546 Culture, Ethnicity, and the Family 3
  - 7400:590 Workshop in Family and Consumer Sciences: Family and Divorce 3
  - 7400:596 Parent Education 3
- Social Work
  - 7750:510 Minority Issues in Social Work Practice 3
  - 7750:552 Social Work and Mental Health 3
  - 7750:554 Social Work in Juvenile Justice 3

MANAGEMENT OF TECHNOLOGY AND INNOVATION
R. Ray Gehani, D.Eng., Ph.D., Director

In an increasingly global economy integrated with technology, the innovative enterprises with effective and efficient management of technology and innovation will gain competitive advantage over their rivals. To respond to these needs of our potential employers, this certificate program in Management of Technology and Innovation was developed by the College of Business Administration with the cooperation of the College of Polymer Science and Polymer Engineering and the guidance of the members of the Advancement Councils of the two colleges. This graduate certificate program offers courses in Management of Technology and other innovation-related business disciplines, including marketing, finance, accounting, entrepreneurship, and more. This certificate program will prepare the learners to innovatively manage a technology-driven enterprise.

To participate in the program the student should:

- Be formally admitted to The University of Akron as a graduate or non-degree graduate student.

Required Courses:

- 6500:665 Management of Technology 3
- 6500:669 Polymer Management Decisions 3
- 6600:600 Marketing Concepts 3
- 6200:601 Financial Accounting 3

Recommended Electives:

From these courses, select any six credits for which you have the proper prerequisites.

- 6200:610 Process Analysis and Cost Management 3
- 6400:602 Managerial Finance 3
- 6500:608 Entrepreneurship 3
- 6500:609 Management and Organizational Behavior 3
- 6500:602 Computer Techniques for Management 3
- 6500:650 Fundamentals of Human Resource Administration 3
- 6600:540 Product and Brand Management 3
- 6600:575 Business Negotiation 3
- 6800:656 Management of International Operations 3

MID-CAREERS PROGRAM IN URBAN STUDIES

Requirements

The program will require the completion of 16 graduate credits in a single area or in several areas in the urban field. Upon the completion of the program, a certificate will be granted.

Admission

A student must satisfy the requirements for entrance in graduate programs or have a bachelor’s degree and the equivalent of five years’ experience in a professional, administrative or leadership position, in which case the student shall be admitted as a non-degree student. A student may wish to pursue additional electives. However, a student admitted to this program will be limited to 20 credits. If the student wishes to pursue more than 20 credits, the student must be admitted to the M.A. program in urban studies.

Program

The Mid-Careers Certificate Program in Urban Studies will require the successful completion of a plan of study which must include a minimum of 16 credits of work in existing courses offered by the Department of Public Administration and Urban Studies. The core program and areas of study are listed below. Electives will be chosen in consultation with the advisor from the approved list of courses. Courses offered by other departments will be accepted if they are urban related and will specifically contribute to the student’s objectives.

Core:

- 3350:600 Basic Analytical Research 3
- 3980:601 Advanced Research and Statistical Methods 3

Options:

- Geography/Urban Planning
  - 3350:600 Planning Theory 3
  - 3350:600,1,2 Seminar: Urban Planning Design 3
  - 3350:600,1,2 Seminar: Planning Theory and Innovation Electives 3
- 3350:600,1,2 Seminar: Planning Theory and Innovation Electives 4
Public Administration

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3980:611</td>
<td>Introduction to the Profession of Public Administration</td>
<td>3</td>
</tr>
<tr>
<td>3980:640</td>
<td>Fiscal Analysis</td>
<td>3</td>
</tr>
<tr>
<td>3980:643</td>
<td>Introduction to Public Policy</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective(s)</td>
<td>4</td>
</tr>
</tbody>
</table>

Urban Research Methods

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3980:670</td>
<td>Research for Futures Planning</td>
<td>3</td>
</tr>
<tr>
<td>3980:673</td>
<td>Community Applications in Public Organizations</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective(s)</td>
<td>4</td>
</tr>
</tbody>
</table>

Urban Service Systems

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3980:620</td>
<td>Social Services Planning</td>
<td>3</td>
</tr>
<tr>
<td>3980:621</td>
<td>Urban Society and Service Systems</td>
<td>3</td>
</tr>
<tr>
<td>3980:571</td>
<td>Program Evaluation in Urban Studies</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective(s)</td>
<td>4</td>
</tr>
</tbody>
</table>

Urban Studies

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3980:602</td>
<td>History of Urban Development</td>
<td>3</td>
</tr>
<tr>
<td>3980:6__</td>
<td>Elective(s)</td>
<td>10</td>
</tr>
</tbody>
</table>

MOTION AND CONTROL SPECIALIZATION

All manufacturing processes involve motion and control which may range from simple use of pneumatic cylinders in robotics to coordinated motion and sequence control in assembly lines. The technology in motion and control grows and changes at a pace that makes systems of over five years old almost obsolete. The primary purpose of the Motion and Control Specialization certificate program is to provide the graduating engineers with a focused expertise in motion and control and to furnish the necessary tools in order to enable them to follow the changes in technology after graduation. In addition, the program will also serve the practicing engineers and life-long learners to come back to school and refresh their skills using the certificate program.

Persons interested in this program should contact the Department of Mechanical Engineering.

Admission:

To participate in the program, the student should be formally admitted to The University of Akron as a postbaccalaureate, undergraduate, graduate, or non-degree graduate student.

Requirements:

Students should successfully complete all three courses listed below:

- Introduction to Industrial Control (5100:651)
- Robot Design and Applications (5100:644)
- Flexible Manufacturing Systems (5100:670)

* Undergraduate students must obtain permission to take this course.

NEW MEDIA TECHNOLOGIES

All applicants to the Program who have previously earned a bachelor's degree. Applicants wishing to pursue a master's degree in Educational Foundations must apply to the Graduate School for admission into the program. Applicants wishing to pursue only the certificate program must apply to the Graduate School for admission as a special non-degree student.

To receive the certificate in New Media Technologies, students are required to take 18 hours from the list of available electives.

Available Electives:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100:590</td>
<td>Workshop: Instructional Technology*</td>
<td>3</td>
</tr>
<tr>
<td>5100:633</td>
<td>Instructional Design</td>
<td>3</td>
</tr>
<tr>
<td>5100:632</td>
<td>Web-Based Learning Systems</td>
<td>3</td>
</tr>
<tr>
<td>5100:633</td>
<td>Hypermedia</td>
<td>3</td>
</tr>
<tr>
<td>5100:634</td>
<td>Visual Literacy</td>
<td>3</td>
</tr>
<tr>
<td>5100:635</td>
<td>Emerging Technologies</td>
<td>3</td>
</tr>
<tr>
<td>5100:636</td>
<td>Topical Seminar: Advanced Multimedia (may be repeated for 6 hours)</td>
<td>3</td>
</tr>
<tr>
<td>5500:175</td>
<td>Instructional Technology Applications</td>
<td>3</td>
</tr>
<tr>
<td>7100:590</td>
<td>Workshop in Art*</td>
<td>3</td>
</tr>
<tr>
<td>7500:553</td>
<td>Music Software Survey and Use</td>
<td>3</td>
</tr>
<tr>
<td>7500:590</td>
<td>Workshops in Music Technology*</td>
<td>3</td>
</tr>
<tr>
<td>7600:516</td>
<td>New Media Writing</td>
<td>3</td>
</tr>
<tr>
<td>7600:517</td>
<td>New Media Production</td>
<td>3</td>
</tr>
<tr>
<td>7600:568</td>
<td>Nonlinear Editing</td>
<td>3</td>
</tr>
<tr>
<td>7600:590</td>
<td>Workshops in Communication*</td>
<td>3</td>
</tr>
</tbody>
</table>

*Workshops may be repeated for a total of 6 credit hours.

NURSING EDUCATION

The certificate in Nursing Education allows for advanced role specialization in nursing education. Four sequential courses for a total of 12 credit hours comprise the certificate requirements. The certificate program is open to all current master's and doctoral students in the College of Nursing, post-baccalaureate students, post-MSN students, post-doctoral and faculty currently teaching in nursing programs. Formal admission to The University of Akron is required as either a post-baccalaureate student, graduate student or non-degree graduate student. The awarding of this certificate is contingent upon a degree completion program.

For information concerning admission to the certificate program, please contact the College of Nursing, Graduate Program, (330) 972-7555.

Required Courses:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>8200:601</td>
<td>Instructional Methods in Nursing Education</td>
<td>3</td>
</tr>
<tr>
<td>8200:602</td>
<td>Nursing Curriculum Development</td>
<td>3</td>
</tr>
<tr>
<td>8200:603</td>
<td>Evaluation in Nursing Education</td>
<td>3</td>
</tr>
<tr>
<td>8200:604</td>
<td>Practicum: The Academic Role of the Nurse Educator</td>
<td>3</td>
</tr>
</tbody>
</table>

PARENT AND FAMILY EDUCATION

Susan D. Witt, Ph.D., Coordinator

Program

This certificate program is a special course of study which can be added to any graduate degree program. It may also be completed by a non-degree graduate student with special permission from the director of the Center for Family Studies. This certificate represents a concentration in theoretical and practical knowledge in parent and family education for community-based services. This course of study promotes collaboration among disciplines and services.

Admission

To participate in the program the student should:

- Be formally admitted to The University of Akron as a postbaccalaureate, graduate or non-degree graduate student.

Make written application to the program and receive written notification of admission from the Center for Family Studies.

Requirements:

Core:

Students must successfully complete all three of the core courses listed below. However, the first two courses plus three hours of electives must be completed prior to the student's enrollment in the practicum course.

- Parent Education (7400:596)
- Developmental Parent-Child Interactions (7400:605)
- Practicum in Parent and Family Education (7400:594)

Electives:

Students must successfully complete six credits of coursework selected from among the various departmental courses listed below. These credits shall be chosen from departments outside the student's discipline.

- Family and Consumer Sciences
  - Family Life Patterns in the Economically Deprived Home (2)
  - Adolescence in the Family, Context (3)
  - Family Crisis (3)
  - Culture, Ethnicity and the Family (3)
  - Family in Life-Span Perspective (3)
  - Family Dynamics (3)
  - Child Development Theories (3)
  - Family and Consumer Law (3)
  - Development in Infancy and Early Childhood (3)

- Social Work
  - Family Counseling in Human Services (3)
  - Child Welfare Policy and Services: Family and Children (3)
  - Social Work Practice (3)

- Nursing
  - Child and Adolescent Health Nursing (5)

- Psychology
  - Psychopathology of Mental Disorders (4)
  - Child Psychology (4)
  - Psychology of Learning Disabilities (4)

- Sociology
  - Socialization of Child to Adult (3)
  - Sociology of Education (3)

- Educational Foundations
  - Individual and Family Development Across the Lifespan (3)
  - Learning Processes (3)
**Public Policy**

Stephen C. Brooks, Ph.D., Chairman, Coordinating Committee

**Program**

This program will assist the person in understanding, formulating and implementing decisions in the public sector. A person who is interested in government service, administration of publicly supported institutions and the teaching of government at the college level should find such an interdisciplinary program to be of great value.

**Admission**

Persons are eligible for admission to the Graduate Certificate in Public Policy Program if they have been admitted to graduate study as non-degree students in the departments of economics, political science or sociology, or are pursuing a master's or doctoral degree in one of those three departments. Students who are pursuing a graduate degree in other departments at the University may be admitted upon the recommendation of the chair of the department in which they are enrolled.

**Requirements**

Core:

Each student enrolled in the program shall complete three of the following courses:

- one from the Department of Economics, one from the Department of Political Science and one from the Department of Sociology.

- Economics (choose one)
  - 3250:630 Human Resource Policy
  - 3250:686 Public Finance
  - 3250:666 Seminar on Economic Planning

- Political Science (choose one)
  - 3700:641 The Policy Process
  - 3700:642 Methods of Policy Analysis
  - 3700:666 Seminar in Public Policy Agendas and Decisions

- Sociology (choose one)
  - 3850:613 Sociology of Program Evaluation and Program Improvement
  - 3850:679 Political Sociology

In addition to the courses listed above, each student, after receiving the approval of his or her advisor, shall complete two courses related to public policy.

Each student shall complete a scholarly paper dealing with public policy under the direction of a graduate faculty member in the departments of economics, political science or sociology. The student shall enroll for three credits in one of the following courses: 3250:687/698 Reading in Advanced Economics, 3700:697 Independent Research and Readings or 3850:697 Readings in Contemporary Sociological Literature. The student’s paper shall be evaluated by an interdisciplinary committee consisting of graduate faculty from at least two of the previously mentioned departments.

All persons enrolled in the Graduate Certificate Program in Public Policy must successfully complete 3700:695 Internship in Political Science, a course which will permit a student to gain experience working with public officials, government agencies, political parties or interest groups. A student will normally enroll in this course after having completed at least 12 semester credits of work relating to public policy. A person with extensive administrative or governmental experience may be permitted, with the approval of the student’s advisor, to substitute another course dealing with public policy in place of the Internship in Political Science.

At least two-thirds of the credits earned for this certificate must be in 600- or 700-level courses. No more than three courses in which the student enrolls, of the seven required for the Graduate Certificate in Public Policy, may also apply toward meeting requirements for a graduate degree at The University of Akron.

The student must maintain at least a “B” (3.00) average in course work for the certificate.

**Administration of the Program**

The departments of economics, political science and sociology shall each annually select a representative for a coordinating committee from among those members of the graduate faculty who have special knowledge or expertise in the area of public policy. The committee shall meet each year elect one of its members as chairperson. The chairperson shall be responsible for disseminating information about the certificate, certifying that a student has met requirements for the completion of the program and convening members of the coordinating committee whenever appropriate.
TEACHING ENGLISH AS A SECOND LANGUAGE†

Kenneth J. Pekentarn, Ph.D., Director

Requirements

This program is intended for those who seek training in the teaching of English as a second language (ESL) at the elementary or high school level or who wish to obtain an initial qualification in teaching ESL in order to teach in settings other than the Ohio public school system.

The program is designed to introduce the student to the central issues in the theory and practice of teaching English to native speakers through courses in modern and applied linguistics, in second language pedagogy and in related disciplines.

Students who do not have English as a native language must demonstrate adequate proficiency in English with a valid TOEFL score of at least 550.

Program

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>3300:573</td>
<td>Seminar in Teaching ESL: Theory and Method</td>
<td>3</td>
</tr>
<tr>
<td>3300:569</td>
<td>Seminar in English: Grammarian Structures of English</td>
<td>3</td>
</tr>
<tr>
<td>5500:570</td>
<td>Multicultural Education in the U.S.</td>
<td>3</td>
</tr>
<tr>
<td>or 3300:569</td>
<td>Seminar in English: Sociolinguistics</td>
<td>2</td>
</tr>
<tr>
<td>or 3300:543</td>
<td>Techniques for Teaching ESL in the Bilingual Classroom</td>
<td>3</td>
</tr>
</tbody>
</table>

†The awarding of this certificate is not contingent upon completion of a degree program. Undergraduate certificate programs require a 2.56 grade point average; graduate certificate programs require a 3.00 grade point average.

**Choice to be decided in consultation with the program director.

TECHNICAL AND SKILLS TRAINING

Qarder Jensrud, Ph.D., Coordinator (e-mail: qjensrud@uakron.edu)

This certificate program in technical and skills training is a special course of study within the College of Education undergraduate and graduate programs to serve the practicing or prospective business and/or industrial-technical trainer.

Persons are eligible for admission to the Certificate in Technical and Skills Training if they have been admitted to study as special, non-degree or full-time students in any department of the University. Undergraduates will earn the certificate upon graduation from their degree program. Individuals who already hold undergraduate or graduate degrees may also pursue this certificate. Students with an undergraduate degree who do not seek a graduate degree may pursue the certificate at the postbaccalaureate program. Students who already hold a graduate degree or do not wish to pursue a graduate degree may be admitted to the program as a non-degree graduate student. Students pursuing graduate degrees will receive their graduate certificate upon completion of the requirements for their graduate degree. Students enrolled in the undergraduate and postbaccalaureate program will enroll in the courses at the undergraduate level. Students admitted to the Graduate School as degree-seeking or non-degree students will enroll in graduate courses. Graduate students enrolled in the core courses at the 500 level will have an additional graduate level project.

Requirements

Minimum: 19 Credits

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>5400:500</td>
<td>Postsecondary Learner</td>
<td>3</td>
</tr>
<tr>
<td>5400:501</td>
<td>Learning with Technology</td>
<td>1</td>
</tr>
<tr>
<td>5400:515</td>
<td>Training in Business and Industry</td>
<td>3</td>
</tr>
<tr>
<td>5400:530</td>
<td>Systematic Curriculum Design for Postsecondary Instruction</td>
<td>3</td>
</tr>
<tr>
<td>5400:553</td>
<td>Systematic Instructional Design in Postsecondary Education</td>
<td>3</td>
</tr>
<tr>
<td>5400:690</td>
<td>Internship in Postsecondary Education</td>
<td>3</td>
</tr>
<tr>
<td>5190:520</td>
<td>Introduction to Instructional Computing</td>
<td>3</td>
</tr>
</tbody>
</table>

The internship is the last course taken. This course can not be taken until all other certificate courses have been completed with a 3.0 GPA or better.

WOMEN’S STUDIES

For information, contact the Interdisciplinary Office, located in Leigh Hall 201, (330) 972-7006.

Building on an interdisciplinary foundation, the Women’s Studies Graduate Certificate Program allows students to examine the cultural practices that have largely excluded and devalued differences in gender, sexual orientation, ethnicity, race and class. This program is designed for graduate students interested in feminist research and/or pedagogy. Students take three core classes in Women’s Studies and pursue the electives in their area of concentration or a related field. This program requires a minimum of 14 credits to complete—between 5 and 7 of these credits are in required Women’s Studies classes, the remainder of the credits are taken in electives.

Admission

Hold a Bachelor’s Degree with a minimum 2.75 grade point average.

Requirements (required 5-7)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1840:580</td>
<td>Feminist Theory</td>
<td>3</td>
</tr>
<tr>
<td>1840:590</td>
<td>Workshop: Women’s Studies Lecture Series</td>
<td>1</td>
</tr>
<tr>
<td>1840:593</td>
<td>Individual Studies on Women</td>
<td>1</td>
</tr>
</tbody>
</table>

Electives

Three courses selected from the Women’s Studies Coordinating Council-approved list of graduate level courses.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1840:585</td>
<td>Special Topics in Women’s Studies: Women, Minorities and Media</td>
<td>3</td>
</tr>
<tr>
<td>1840:586</td>
<td>Special Topics in Women’s Studies: Women, Poverty and Welfare</td>
<td>3</td>
</tr>
<tr>
<td>1840:587</td>
<td>Special Topics in Women’s Studies: Women as Survivors</td>
<td>3</td>
</tr>
<tr>
<td>1840:595</td>
<td>Special Topics in Women’s Studies: Works of Women</td>
<td>3</td>
</tr>
<tr>
<td>3300:550</td>
<td>Selected Topics in Ancient, Culture, Women and Gender</td>
<td>3</td>
</tr>
<tr>
<td>or 1840:596</td>
<td>in Classical Antiquity</td>
<td>3</td>
</tr>
<tr>
<td>or 1840:597</td>
<td>in Women’s Studies</td>
<td>3</td>
</tr>
<tr>
<td>3300:569</td>
<td>Seminar in English: Twentieth Century Women Writers</td>
<td>3</td>
</tr>
<tr>
<td>3300:568</td>
<td>Seminar in English: Women and Film</td>
<td>3</td>
</tr>
<tr>
<td>3400:500</td>
<td>Women in Revolutionary China</td>
<td>3</td>
</tr>
<tr>
<td>3750:674</td>
<td>Psychology of Women</td>
<td>3</td>
</tr>
<tr>
<td>3820:523</td>
<td>Sociology of Women</td>
<td>3</td>
</tr>
<tr>
<td>7100:501</td>
<td>Special Topics in History of Art: Women in Art</td>
<td>3</td>
</tr>
<tr>
<td>7600:508</td>
<td>Women, Minorities and News</td>
<td>3</td>
</tr>
<tr>
<td>7750:511</td>
<td>Women’s Issues in Social Work Practice</td>
<td>3</td>
</tr>
<tr>
<td>or 7750:510</td>
<td>Topics in Social Work/Social Welfare: Gay and Lesbian Issues</td>
<td>3</td>
</tr>
</tbody>
</table>

or other classes as approved by Women’s Studies graduate coordinator for the certificate.

Admission

To participate in the program the student should:

- Be formally admitted to The University of Akron as an undergraduate, postbaccalaureate or graduate student.
- Make written application to the program coordinator.
- Receive written notification from the program coordinator.
- Consult with a Postsecondary Technical Education Program Advisor to formulate a program of study.
SECTION 5. Graduate Courses

### Course Numbering Index*

**Interdisciplinary Programs**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>Divorce Mediation</td>
</tr>
<tr>
<td>1820</td>
<td>Home-Based Intervention Therapy</td>
</tr>
<tr>
<td>1840</td>
<td>Women's Studies</td>
</tr>
<tr>
<td>1880</td>
<td>Medical Studies</td>
</tr>
<tr>
<td>3000</td>
<td>Cooperative Education</td>
</tr>
<tr>
<td>3006</td>
<td>Institute for Lifespan</td>
</tr>
<tr>
<td>3010</td>
<td>Development and Gerontology</td>
</tr>
</tbody>
</table>

**Buchtel College of Arts and Sciences**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3100</td>
<td>Biology</td>
</tr>
<tr>
<td>3110</td>
<td>Biology/NEOCOM</td>
</tr>
<tr>
<td>3150</td>
<td>Chemistry</td>
</tr>
<tr>
<td>3200</td>
<td>Classics</td>
</tr>
<tr>
<td>3210</td>
<td>Greek</td>
</tr>
<tr>
<td>3220</td>
<td>Latin</td>
</tr>
<tr>
<td>3230</td>
<td>Anthropology</td>
</tr>
<tr>
<td>3240</td>
<td>Archaeology</td>
</tr>
<tr>
<td>3250</td>
<td>Economics</td>
</tr>
<tr>
<td>3300</td>
<td>English</td>
</tr>
<tr>
<td>3350</td>
<td>Geography and Planning</td>
</tr>
<tr>
<td>3370</td>
<td>Geology</td>
</tr>
<tr>
<td>3400</td>
<td>History</td>
</tr>
<tr>
<td>3450</td>
<td>Mathematics</td>
</tr>
</tbody>
</table>

**College of Engineering**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>4200</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>4300</td>
<td>Civil Engineering</td>
</tr>
<tr>
<td>4400</td>
<td>Electrical Engineering</td>
</tr>
</tbody>
</table>

**College of Education**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>5100</td>
<td>Educational Foundations and Leadership</td>
</tr>
<tr>
<td>5170</td>
<td>General Administration</td>
</tr>
<tr>
<td>5190</td>
<td>Higher Education Administration</td>
</tr>
<tr>
<td>5400</td>
<td>Postsecondary Technical Education</td>
</tr>
<tr>
<td>5500</td>
<td>Curricular and Instructional Studies</td>
</tr>
</tbody>
</table>

**College of Business Administration**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>6200</td>
<td>Accountancy</td>
</tr>
<tr>
<td>6300</td>
<td>Entrepreneurship</td>
</tr>
<tr>
<td>6400</td>
<td>Finance</td>
</tr>
</tbody>
</table>

**College of Fine and Applied Arts**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>7100</td>
<td>Art</td>
</tr>
<tr>
<td>7400</td>
<td>Family and Consumer Sciences</td>
</tr>
<tr>
<td>7500</td>
<td>Music</td>
</tr>
<tr>
<td>7510</td>
<td>Musical Organizations</td>
</tr>
<tr>
<td>7520</td>
<td>Applied Music</td>
</tr>
<tr>
<td>7600</td>
<td>Communication</td>
</tr>
</tbody>
</table>

**College of Nursing**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>8200</td>
<td>Nursing</td>
</tr>
</tbody>
</table>

**College of Polymer Science and Polymer Engineering**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>9841</td>
<td>Polymer Engineering</td>
</tr>
</tbody>
</table>

* Each course at the University has two numbers. One designates the college and department of which it is a part; one specifies the major subject of the particular course. For instance:

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>3300:507</td>
<td>Middle English Literature</td>
</tr>
</tbody>
</table>

In the above example, the first four digits of the number (3300) indicate the college and department. In the case, 3000 represents the Buchtel College of Arts and Sciences; 3300 refers to the Department of English. The second set of digits (507) following the colon indicates exactly which course in the Department of English is being specified. The course number also indicates the level at which the course is being taught and the point at which the student is ready to take the course. A student must apply for and be admitted to the Graduate School before registering for graduate credit.

An explanation of that numbering system follows:

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>500-599</td>
<td>Master’s-level courses (also, 600-799 J.D. level courses)</td>
</tr>
<tr>
<td>700-499</td>
<td>Doctoral-level courses</td>
</tr>
</tbody>
</table>

---

### Interdisciplinary Programs

#### DIVORCE MEDIATION 1800:

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>601</td>
<td>Divorce Mediation</td>
</tr>
</tbody>
</table>

Prerequisite: Admission to the Graduate Certificate Program on Divorce Mediation. Overview of divorce mediation process includes guidelines for negotiating separation and divorce agreements, division of personal and real property, support, custody, and future plans.

**HOME-BASED INTERVENTION THERAPY 1820:**

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>501</td>
<td>Home-Based Intervention Theory</td>
</tr>
</tbody>
</table>

Prerequisite: Admission to Certificate Program. Overview of home-based intervention to include philosophy and description of this programming as well as assessment of family, home and community environment.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>502</td>
<td>Home-Based Intervention Techniques and Practice</td>
</tr>
</tbody>
</table>

Prerequisite: 503. Provides intervention techniques required for home-based intervention and learning opportunities for matching techniques with specific family problems.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>503</td>
<td>Home-Based Intervention Internship</td>
</tr>
</tbody>
</table>

Prerequisite: 504. Allows students the opportunity to apply knowledge of home-based intervention in actual agency work setting, working in the homes of their clients.

### WOMEN'S STUDIES 1840:

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>580</td>
<td>Feminist Theory</td>
</tr>
</tbody>
</table>

Prerequisite: 1840:300. A summary of feminist theory to familiarize students with the main currents in contemporary feminist theory and the origins and evolution of that thought.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>585</td>
<td>Special Topics in Women's Studies</td>
</tr>
</tbody>
</table>

May be repeated. Specialized topics and current issues in Women's Studies. Covers content and issues not currently addressed in other academic courses. Emphasis will be on original source materials, critical analyses and the synthesis of empirical and theoretical aspects.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>586</td>
<td>Internship in Women's Studies</td>
</tr>
</tbody>
</table>

Prerequisite: permission of Director of Women's Studies. This class provides supervised experience and on-the-job training in an organization, agency, corporation or group dealing with women's issues.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>590</td>
<td>Workshop</td>
</tr>
</tbody>
</table>

May be repeated. Group experiential study of special issues in Women's Studies.

### MEDICAL STUDIES 1880:

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>501</td>
<td>Special Topics: Medical Education</td>
</tr>
</tbody>
</table>

May be repeated with a change of topic with a maximum of three credits toward graduation. Prerequisites: upper-college student status and permission. May be repeated. Prerequisites: upper-college student status and permission. Selected topics on medical education for professionals. Intended to provide advanced undergraduate education and continuing education for student and practitioners in the health services. Graded credit/non-credit.

### COOPERATIVE EDUCATION 3000:

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>501</td>
<td>Cooperative Education</td>
</tr>
</tbody>
</table>

Prerequisite: must complete 12 graduate credit hours with a minimum of 2.0 overall grade point average. (May be repeated.) For cooperative education students only. Work experiences in business, industry, or governmental agency. Comprehensive performance evaluation and written report required. Graded credit/non-credit.

### INSTITUTE FOR LIFE-SPAN DEVELOPMENT & GERONTOLOGY 3006:

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>680</td>
<td>Interdisciplinary Seminar in Life-Span Development and Gerontology</td>
</tr>
</tbody>
</table>

Prerequisite: permission. The certificate program student only. Explores interdisciplinary issues in life-span development and gerontology. Guest speakers from various disciplines and areas required for life-span and gerontological components and from government and community facilities and services.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>685</td>
<td>Special Topics</td>
</tr>
</tbody>
</table>

Prerequisite: permission of instructor. Specialized topics and current issues in life-span development and gerontology. Emphasis is on original source materials, critical analyses and synthesis of empirical, theoretical and applied aspects.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>688</td>
<td>Retirement Specialist</td>
</tr>
</tbody>
</table>

An investigation of issues related to the design and implementation of pre-retirement planning and examination of life-span planning education as employed by labor, business and education.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>690</td>
<td>Workshop</td>
</tr>
</tbody>
</table>

(May be repeated) Group studies of special topics in life-span development and gerontology. May be used as elective credit but not as part of certificate required courses.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>695</td>
<td>Practicum in Life-Span Development and Gerontology</td>
</tr>
</tbody>
</table>

Prerequisite: permission. Supervised experience in research or community agency work.

### ENVIRONMENTAL STUDIES 3010:

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>501</td>
<td>Seminar in Environmental Studies</td>
</tr>
</tbody>
</table>

Prerequisite: graduate standing. Specific environmental topic or topics from interdisciplinary viewpoint each semester. The director of Environmental Studies coordinates course resources persons are drawn from the University and surrounding community.

<table>
<thead>
<tr>
<th>Course Numbering</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>590</td>
<td>Workshop in Environmental Studies</td>
</tr>
</tbody>
</table>

(May be repeated) Workshop in Environmental Studies. Special topics related to environmental issues and topics covered. Instructed under direction of University faculty.

---
556. GENERAL ENTOMOLOGY
Prerequisites: 12, 217. Structure, physiology, life cycles, economic importance of orders and major families of insects. Laboratories. Parallel lectures.

557. INVERTEBRATE ZOOLOGY
Prerequisites: 12, 217. Invertebrate groups, their classification, functional morphology, adaptive radiation and life history. A phylogenetic approach is used. Laboratories parallel lectures.

558. PARASITOLOGY
Prerequisites: 12; 356/239. Principles of parasitism; host-parasite interactions; important human and veterinary parasitic diseases, and control measures. Laboratories parallel lectures.

559. Ichthyology
Prerequisites: 217. Study of fishes, including aspects of evolution, anatomy, physiology, natural history and commercial exploitation of fishes. Laboratory. Incorporates field-based exercises and fish taxonomy.

560. OPMATOLOGY
Prerequisite: 217. Introduction to biology of birds, classification, anatomy, physiology, behavior, evolution, natural history and field identification. Laboratory. Field trips involved; minor transportation costs.

561. HERPETOLOGY
Prerequisite: 112. Survey of the diversity, ecology and evolution of amphibians and reptiles. Special emphasis is given to Ohio species. Laboratory.

562. Vertebrate Zoology
Prerequisite: 369 or permission. Biology of vertebrates, except birds — evolution, ecology, behavior, systematics and anatomy. Laboratory with field trips.

563. Human Physiology
Prerequisite: senior or graduate standing. Detailed study of function of the human body with special emphasis on neuromuscular, cardiovascular, respiratory, renal and endocrine physiolog - laboratory.

564. Comparative Animal Physiology
Prerequisite: 12. Study of respiration, circulation, digestion, metabolism, osmoregulation, and excretion in a variety of invertebrate and vertebrate animals. Adaption to the environment is emphasized. Laboratory.

565. Advanced Cardiovascular Physiology 3 credits
Prerequisite: 461 or 562 or permission. Study of physiological mechanisms involved in heart attack, strokes, fluid balance, hypertension and heart disease. Controversial issues in each area will be examined and current research presented.

566. Vertebrate Embryology 4 credits
Prerequisite: 12 or permission of instructor. Designed to introduce the process of vertebrate development. Lecture and lab work include descriptive and experimental embryology.

567. Comparative Vertebrate Morphology 3 credits
Prerequisite: 462 or permission of instructor. Introduction to the comparative morphology of major vertebrates. The laboratory consists of dissections of representative vertebrates.

568. The Physiology of Reproduction 3 credits
Prerequisite: 462/562 or permission. Study of the physiological mechanisms of reproduction throughout the animal kingdom with special emphasis on mammalian endocrinological control. Controversial issues in the field will be examined and current research presented.

569. Respiratory Physiology 3 credits
Prerequisites: 462/562 or 465/564 or permission. Study of mechanisms determining gas exchange including mechanics, ventilation, blood flow, diffusion, and control systems. Emphasis is given to normal human lung function. Clinical aspects are not considered in detail.

570. Large Animal Reproduction 1 credit
Prerequisite: required of anyone working with animals, and covers government regulations, care of animals and a tab to teach basic animal handling and measurement techniques.

571. Physiological Genetics 3 credits
Prerequisite: 211 or equivalent, 462/562 or equivalent, or permission of instructor. The integrated approach to study of genetics and physiology involves complex systems from molecular to behavioral in plants and animals.

572. Biological Mechanisms of Stress 3 credits
Prerequisite: 462/562 or equivalent, or permission of instructor. Study of mechanisms from molecular to behavioral of how stress influences body systems and signals. The latest research and experimental issues are discussed.

573. Molecular Biology 3 credits
Prerequisites: 211, 311. Fundamentals of molecular biology, including recombinant DNA technology, applications in biotechnology, medicine, and genetic engineering. Mechanisms of gene regulation.

574. Advanced Genetics 3 credits
Prerequisite: 25. Nature of the gene; genetic codes; hereditary determinants; mutation and genetics in population. Lecture and seminar.

575. Pharmacology 3 credits
Prerequisite: 257 or 209 or permission of instructor. Interactions of drugs with living systems, with emphasis on absorption, mechanisms of action, bioactivation, and elimination. Clinical aspects are not considered in detail.

576. Cell Physiology 3 credits
Prerequisite: 31. Explores molecular and biochemical aspects of energy metabolism, ion transport and intercellular signaling, growth and death of cells. Emphasizes up-to-date scientific literature and techniques. Laboratory.

577. Workshop in Biology 10 credits
(May be repeated) Prerequisite: permission of instructor. Group studies of special topics in biology. May not be used to meet undergraduate or graduate major requirements in biology. May be used for elective credit only.

578. Biological Problems 12 credits each
Prerequisites: permission. Honors-level work. Usually consisting of laboratory investigations. A maximum of 4 credits may apply toward the major degree requirements.

579. Basic DNA Techniques 3 credits
Prerequisite: 257. DNA techniques including extraction of DNA, cleavage of DNA and cloning. Laboratory.

580. Environmental Physiology 3 credits
Prerequisites: 301, 302. Study of physiological reponses of healthy mammals to natural changes or extremes of physical environment.

581. Medical Physiology, Pathophysiology, and Pharmacology 3 credits
Prerequisite: Admission to M.S. program, or 300/581, or consent of instructor. Selected principles of human physiology, pathophysiology, and pharmacology are examined in depth, integrated, and related to the care of patients in the clinical setting.
620 ANIMAL CELL CULTURE 4 credits
Tissue culture techniques, physiology and biology of immortalized cells and tissues under in vitro conditions, application of these techniques to animal, cancer chemotherapy and animal cell genetics. Laboratory.

688 PRINCIPLES OF TRANSMISSION ELECTRON MICROSCOPY 3 credits
Prerequisites: 314, 472, 629, or permission. Modern methods of transmission electron microscopy. Portrayal and principles of sample preparation, operation of the instrument, images and interpretation of images, additional instruments and analysis techniques in electron microscopy. Laboratory.

689 PRINCIPLES OF SCANNING ELECTRON MICROSCOPY 3 credits
Prerequisites: 314, 688 or equivalent. An introduction to modern scanning electron microscopy. The portrayal and principles of sample preparation, operation of the instrument, images and interpretation of images, additional instruments and analysis techniques in electron microscopy. Laboratory.

878 BIOLOGY COLLOQUIUM 1 credit each
May be repeated. Prerequisite: permission. Available at all departmental seminars and presentations of seminars based on original research. Required of all thesis option students who present their thesis research.

699 MASTER'S THESIS 1-6 credits
May be repeated. Minimum of six credits is required for thesis option students.

BIOLOGY/NEUROCOM 3110:

630 HUMAN GROSS ANATOMY I 3 credits
Prerequisites: graduate standing and permission. An intensive survey of human macromorphology.

631 HUMAN GROSS ANATOMY II 3 credits
Prerequisite: graduate standing and permission. An intensive survey of human macromorphology.

641 FUNCTIONAL NEUROANATOMY 4 credits
Prerequisite: permission or graduate standing. Study of structure and function of the mammalian nervous system with emphasis on human brain and human behavior. Laboratory.

665 SPECIAL TOPICS: BIOLOGY/NEUROCOM 1-6 credits
Prerequisite: permission. Instructor. Advanced topics in medical education covering areas not otherwise available. May be repeated with a change in topic.

CHEMISTRY 3150:

501 BIOCHEMISTRY LECTURE I 3 credits

502 BIOCHEMISTRY LECTURE II 3 credits
Prerequisite: 404/502. Overview of metabolism; thermodynamics; carbohydrate, fatty acid, amino acid, and nucleic acid metabolism; hormonal control of metabolism. Photoisomerism.

572 ADVANCED INORGANIC CHEMISTRY 3 credits

590 WORKSHOP IN CHEMISTRY 1-2 credits
May be repeated. Group studies of special topics in chemistry. May not be used to meet undergraduate or graduate major requirements in chemistry.

603 BIOCHEMISTRY LECTURE III 3 credits
Prerequisites: 501-502 and RNA, DNA and protein metabolism. Translation and transcription. Gene function and expression.

616 BASIC QUANTUM CHEMISTRY 3 credits
Prerequisites: 314 or permission of instructor. Quantum mechanics with applications to molecular systems. Includes angular momentum, molecular hamiltonians, variation and perturbation methods and molecular orbital theories.

611 SPECTROSCOPY 3 credits
Prerequisites: 690 or permission of instructor. Interation of light with matter, linear and nonlinear spectroscopy. Rotational, vibrational and electronic spectroscopy. Radiations transitions and photochemistry.

619 TRANSITION-METAL ORGANO/METALLICS 3 credits
Prerequisite: 472 or equivalent. The organometallic chemistry of the transition metal elements. Topics covered include synthesis, characterization methods, structure, bonding, reactivity, and application.

720 MAIN GROUP ORGANO/METALLICS 3 credits
Prerequisite: 472 or equivalent. The organometallic chemistry of main group elements. Topics covered include synthesis, characterization methods, structure, bonding, reactivity, and application.

621 ADVANCED PREPARATIONS 1-2 credits
Prerequisite: permission. Methods for purifying and purifying organic and inorganic compounds. Laboratory.

625 CHEMISTRY SEMINAR 1 credit
Lectures on current research topics in chemistry by invited speakers.

629 PHYSICAL INORGANIC CHEMISTRY 3 credits
Prerequisites: 34, 472, or permission. Detailed treatment of chemistry of transition elements. Group theoretical applications, ligand field theory, kinetics and mechanism magnetism, electronic spectra, molecular orbital theory.

630 THEORETICAL INORGANIC CHEMISTRY 2 credits
Prerequisites: 34, 472, 928, or permission. Detailed treatment of chemistry of transition elements. Group theoretical applications, ligand field theory, kinetics and mechanism magnetism, electronic spectra, molecular orbital theory.

635 THERMODYNAMICS AND STATISTICAL THERMODYNAMICS 3 credits
Prerequisites: 332 and 334 or permission of instructor. Rigorous treatment of laws of thermodynamics and their applications to selected chemical systems. Fundamentals of statistical thermodynamics and applications to systems in chemical equilibrium.

639 CHEMICAL KINETICS 3 credits
Prerequisite: 625 or permission of the instructor. Phenomenological kinetics, experimental methods of investigation and analysis of reaction systems. Theoretical treatments of reaction rates.

650 PHYSICAL ORGANIC CHEMISTRY 3 credits
Prerequisite: Undergraduate inorganic chemistry. The study, characteristics, structure, bonding, and reactivity of organic compounds. Emphasis is placed on applications and on examples from the recent literature.

650A CHEMICAL SEPARATIONS 3 credits
Prerequisites: 423 and 424 or equivalent. General theory, instrumentation and application of methods of separation. Emphasis on modern chromatographic techniques and recent advances.

664 SPECTRAL METHODS 3 credits
Prerequisite: 314 or permission. Theory and application of instrumental measurements and interpretation of data.

674 ELECTROCHEMISTRY 3 credits
Prerequisites: 423 and 424 or equivalent. Theory and application of electrochemical methods of analysis.

675 X-RAY CRYSTALLOGRAPHY 3 credits
Prerequisite: permission. The theoretical and practical aspects of single crystal x-ray crystallography are discussed. Topics covered include diffraction, space groups, structure solution and refinement.

870 SPECTROSCOPIC IDENTIFICATION OF ORGANIC COMPOUNDS 3 credits
Prerequisites: 265, 254 or permission of instructor. Determination of the structures of organic compounds by spectroscopic analysis. UV/Vis, IR, NMR, mass spectrometry. FTIR, NMR, Raman spectroscopy. 13C-NMR.

688 MECHANISTIC AND SYNTHETIC ORGANIC CHEMISTRY I 3 credits
Prerequisites: 683 or permission of instructor. Introduction to the structural and mechanistic aspects of organic reactions; HMO calculations, acids and bases, equilibrium, kinetics and energy relationships, reaction mechanisms.

689 MECHANISTIC AND SYNTHETIC ORGANIC CHEMISTRY II 3 credits
Prerequisite: 683 or permission of instructor. Synthetic organic chemistry from a mechanistic perspective: nucleophilic and electrophilic substitution and addition reactions, chemical functional group manipulations, oxidation, reductions, cyclodeformation reactions.

699 MASTER'S THESIS 1-6 credits
For properly qualified candidates for master's degree. Supervised original research in analytical, inorganic, organic, physical or biochemistry.

701 CHEMICAL LITERATURE 2 credits
Prerequisite: permission. Online searching of chemical databases and literature. Master's research emphasis placed on chemical abstracts, but other databases are included. Lecture and online searching.

710 SPECIAL TOPICS: ANALYTICAL CHEMISTRY 3 credits
May be repeated. Prerequisite: permission. Topics in advanced analytical chemistry. Electroanalytical, analytical activation, atomic absorption spectroscopy, mass spectrometry, liquid-liquid, liquid-solid and gas chromatography, ion exchange, thermodynamical methods, separations, sampling, recent developments.

711 SPECIAL TOPICS: INORGANIC CHEMISTRY 3 credits
May be repeated. Prerequisite: permission. Consideration of topics in modern inorganic chemistry such as coordination compounds, organometallics, organocatalysts, homogeneous catalysis.

712 SPECIAL TOPICS: ORGANIC CHEMISTRY 1-3 credits
May be repeated. Prerequisite: permission. Topics in advanced organic chemistry such as natural products, heterocyclic compounds, photochemistry.

713 SPECIAL TOPICS: PHYSICAL CHEMISTRY 1-3 credits
May be repeated. Prerequisite: permission. Subject from modern physical chemistry.

715 SPECIAL TOPICS: BIOCHEMISTRY 1-3 credits
May be repeated. Prerequisite: permission. Recent developments in areas of biochemistry.

720 ADVANCED BIOCHEMICAL TECHNIQUES 3 credits
Prerequisite: 404/502. An advanced lecture course on physical techniques in biochemistry. Includes physical and hydrodynamic methods, radiocellular techniques, scattering and magnetic resonance spectroscopy.

722 ENZYMATIC REACTIONS 3 credits
Prerequisites: 404/502 or permission. Mechanisms of enzyme catalyzed reactions, general aspects and specific examples for phosphoryl, E1, E2, glycosyl transfers, elimination/reduction, isomerization and rearrangements. Chemistry of cofactors.

724 BIOMORPHIC CHEMISTRY 3 credits
Prerequisites: 404/502 or permission. Survey of the structure and properties of metal complexes with amino acids, nucleosides, nucletides and macromolecules; metal ion metabolism; metals in medicine.

726 ADVANCED METABOLISM 3 credits
Prerequisites: 404/502 or 404/502. Study of advanced pathways in carbohydrates, lipid and protein metabolism with emphasis placed on metabolic dysfunction.

748 PHYSICAL ORGANIC CHEMISTRY 3 credits
Prerequisites: 683, 684 or permission of instructor. An advanced treatment of the theory and mechanisms of organometallic chemistry; FMO theory, molecular mechanics, molecular strain, kinetic and thermodynamic, acidity functions, base functions, energy relationships.

759 ADVANCED SYNTHETIC ORGANIC CHEMISTRY 3 credits
Prerequisites: 683, 684 or permission of instructor. An advanced treatment of organic functional group manipulations in the context of the total synthesis of natural products.

809 DOCTORAL DISSERTATION 1-18 credits
Open to qualified student accepted as a candidate for Doctor of Philosophy in Chemistry. Supervised original research undertaken in organic, inorganic, physical, analytical or biochemistry.

CLASSICS 3200:

501 EGYPTOLOGY I AND II 3 credits each
The history and antiquities of ancient Egypt.

504 SAKRISTOLOGY 3 credits each
May be repeated for credit with different cuneiform language. Prerequisite: permission of instructor. The Akkadian language.

505 ANCIENT NEAR EASTERN ARCHAEOLOGY 3 credits each
May be repeated for credit with different subject. Prerequisite: permission of instructor. Linear A, Mesopotamia, Asia Minor, ancient lands; Old Testament in light of material evidence.

550 SELECTED TOPICS IN ANCIENT CULTURES 3 credits
May be repeated with change of subject. Varies offerings in literature, art and archeology and religion. No foreign language necessary.
561 PRINCIPLES OF INTERNATIONAL ECONOMICS
3 credits
Prerequisites: 300 and 201 or 244. International trade and foreign exchange, policies of free and controlled trade, international monetary problems.

575 DEVELOPMENT OF ECONOMIC THOUGHT
3 credits
Prerequisites: 200 and 208 or 244. Evolution of theory and method; relation of ideas of economic thought from antiquity to modern times.

581 MONETARY AND BANKING POLICY
3 credits
Prerequisites: 380, 400. Control over currency and credit, policies of control by central banks and governments, United States Treasury and Federal Reserve System.

587 URBAN ECONOMICS: THEORY AND POLICY
3 credits
Prerequisites: 300 and 201 or 244 or permission of instructor. Analysis of urban issues from an economic perspective. Emphasis on urban growth, land-use patterns, housing, income distribution, poverty and urban fiscal policy.

591 WORKSHOP IN ECONOMICS
3 credits
May be repeated (May be repeated Group studies of special topics in economics. May not be used to meet undergraduate or graduate major requirements in economics. May be used for elective credit only.

600 FOUNDATIONS OF ECONOMIC ANALYSIS
3 credits
Prerequisite: graduate standing. Determination of national income, employment and price levels, aggregate consumption, investment and asset holding, decision problems faced by households and firms. Real and nominal analysis of competition and monopoly and equilibrium analysis. May not be substituted for 602, 603, 611, or toward the 30 graduate credits required for M.A. in economics.

602 MACROECONOMIC ANALYSIS I
2 credits
Construction of static macroeconomic models. Analysis predominantly in terms of comparative statistics with only relatively brief mention of dynamic models.

603 MACROECONOMIC ANALYSIS II
2 credits
Prerequisite: 602. Macroeconomic stability and instability: closed and open Keynesian systems. Inclusive coverage of post-Keynesian theories of economic growth.

606 ECONOMICS OF THE PUBLIC SECTOR
3 credits

621 FRAMEWORK OF MATHEMATICAL MODELS
3 credits
Prerequisite: graduate standing. Development of theoretical and analytical framework for decision making. Discussion of applications of the framework to situations concerning demand, supply, production, price, employment, and wage.

628 STATISTICS FOR ECONOMETRICI
3 credits
Prerequisites: courses in calculus, intermediate microeconomics or permission of the instructor. Review of selected topics of differential and integral calculus and their application to econometric analysis. Theory of optimization in production and consumption: static macroeconomic models. Analysis of growth and stability.

629 APPLICATIONS OF MATHEMATICAL MODELS TO ECONOMICS
3 credits
Prerequisites: courses in calculus. Intermediate microeconomics or permission of the instructor. Review of selected topics of differential and integral calculus and their application to econometric analysis. Theory of optimization in production and consumption: static macroeconomic models. Analysis of growth and stability.

630 APPLICATION OF LINEAR MODELS IN ECONOMIC ANALYSIS
3 credits
Prerequisites: courses in intermediate microeconomics. Review of selected topics of linear algebra relevant to economic theory. Static and dynamic input-output tables, dynamic models, consumption technology and theory of demands, linear programming, general equilibrium analysis.

671 THE ECONOMICS OF REGULATION
3 credits
Prerequisites: 650 or permission of instructor. Examines rationale, methods and success of government regulation of public utility, transportation and communications industries.

675 ECONOMETRICS
3 credits
Prerequisites: 628 or equivalent. Formulation of functional relationships among economic variables based on statistical estimation from observational data and construction of multivariate econometric models and methods of estimation.

689 SEMINAR IN RESEARCH METHODS
3 credits
Prerequisite: permission of instructor. A seminar in the research use of applied mathematical economics or econometrics. Emphasis is on estimation and hypothesis testing as a prelude to econometrics.

690 ECONOMETRICS
3 credits
Prerequisites: 620 or equivalent. Formulation of functional relationships among economic variables based on statistical estimation from observational data and construction of multivariate econometric models and methods of estimation.

690 SEMINAR IN RESEARCH METHODS
3 credits
Prerequisite: permission of instructor. Examination of unique problem of public employers. Investigation of collective bargaining theory. Discussion of wage employment theories, effects of unions collective bargaining on the economic system and the effects of government regulation.

692 PUBLIC SECTOR LABOR MARKETS
3 credits
Prerequisites: 635 or permission of instructor. Examination of unique problem of public employers. Investigation of collective bargaining theory. Discussion of wage employment theories, effects of unions collective bargaining on the economic system and the effects of government regulation.

692 SEMINAR IN ECONOMIC GROWTH AND DEVELOPMENT
3 credits
Prerequisites: 200 or 208 or 244. Critical survey of historical theories of economic growth; the age of classical economics; problems in development of emerging countries. Discussion of aggregative macrodynamics of capital formation, investment, technology and external trade.

698 SEMINAR ON REGIONAL ECONOMIC ANALYSIS AND DEVELOPMENT
3 credits
Prerequisites: 200 or 208 or 244. Critical survey of historical theories of economic growth; the age of classical economics; problems in development of emerging countries. Discussion of aggregative macrodynamics of capital formation, investment, technology and external trade.

698 SEMINAR ON REGIONAL ECONOMIC ANALYSIS AND DEVELOPMENT
3 credits
Prerequisites: 200 or 208 or 244. Critical survey of historical theories of economic growth; the age of classical economics; problems in development of emerging countries. Discussion of aggregative macrodynamics of capital formation, investment, technology and external trade.

699 INTERNATIONAL MONETARY SYSTEMS
3 credits

701 INTERNATIONAL TRADE
3 credits
Prerequisite: permission of instructor. Recent developments in trade theory, policy implications in trade relations among developed and developing economics.

703 MONETARY ECONOMICS
3 credits
Prerequisite: permission of instructor. Recent developments in trade theory, policy implications in trade relations among developed and developing economics.

703 MONETARY ECONOMICS
3 credits
Prerequisite: permission of instructor. Recent developments in trade theory, policy implications in trade relations among developed and developing economics.
697 READING IN ADVANCED ECONOMICS 3 credits
(A maximum of six credits may be applied toward the master's degree in economics.) Intensive investigation of an advanced problem area in advanced economics under supervision of instructor. Since the subject matter is decided upon in each case, the course may be taken repeatedly for credit.

699 MASTER'S THESIS 3 credits
(May be repeated for a total of six credits)

**ENGLISH**

500 ANGLO SAXON 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Studies in Old English language and Old English poetry and prose, including Beowulf.

503 DEVELOPMENT OF THE ARTHURIAN LEGEND 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Traces evolution of Arthurian materials from 540 in 1500 and beyond, with emphasis on characters, themes, events and treatments.

506 CHAUCER 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Course will follow Chaucer's major works - The Canterbury Tales and Troilus and Criseyde in Middle English.

507 MIDDLE ENGLISH LITERATURE 3 credits
Prerequisites: 111 and 112. Study of genres, topics, styles and writers of the Middle English literary works from 12th to 15th centuries. Readings in Middle English.

521 SWIFT AND POPE 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. An intensive study of the major satirists of Swift and Pope. Concentration on the rhetorical strategies of each author within the context of the shifting intellectual and cultural milieu at the end of the 18th and beginning of the 19th Centuries.

524 EARLY ENGLISH FICTION 3 credits

530 MODERN BRITISH AND IRISH DRAMA 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Study of major British and Irish dramatists, particularly those of post-World War II. Focal figures are Shaw, Galsworthy, O’Casey, Osborne, Arden and Pinter.

533 AMERICAN WOMEN POETS 3 credits
Prerequisites: 111 and 112. Study of modern poets' uses and revisons of tradition, of themes, of relationships, concepts of art and the critic's debate between "public" and "private" poetry.

537 MODERN EUROPEAN FICTION 3 credits
Prerequisite: Representative European writers from about 1850 to present, in translation. Focus on fiction of such writers as Zola, Tolstoy, Dostoevsky, Mann, Proust, Kafka and Solzhenitsyn.

569 EROS AND LOVE IN EARLY WESTERN LITERATURE 3 credits
An analysis of sex and love in the western literature from Greco-Roman times to 1600. Emphasizes egalitarian, satiric, fantastic or realistic uses of sexuality and "romantic" love.

570 HISTORY OF ENGLISH LANGUAGE 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Development of English language, from its beginnings: sources of its vocabulary, its sounds, its rules; semantic change, social influences on changes; dialect origins, correctness.

571 U. S. DIACETIC BLACK AND WHITE 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Study of differences in pronunciation, vocabulary and grammar among U.S. language varieties. Origins, regional and social differences are explored. Current focus on black English and Appalachian speech, explored.

572 SYNTAX 3 credits
Prerequisites: 371, 111 and 112 or their equivalents, or permission of the instructor. Principles of syntactic description. Sentence structures are investigated from a variety of languages, with emphasis on English.

573 SEMINAR IN TEACHING ESL; THEORY AND METHOD 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Theoretical issues in second language acquisition and language acquisition as relected in learning of a second language. Emphasis on techniques for teaching the English as a second language based on research in linguistics, psycholinguistics and second language pedagogy.

675 THEORY OF RHETORIC 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. Analysis of modern theories of rhetoric; the author's capacity to influence the audience; the written word and its function in society.

589 SEMINAR IN ENGLISH 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. May be repeated with different topics. Special studies and methods of literary research, in selected areas of English and American literature and language.

590 WORKSHOP IN ENGLISH 3 credits
Prerequisites: 111 and 112 or their equivalents, or permission of the instructor. May be repeated with different topics. Special studies of special topics in English. Cannot be used to meet undergraduate or graduate major requirements in English; for elective credit only.

600 TEACHING COLLEGE COMPOSITION PRACTICUM 3 credits
Prerequisite: Teaching assignment in Composition. Oriented toward a weekly analysis of teaching techniques and practice, limited to teaching assistants in the Department of English.

615 SHAKESPEAREAN DRAMA 3 credits
Concentrated study of major Shakespearean plays with emphasis on historical, critical and dramatic documents pertinent to development of Shakespeare's art.

616 SHAKESPEARE'S CONTEMPORARIES IN ENGLISH DRAMA 3 credits
Readings in major playwrights - Lyly, Greene, Marlowe, Jonson, Beaumont, Fletcher, Webster, Middleton and Ford and in contemporary writings relevant to theory and practice of drama.

618 MILTON 3 credits
Prerequisite: Milton's major poems and prose works: Paradise Lost, Paradise Regained; Areopagitica. Student becomes acquainted with Milton, the man and Milton the artist.

620 AUTOBIOGRAPHY AS LITERATURE 3 credits
This course examines the genre of autobiography and memoir. A wide representation of autobiographies will be the focus of discussion and analysis.

625 AUTOBIOGRAPHICAL WRITING 3 credits
Using a workshop format, this course examines autobiographical essays written by class members. Attention will be devoted to the art of craft and writing of autobiography.

627 KEATS AND HIS CONTEMPORARIES 3 credits
Writings of John Keats, studied against background of romantic poetic theory and poetry of Keats' contemporaries.

639 THEORY AND PRACTICE OF MODERN POETRY 3 credits
Study of modern prosody, critical theories of modern poetry and the relation between writer's theory and practice, with particular attention to Frost, Stevens, Yeats and Eliot.

643 SEMINAR IN JAMES 3 credits
Study of Henry, James, life and works. Primary emphasis will be on James' fiction; both long and short, and early and late, but some attention will also be given to his literary criticism, travel pieces and plays.

665 LITERARY CRITICISM 3 credits
Inquiry into nature and value of literature and problems of practical criticism as represented in major statements of ancient and modern critics.

670 MODERN LINGUISTICS 3 credits
Introduction to the main methodologies and results of modern psycholinguistic research in areas of semantics, phonology and dialects. Goals include understanding of language variation and background preparation for linguistic studies of literature.

673 THEORIES OF COMPOSITION 3 credits
Study of composition theories and research, with attention to their implications for writing and instruction. Focus on seminal ideas and issues. Syllabus varies by semester. Class sessions include discussion of readings and presentations.

675 RESEARCH METHODOLOGIES IN COMPOSITION 3 credits
Research methodologies in composition and their application. Students will define research areas, summarize and evaluate work already done, and propose and complete semester research projects.

676 WRITING FOR MGAs 3 credits
Emphasis on managerial writing. Writing tasks are presented as decision-making tools, and students develop strategies for messages to subordinates, analytical reports and messages to outside audiences.

678 THEORY AND TEACHING OF BASIC COMPOSITION 3 credits
Review of recent research in composition and the composition experience. Special topics.

679 SCHOLARLY WRITING 3 credits
Study of composing, analyzing, and evaluating academic arguments. Practice in specific forms of academic writing, such as research papers and articles and book reviews.

683 SEMINAR IN ENGLAND 3 credits
A study of England from the middle ages through the late 20th Century. Written from the perspective of modern scholarship.

687 INDIVIDUAL READING IN ENGLISH 3 credits
Individual study under guidance of professor who directs and coordinates student's reading and research.

699 MASTER'S THESIS 16 credits
Original work in the field of language and literature and completion of graduate student's major requirements.

**GEOGRAPHY AND PLANNING**

505 GEOGRAPHIC INFORMATION SYSTEMS 3 credits
Prerequisite: 560 or permission. Introduction to the principles and concepts underlying geographic information systems (GIS) and their application in professional practice and academic research. Laboratory.

510 ADVANCED GEOGRAPHIC INFORMATION SYSTEMS 3 credits
Prerequisite: 505. Advanced instruction in the theory and application of geographic information systems (GIS) including hands-on experience with both raster and vector GIS. Laboratory.

515 ENVIRONMENTAL PLANNING 3 credits
Study of urban and regional planning and policy issues in the development of modern cities; interaction between cities; internal structure of cities. Perspectives on urban change; contemporary urban and land-use problems and the theories of modern cities and their planning.

520 URBAN GEOGRAPHY 3 credits
Prerequisite: 580 or 2935:100 or 2920:100 or permission of instructor. Spatial structure of urban systems; interaction between cities; internal structure of cities. Perspectives on urban change; contemporary urban and land-use problems and the theories of modern cities and their planning.

525 TRANSPORTATION SYSTEMS PLANNING 3 credits
Prerequisite: 320 or permission. Study and analysis of transportation systems from a geographic perspective. Emphasis on transportation problems and issues, elements of transportation planning.

532 INDUSTRIAL AND COMMERCIAL SITE LOCATION 3 credits
Prerequisite: 580 or permission. Relationship between land, resources, population, transportation and industrial and commercial location processes.

533 LAND USE ANALYSIS 3 credits
Prerequisite: 320 or permission. Analysis of land use and its relationship to surrounding areas. Data sources and methods of site evaluation.

539 HISTORY OF URBAN DESIGN AND PLANNING 3 credits
Prerequisite: 320 or permission. Analysis of land use and its relationship to surrounding areas. Data sources and methods of site evaluation.

534 MASTER'S THESIS 16 credits
Original work in the field of geography and planning and completion of graduate student's major requirements.
### 540 PRINCIPLES OF CARTOGRAPHY
Theoretical and practical applications of cartographic principles used to design and produce maps for research reports, public presentations, publication, and other professional-level work. 3 credits

### 542 THRMATIC CARTOGRAPHY
Prerequisite: 540. Principles and techniques of thematic mapping. Stresses maps as communication tools. Examines principal thematic mapping techniques and means of presenting quantitative and qualitative data. Laboratory. 3 credits

### 544 APPLICATIONS IN CARTOGRAPHY AND GEOGRAPHIC INFORMATION SYSTEMS
Prerequisite: 540 or 442 and 430 or 505 or permission. Application of analytic and presentation techniques from cartography and geographic information systems to practical problems in geography and planning. Laboratory. 3 credits

### 547 REMOTE SENSING
Prerequisite: 315 or permission. Concepts, systems, and methods of applying aerial photography, satellite imagery, and other remote-sensing data for analyzing geographic, geological, and other earth phenomena. 3 credits

### 548 ADVANCED CARTOGRAPHY
Prerequisite: 540/440 or permission. Advanced study of cartographic principles with an emphasis on the use of color for map design and production. Laboratory activities. 3 credits

### 549 ADVANCED REMOTE SENSING
Prerequisite: 447/547 or permission. Current research in remote sensing. Applications in study of human cultural and biophysical environment. Practice or planning, design, execution, and interpretation of remote sensing studies. 3 credits

### 550 DEVELOPMENT PLANNING
A study of planning concepts and techniques for developing countries, including growth and development, planning agencies, regional inequities and alternative approaches. 3 credits

### 571 MEDICAL GEOGRAPHY AND HEALTH PLANNING
Spatial analysis of diseases, their socioeconomic correlates; diffusion pattern of infectious diseases with particular reference to North America; health-planning processes and spatial analysis of healthcare delivery systems. 3 credits

### 581 RESEARCH METHODS IN GEOGRAPHY AND PLANNING
Prerequisites: 12 credits in geography and planning. Investigation of library and archive resources. Emphasis on development of professional writing skills. 3 credits

### 585 STATISTICAL ANALYSIS
Prerequisite: 481/581 or permission. Analysis of mapped statistical surfaces. Principles for use of maps as model for statistical evidence, prediction, hypothesis testing. 3 credits

### 589 SPECIAL TOPICS IN GEOGRAPHY
May be repeated. Selected topics of interest in geography. 1-3 credits

### 590 WORKSHOP IN GEOGRAPHY
(May be repeated for a total of six credits) Group studies of special topics in geography. 1-3 credits

### 595 SOIL AND WATER FIELD STUDIES
Prerequisite: 310 or permission. Properties, origins and uses of major soil and water regime landscapes. Processes relationships between soil and the hydrologic cycle, urbanization, subsurface- and surface-urbanization and agricultural land use. Field trips required. 3 credits

### 596 FIELD RESEARCH METHODS
Prerequisite: 481/581 or permission. Field work enabling student to become competent in collecting, organizing, and analyzing data while carrying out field research projects. 3 credits

### 600, 12 SEMINAR
May be repeated. Topics may vary each time. 3 credits

### 610 PLANNING THEORY
Introduction to the political, institutional and ethical foundations and procedural theories of urban and regional planning. 3 credits

### 611 FACILITIES PLANNING
Study of need, process and limitation of urban facilities planning. 3 credits

### 633 COMPARATIVE PLANNING
A survey of national and local planning implementation measures in use in the United States and abroad. Particular attention will be given to the planning experiences of European nations and their impact on American planning theory and practice. 3 credits

### 660 ADVANCED SPATIAL ANALYSIS
Prerequisite: 540/581 or permission. Advanced concepts and methodologies in geographic research. Emphasis on quantitative analysis in geographic research involving multiscale datasets. Fieldwork. 3 credits

### 668 PLANNING INTERNSHIP
Prerequisite: permission. Individual experience in selected planning agencies for supervised professional planning work. 3 credits

### 667 HISTORY OF GEOGRAPHIC THOUGHT
Prerequisite: 481/581 or permission. Critical review of major developments in geographic concepts from ancient times to present. 3 credits

### 695 GRADUATE COLLOQUIUM
(May be repeated for a maximum of six credits.) Lecture series on topics of interest in geography and planning, culture, and related academic and economical analysis. 1 credit

### 699 INDIVIDUAL READING AND RESEARCH
(May be repeated for a total of six credits.) Prerequisite: permission of instructor. Intensive investigation of selected topics under guidance of faculty member. 1-3 credits

### 793 THESIS RESEARCH
Independent and original work toward a thesis. 1-6 credits

### GEOLoGY

#### 505 ARCHAEOLOGICAL GEOLOGY
Prerequisite: 101 or by permission of instructor. Provides background in geologic principles and techniques relevant to archeologists. Topics include stratigraphy, lithification, dating, excavation and assessment, geologic and historical, and remote sensing. Required lab. 3 credits

#### 507 REGIONAL GEOLOGY OF NORTH AMERICA
Prerequisite: 102, 260 or permission. Recommended: 350. Examination of physiographic provinces of North America emphasizing structure, tectonic setting, stratigraphy, and processes responsible for landforms in each province. Laboratory. 3 credits

#### 511 GLACIAL GEOLOGY
Prerequisite: 210 or permission. Causes and effects of Pleistocene expansion of polar ice masses with emphasis on glacial deposits and world climatic changes. 3 credits

#### 521 COASTAL GEOLOGY
Prerequisites: 10, 124 or permission of instructor. Study of the origins and evolution of coasts and coastal deposits with particular attention paid to the interaction of waves and currents with sediment, and the development of associated sedimentary features. 3 credits

#### 525 PRINCIPLES OF SEDIMENTARY BASIN ANALYSIS
Prerequisites or corequisites: 304 and 505 or permission. Primarily the study of depositional systems, regional and global stratigraphic cycles, and sedimentation and plate tectonics. 3 credits

#### 532 OPTICAL MINERALOGY-INTRODUCTORY PETROGRAPHY
Prerequisites: 230 and 237 in equivalent. Optical techniques for identification, characterization, and classification of minerals and rocks using the petrographic microscope. Laboratory. 3 credits

#### 533 ADVANCED PETROGRAPHY
Prerequisite: 532. Petrogenesis of igneous, metamorphic and sedimentary rocks as determined by microscopic studies of textures and mineral assemblages emphasizing thin section. Laboratory. 3 credits

#### 535 PETROLEUM GEOLOGY
Prerequisite: 350 or permission; recommended: 324. Natural occurrences of petroleum. Characteristics, origin, and exploration. Laboratory. 3 credits

#### 536 GEOLOGIC RESOURCE MANAGEMENT
Prerequisites: 101, 231; recommended: 214, 215. Concepts and techniques for the allocation of mineral and water resources emphasizing demonstrated need and exploitation. 3 credits

#### 537 ECONOMIC GEOLOGY
Prerequisites: 231 and 260. Study of metallic and nonmetallic mineral deposits emphasizing exploration and exploitation. 3 credits

#### 541 FUNDAMENTALS OF GEOPHYSICS
Prerequisites: 3450:223 or permission and 3650:292. Fundamental concepts in solid earth geophysics, planetary physics, geodesy, and geomagnetism. Contributions of geophysics to recent major developments in geoscience. 3 credits

#### 544 ENVIRONMENTAL MAGNETISM
Prerequisites: 101 or permission of instructor. Introduction to the theory and method of environmental magnetism and the application of environmental magnetism to interpreting sedimentary deposits. 3 credits

#### 545 EXPLORATION GEOPHYSICS
Prerequisites: 540/581 or permission. 3 credits

#### 549 BOREHOLE GEOPHYSICS
Prerequisite: permission of instructor. Basic principles and techniques of geophysical well logging with emphasis on electrical, acoustic, and sonic methods and their quantitative evaluation. Applications in oil, gas and groundwater exploration. Laboratory. 3 credits

#### 553 ADVANCED STRUCTURAL GEOLOGY
Prerequisites: 306 or permission. Fundamental and advanced concepts of structural geology with emphasis on current and developing concepts. Laboratory. 3 credits

#### 555 ADVANCED PALEONTOLOGY
Prerequisites: 3370:101, 102, 230, 231, 3450:221, 3370:101, 102. Provides advanced training in palaeontological subjects. Topics will include environmental analysis, biostratigraphic correlation, fossil preservation, diversification and extinction patterns and geological signals of fossils. 3 credits

#### 557 MICROPALEONTOLOGY
Prerequisite: 306 or permission. Introduction to techniques of micropaleontology evolution and paleoecology of selected microfossil groups. Laboratory. 3 credits

#### 560 GEOCHEMISTRY
Prerequisites: 306 or permission. Fundamental and advanced concepts of structural geology with emphasis on current and developing concepts. Laboratory. 3 credits

#### 563 STABLE ISOTOPE GEOCHEMISTRY
Prerequisites: 3150:151, 152, 153; 3450:221. Application of stable isotope geochemistry to the study of the hydrologic and carbon cycles, modern sedimentary environments, and the interpretation of sedimentary rocks. 3 credits

#### 574 GROUNDWATER HYDROLOGY
Prerequisite: 101. Origin, occurrence, regimen and utilization of groundwater. Qualitative and quantitative presentation of geological and geophysical aspects of groundwater hydrology. Laboratory. 3 credits

#### 581 ANALYTICAL METHODS IN GEOLOGY
Prerequisites: 232 and 233. A survey of analytical methods used to solve geologic problems with emphasis on method selection, proper sample collection, analysis of data quality and data presentation. 3 credits

#### 586 GEOSCIENCE INFORMATION ACQUISITION AND MANAGEMENT
Prerequisite: Permission by a Geology Department graduate student advisor. Topics may vary each time. Laboratory. 3 credits

#### 595 INDIVIDUAL READINGS IN GEOLOGY
Prerequisite: permission of graduate advisor required. May be repeated a maximum of six credits; may not be used to meet degree requirements. Directed reading to fit individual student programs. Credit/Noncredit. 1-6 credits

#### 597 WORKSHOP
May be repeated. Group studies of special topics in geology. May not be used to meet undergraduate or graduate major requirements in geology. May be used for elective credit only. 1-3 credits

#### 599 GEOLGY FIELD CAMP 1
Prerequisites: 101 and 102 or permission of instructor. Introduction to collection and interpretation of field data and construction of geological maps. 3 credits

#### 599 GEOLGY FIELD CAMP 2
Prerequisites: 231, 260, 400/503 or permission of instructor. Advanced techniques and methods of field geology necessary for detailed geological maps and interpretation. 3 credits

#### 623 CARBONATE PETROLOGY
Prerequisites: 324 and 4353 or permission of instructor. Detailed examination of modern and carbonate suites with emphasis on depositional facies and diagenetic alteration. Laboratory. 3 credits

#### 624 SEDIMENTARY PETROLOGY
Prerequisites: 324 and 4353 or permission of instructor. Basic processes that transport and deposit sediment and the stratigraphic associations with these processes. Laboratory. Study of depositional systems and associated facies architecture. Laboratory. 3 credits

#### 631 ROCKS AND MINERALS
Prerequisite: 101 and permission. Intensive course integrating crystallography, mineralogy and petrology for the science teacher and graduate student from disciplines other than geology. Laboratory. 3 credits

#### 632 IGNEOUS PETROLOGY
Prerequisite: 4353. Origin and paragenesis of igneous rocks. Theory, petrochemistry and occurrences of major igneous rock types. Selected rock suites studied. Laboratory. 3 credits
695 GEOLGY COLLOQUIUM 1 credit
Lecture on current topics in geological sciences and thesis proposals and defenses by graduate students. May be repeated. Does not satisfy degree requirements.

699 MASTER'S THESIS 1-15 credits
Independent and original investigation. Must be successfully completed, report written and defended before a committee.

HISTORY

3400:

500 WOMEN IN REVOLUTIONARY CHINA 2 credits
Prerequisites: 439/532, 398, or 100/200, or permission of instructor. A study of the changing roles of women's lives in China during the late imperial (1644-1911), and socialist (1949-1968) periods.

501 JAPAN AND THE PACIFIC WAR, 1895-1945 3 credits
The rise of Japanese nationalism and the development of the Empire of Japan. Case studies of the role of the nation in modern Japan.

504 STUDIES IN ROMAN HISTORY 3 credits
Prerequisites: completion of at least two years of ancient history courses. Considers the development of Roman civilization and culture from the early Republic to the Roman Empire.

516 MODERN INDIA 1-15 credits
History of the Indian subcontinent from c.500 to the present. Focus on the political, social, and cultural aspects of Indian history.

524 THE REFORMATION 3 credits
The European religious, cultural, political, and social changes that occurred during the 16th century, with an emphasis on the impact of the Reformation on the development of modern European society.

525 THE EMPIRE IN THE RENAISSANCE 3 credits
The political, social, and cultural development of the European empires in the 16th and 17th centuries, with a focus on the impact of the empire on the development of modern European society.

532 THE EMPIRE IN THE REFORMATION ERA, 1520-1600 3 credits
The political, social, and cultural development of the European empires in the 16th and 17th centuries, with a focus on the impact of the empire on the development of modern European society.

538 NAZI GERMANY 3 credits
This course covers the social, economic, and political history of Germany from World War I to 1945 with an emphasis on the Third Reich.

539 EUROPE IN THE COLD WAR 3 credits
Prerequisites: 6 hours of 300-level courses at the 200 or 300 level, or permission of the instructor. The political, social, and cultural development of Europe from the Cold War to the present, with a focus on the impact of the Cold War on the development of modern European society.

540 THOMAS, STUART BRITAIN, 1460-1714 3 credits
An examination of the development of the British Empire from the 14th to the 18th centuries, with a focus on the economic, political, and social aspects of the development of the British Empire.

543 CHURCHILL'S ENGLAND 3 credits
An examination of the developments of the British Empire from the 14th to the 18th centuries, with a focus on the economic, political, and social aspects of the development of the British Empire.

550 THE ROMAN EMPIRE IN THE 1ST CENTURY, 1607-1713 3 credits
514 VECTOR ANALYSIS
Prerequisite: 223. Vector algebra, calculus of scalar-vector, vector-scalar, vector-function integrals, theorems, orthogonal and general curvilinear. Application of geometry and engineering.

515 COMBINATORICS AND GRAPH THEORY
Prerequisite: 222 or permission. Introduction to basic ideas and techniques of combinatorial properties of structures of systems.

520 MATHEMATICAL TECHNOLOGY AND COMMUNICATION
Prerequisite: 222 and 312 or permission of the instructor. Historical, numerical, and algebraic computation with applications using a variety of mathematical hardware and symbolic manipulators, dynamic geometry software, programs, scripts and web browsers.

521,222 ADVANCED CALCULUS I AND II
3 credits each
Prerequisite: 223, 427 is highly recommended. Real number system, sequences, series, set theory, continuity, differentiation, integration, partial derivatives, multiple integration, differentiation and minima, and convergence of power series, improper integrals, transformations, line and surface integrals.

535 COMPLEX VARIABLES
Prerequisite: 223. Complex variables, elementary functions, differentiation and analytic functions; Cauchy's theorem; power series and Laurent series; residue theorem; applications such as conformal mapping, inversion of integral transform.

541 APPLIED NUMERICAL METHODS I
3 credits
Prerequisites: 222 and 5400.22B or permission of instructor. Numerical methods in polynomial interpolation, root finding, numerical integration, and numerical linear algebra.

543 APPLIED NUMERICAL METHODS II
3 credits
Prerequisites: 336 and 427.01 or permission of instructor. Numerical methods in the solution of ordinary and partial differential equations. Numerical differentiation, Runge-Kutta methods, and iterative methods for ODEs, finite differences for PDEs.

549 NUMERICAL SOLUTIONS FOR ORDINARY DIFFERENTIAL EQUATIONS
3 credits

553 NUMERICAL SOLUTIONS FOR PARTIAL DIFFERENTIAL EQUATIONS
3 credits
Prerequisite: 429.051 or equivalent. For advanced undergraduate and graduate students. The study of finite difference and element methods for partial differential equations. Consistency, stability, convergence and computer implementation.

563 PARTIAL DIFFERENTIAL EQUATIONS
3 credits
Prerequisite: 249 or 336. The classical initial and boundary value problems of mathematical physics developed and solved using Fourier series and integral transforms.

565 SYSTEMS OF ORDINARY DIFFERENTIAL EQUATIONS
3 credits
Prerequisites: 249 or 336 and either 392 or 428 or permission. Analysis, solution of systems of equations, linear, nonlinear. Topics: stability theory, perturbation methods, asymptotic methods, applications from physical, social sciences.

567 NUMERICAL MODELS
3 credits
Prerequisites: 258 or 335, and sophomore sequence in an approved applied area, or permission. Formulation and analysis of mathematical models in social and physical sciences. Analysis of deterministic and stochastic models. Topics may include stochastic processes, linear programming, game theory, measurement.

573 ADVANCED ENGINEERING MATHEMATICS I
3 credits
Prerequisite: 258 or 250. Functions, eigenvalue problems, systems of ODEs, vector analysis, complex variables.

574 ADVANCED ENGINEERING MATHEMATICS II
3 credits
Prerequisites: 258 and 250 or permission. Special functions, fourier series and transforms, PDEs.

575 CONCEPTS IN GEOMETRY
4 credits
Prerequisite: 253 or permission of instructor. 207 is recommended. Automatic treatment of both Euclidean and non-Euclidean geometries. Other concepts included are finite geometry, transformations, constructions and inversions.

579 INTRODUCTION TO TOPOLOGY
3 credits
Prerequisites: 258 or 335. Topology of the real line. Theory of metric spaces, topological spaces, compactness, connectedness, and characterization of continuous functions.

590 TOPICS IN MATHEMATICS
1-3 credits
Prerequisite: 104. Selected topics for a total of six credits. Prerequisite: permission of instructor. Selected topics in mathematics and applied mathematics at an advanced level.

591 WORKSHOP IN MATHEMATICS
1-3 credits
Prerequisite: Group studies of special topics in mathematics and statistics. May be repeated for a total of six credits.

592 MEASURE THEORY
3 credits
Prerequisite: 258 or 335. Measure, measurable function, Lebesgue integral, convergence theorems, Lebesgue-Riemann-Kantorovitch theory.

593 ANALYTIC FUNCTION THEORY
3 credits
Prerequisite: 258 or permission of instructor. An introduction to analytic functions and integration, series and sequences. Applications to topology, vector-valued functions.

594 TOPICS IN ALGEBRA
3 credits
Prerequisites: 421/422. Selected topics from different areas; some selected topics in some of the following areas: semi-groups, groups, rings, modules and fields.

595 REAL ANALYSIS
3 credits
Prerequisites: 421/422. In-depth study of real analysis - metric spaces, normed vector spaces, integration theory, Hilbert spaces.

596 MEASURE THEORY
3 credits
Prerequisites: Real analysis. Measure, measurable function, Lebesgue integral, convergence theorems, Lebesgue-Riemann-Kantorovich theory.

623 ANALYTIC FUNCTION THEORY
3 credits
Prerequisite: 253. Complex number system, holomorphic functions, continuity, differentiability, power series, convergence complex integration, residue theory, singularities, analytic continuation, asymptotic expansion.

624 ADVANCED NUMERICAL ANALYSIS I AND II
3 credits each

625.30 MATRIX COMPUTATIONS I AND II
3 credits each
Prerequisite: 242.622 or permission. Special emphasis. This course is a treatment of numerical linear algebra based on the principles of scientific computing.

631 VARIATION OF VECTORS
3 credits
Prerequisite: 235 or 336. Problems with fixed and movable endpoints, problems with constraint, generalization to several variables, the maxima principle, linear and non-linear problems, the connection between classical theory and the maximality principle.
528 UNIX SYSTEM PROGRAMMING 3 credits
Prerequisites: 516 and knowledge of C. An overview of the UNIX operating system. Shell programs. Process management, storage management, scheduling, file system, algorithms, resource protection, and system programming.

530 THEORY OF PROGRAMMING LANGUAGES 3 credits
Prerequisites: 346. Advanced course in semi-formal programming languages and their analysis, formal definitions of programming languages. Backus Normal Form, semantics. Alternate programming paradigms including functional programming.

545 APPLICATIONS OF ALGORITHMS 3 credits
Prerequisites: 254 and 465/475. Design and analysis of efficient algorithms for random access machines, derivation of pattern classification algorithms.

540 COMPUTER ORGANIZATION 3 credits
Prerequisites: 307 and 316. Techniques used in writing and modifying compilers including translation, loading, execution, symbol tables and storage allocation; compilation of simple expressions and statements. Organization of a compiler for handling lexical scan, syntax, object code generation, error diagnostics and code optimization. Use of compiler writing language for boot-strapping. The course requires a project involving compiler writing.

560 IMAGE PROCESSING AND COMPUTER VISION 3 credits
Prerequisites: 316 or 401/501. ISO-GIS, TCPIF SNA data switching, protocols, flow and error control, routing, topology. Network protocols, network taxonomies, and software-based programing.

567 COMPUTER GRAPHICS 3 credits
Prerequisites: 216 and knowledge of C. Topics in vector graphics, scan line graphics, representation and acquisition, inference mechanisms for expert systems, uncertainty models, fractal mapping, surface rendering, and visualization algorithms.

568 ARTIFICIAL INTELLIGENCE AND HEURISTIC PROGRAMMING 3 credits
Prerequisites: 316. Study of various programs which have displayed some intelligent behavior. Exploration of what various computers can display intelligence.

569 COMPUTER USE IN MANUFACTURING 3 credits
Prerequisites: 210, 206, 4450/330. An introduction to the hardware organization of the computer and its use in manufacturing and service systems level. An in-depth study of the architecture of a particular computer system family.

567 MICROPROCESSOR PROGRAMMING AND INTERFACEING 3 credits
Prerequisites: 306, 316. Detailed study of a particular microprocessor architecture and instruction set, with emphasis on standard device interface components. Real time programming concepts.

570 AUTOMATA, COMPUTABILITY AND FORMAL LANGUAGES 3 credits
Prerequisites: 495/495. Presentation of theory of formal languages and their relation to automata. Includes determinism, and nondeterminism, regular languages, context-free languages, pushdown automata, Turing machines; finite, pushdown and linear-bounded automata; turning machines; closure properties; computational complexity, stack automata and decidability.

571 DATA BASE MANAGEMENT 3 credits
Prerequisites: 216. Fundamentals of database organization, anti-implications and representation, data integrity, privacy.

572 INTRODUCTION TO PARALLEL PROCESSING 3 credits
Prerequisites: 516 and knowledge of C. Commercial processors: past and present. Parallel languages, models of parallel computation. Emphasis on parallel algorithm design and performance evaluation. A broad study of parallel paradigms with relation to real world applications.

573 SOFTWARE ENGINEERING AND FORMAL METHODS 3 credits
Prerequisites: 316. Introduction to formal software specification and validation. Introduction of modeling tools and design, development, validation, and maintenance.

579 TOPICS IN COMPUTER SCIENCE 1-3 credits
(May be repeated for a total of six credits) Prerequisite: Permission. Seminar-type discussion on topics in computer science at an advanced level.

591 WORKSHOP IN COMPUTER SCIENCE 1-3 credits
Group studies of special topics in computer science. May not be used to meet undergraduate requirements in mathematics, statistics or computer science.

597 INDIVIDUAL READING IN COMPUTER SCIENCE 1-3 credits
(May be repeated) Prerequisite: permission. Graduate teaching assistant or permission. Training and preparation in areas of computer science not covered by courses in the department. Differences in level between faculty member in charge and student to be determined.

570 SYMPHONY: DESIGN AND COMPOSITION OF SYNTACTIC ANALYZERS 3 credits
Prerequisites: 3540/3540. Syntactic analysis, derivation of pattern classification algorithms, major language features. Major programming project required.

565 COMPUTER NETWORKS AND DISTRIBUTED PROCESSING 3 credits
Prerequisites: 465/465 and 465. Introduction to interconnection technologies, protocol layering models, datagram and stream transport service, client-server protocol, principles and protocols of interconnected networks operating as unified systems, and TCP/IP technology.

567 ADVANCED COMPUTER GRAPHICS 3 credits
Prerequisites: 467/503. Graphics includes C and UNIX. Topics include 3D viewing and projection, image manipulation, 3D transformations, color shading, clipping and animation via raster files, fractals, surface rendering, and solid modeling.

558 VISUALIZATION 3 credits
Prerequisites: 457 or 557 or permission of instructor. Visualization pipeline, data representation in visualization, visualization algorithms, object-oriented visualization, scientific visualization, volume visualization, visualization applications and research topics.

600 EXTERNAL SYSTEMS 3 credits
Prerequisites: 455/560 or maturity in mathematics. Architecture of expert systems, knowledge representation and acquisition, inference engines and mechanisms for expert systems, uncertainty management, expert system tools and applications.
561 ADVANCED COMPUTER ARCHITECTURE
Prerequisite: 465/565 or equivalent. Fundamentals of computer architecture and design, with emphasis on mainstream computer architectures. Studies of pipelined, vector, RISC, and multiprocessor architectures. 3 credits

569 ADVANCED DATABASE MANAGEMENT
Prerequisite: 475/575 or equivalent. Relational database theory, including functional query languages, query processing and optimization techniques, recovery techniques; efficiency and effectiveness of cost-effective computer systems. Classical results and practical insights into implementing parallel algorithms on actual parallel machines. 3 credits

570 SOFTWARE ENGINEERING
Prerequisite: 307 and 306. Introduction to current techniques and methodologies useful in software design, development, validation, and maintenance. 3 credits

ADVANCED TOPICS IN COMPUTER SCIENCE
1-2 credits
May be repeated. Prerequisite: permission of instructor. At most, six credits may be applied to degree requirements. Selected topics in computer science at an advanced level. May be repeated for a total of four credits. A properly qualified candidate for the Master's degree may obtain 2-4 credits for research experience which culminates in presentation of a faculty-supervised thesis.

582 SEMINAR IN COMPUTER SCIENCE
1-3 credits
Prerequisite: permission of advisor. Seminar-type discussions on topics in computer science. No more than two credits may apply to major requirements.

590 PRACTICUM IN COMPUTER SCIENCE
1 credit
Prerequisite: graduate teaching assistant or permission. Training and experience in college teaching of computer science under the supervision of an experienced faculty member. May not be used to meet degree requirements. Credit/No Credit.

599 MASTER'S RESEARCH
1-6 credits
May be repeated. Prerequisite: permission of advisor. Research in suitable topics in computer science culminating in a research paper. No more than two credits applicable to major requirements.

601 MASTER'S THESIS
2 credits
Prerequisite: permission. May be repeated for a total of four credits. A properly qualified candidate for the Master's degree may obtain 2-4 credits for research experience which culminates in presentation of a faculty-supervised thesis.

STATISTICS
3470:

550 PROBABILITY
3 credits
Prerequisite: 2450/22 or 2450/222. Introduction to probability, random variables and probability distributions, expected value, sums of random variables, Markov processes.

551, THEORETICAL STATISTICS I AND II
2 credits
Sequential courses. (Fall-Spring) Elementary combinatorial probability theory, probability distributions, mathematical expectations, functions of random variables, sampling distributions, point and interval estimation, tests of hypotheses, regression, correlation, introduction to experimental designs.

580 STATISTICAL METHODS
4 credits
Application of statistical methods to the social sciences including description, statistical, probability distributions, statistical inference (parametric, nonparametric), categorical data analysis, linear regression, correlation, computer applications. May not be used to meet Mathematical Sciences degree requirements.

581 APPLIED STATISTICS
4 credits
Prerequisite: 3450/22 or 2450/222. Applications of statistical theory to natural and physical sciences and engineering, including probability distributions, interval estimation, hypotheses testing (parametric and nonparametric), and simple linear regression and correlation.

582 APPLIED STATISTICS II
4 credits
Prerequisite: 460/560 or equivalent. Applications of the techniques of regression and multifactor analysis of variance.

585 DESIGN OF SAMPLE SURVEYS
3 credits
Prerequisite: 460/560 or equivalent. Design and analysis of frequently used sample survey techniques.

590 RELIABILITY MODELS
3 credits
Prerequisite: 460/560. Selected topics in reliability modeling including parametric and nonparametric models, competing modes of failure, censored data, and accelerated life models.

591 ACTUARIAL SCIENCE I
3 credits
Prerequisite: 475/571. Continuation of Actuarial Science I. Study of multi-life functions, multiple decrement models, valuation theory for pension plans, insurance models including expenses, nonforfeiture benefits and dividends.

592 FOUNDATIONS OF STATISTICAL QUALITY CONTROL
3 credits
Prerequisite: 460/560 or equivalent. Covers a solid foundation in the theory and applications of statistical techniques widely used in industry.

593 STATISTICAL COMPUTER APPLICATIONS
3 credits
Prerequisite: 3450/22 or 2450/222. Computer course in statistics or permission. Translation of statistical operations into computer languages, iterative procedures, generating data, Monte Carlo techniques, use of statistical packages.

599 TOPICS IN STATISTICS
1-3 credits
May be repeated. Prerequisite: permission for a total of six credits. Prerequisite permission. Selected topics in advanced statistics, including quality control, reliability, sampling techniques, decision theory, advanced inference, stochastic processes and other.

609 WORKSHOP IN STATISTICS
1-2 credits
May be repeated with change of topic. Group studies of special topics in statistics. May not be used to meet undergraduate or graduate major requirements in mathematics and statistics. May be used for elective credit only.

610 STATISTICAL CONSULTING
3 credits
Prerequisite: 460/560 or permission. Students will be assigned to work with an instructor on current problems in the Center for Statistical Consulting. May be repeated for a total of 4 credits; however, only 2 credits will count toward major requirements. Does not count for elective credit for math science department majors.

650 ADVANCED PROBABILITY AND STOCHASTIC PROCESSES
3 credits
Prerequisite: 651. Random walks, distributions, unlimited sequence of trials, laws of large numbers, random evolutions, branching processes, renewal theory. Markov chains, time-dependent stochastic processes.

651 PROBABILITY AND STATISTICS
4 credits
Prerequisite: 3460/22 or equivalent. Probability, random variables, moments and generating functions, random vectors, special distributions, limit theorems, sampling, point estimation, hypothesis testing, confidence estimation.

652 ADVANCED MATHEMATICAL STATISTICS
3 credits
Prerequisite: 651. Convergence of random variables, the Central Limit Theorem; theory of estimation; theory of hypothesis testing; the multivariate normal distribution; introduction to linear models, Bayesian statistics.

655 LINEAR MODELS
3 credits
Prerequisites: 3450/32 and 651 or equivalent. General linear model in matrix notation, general linear hypotheses, regression models, experimental design model, analysis of variance and covariance, variance components.

656 ADVANCED STATISTICAL METHODS
4 credits
Prerequisite: 460/560 or 461/561 or 664 or equivalent. Permission. Theory and applications of the techniques of regression and multivariable analysis of variance.

657 EXPERIMENTAL DESIGN
3 credits
Prerequisite: 460/560 or equivalent. Permission. Topics in experimental design including random and fixed effects, nested designs, split plots designs, confounding, fractional factors, Latin squares, and analysis of covariance.

658 STATISTICS FOR THE HEALTH SCIENCES
4 credits
Prerequisite: 460/560 or 461/561 or equivalent. Tutorial in regression and correlation techniques. Design of experiments used in clinical studies and analysis of medical research data.

660 REGRESSION
3 credits
Prerequisite: 460/561 or equivalent. Multivariate techniques. Multiple linear regression: least squares, matrix notation, model building and checking estimation, hypothesis testing, outliers, influence, multicollinearity, transformations, categorical regressions; logistic regression.

663 NONPARAMETRIC STATISTICS-METHODS
3 credits
Prerequisite: 460/560 or 461/561 or equivalent. Permission. Theory and practice using techniques requiring less restrictive assumptions. Nonparametric analogues to t- and F-tests, ANOVA, regression and correlation. Computer applications.

665 FACTOR ANALYSIS
3 credits
Prerequisite: 460/560 or 461/561 or 664 or equivalent. Theory and techniques for identifying variables through use of principal components and factor analysis. Identification of groups using cluster analysis. Computer applications.

668 MULTIVARIABLE STATISTICAL METHODS
3 credits
Prerequisite: 460/562 or 663 or 665 or equivalent. Multivariate techniques including distance concept, Hotelling’s T2, multivariate ANOVA, regression and correlation, linear equations, factor analysis, ordered and repeat measure designs, Bonferroni X2 tests, linear discrimination analysis, canonical correlations, application.

670 BIOSTATISTICS
3 credits
Prerequisite: 460/560, 461/561 or 664 or equivalent. Permission. Statistical techniques and methods for biological, medical and health sciences including clinical trials, sample size, power, log-linear models, survival analysis, and biocomputer applications.

675 RESPONSE SURFACE METHODOLOGY
3 credits
Prerequisite: 460/562 or 663 or 665 or equivalent. First and second order response designs, efficient experimental plans, methods for the analysis, and optimization of response functions.

680 ADVANCED TOPICS IN STATISTICS
1-3 credits
May be repeated for a total of six credits. Prerequisite: 651. Selected topics in statistics including concepts in order, statistics, advanced inference, sequential analysis, stochastic processes, reliability theory, Bayesian statistics and regression.

681 SEMINAR IN STATISTICS
1-3 credits
May be repeated. Prerequisite: permission of advisor. Seminar-type discussions on topics in statistics leading to supervised research project. No more than 2 credits apply to major requirements.

683 PRACTICUM IN STATISTICS AND MATHEMATICS
1-3 credits
Prerequisite: graduate teaching assistant or permission. Training and experience in college teaching of statistics. May not be used to meet degree requirements. Credit/No Credit.

690 INDIVIDUAL READING
1-2 credits
May be repeated for a total of four credits. Prerequisite: graduate standing and permission. Directed studies in statistics under guidance of selected faculty member.

694 MASTER'S RESEARCH
1-6 credits
May be repeated. Prerequisite: permission of advisor. Research in suitable topics in statistics culminating in a research paper. No more than 2 credits applicable to major requirements.

695 MASTER'S THESIS
2 credits
May be repeated for a total of 4 credits. Prerequisite: Permission. Properly qualified candidates for master’s degree may obtain 2-4 credits for research experience which culminates in presentation of a faculty-supervised thesis.

ENGINEERING APPLIED MATHEMATICS
3490:

700 ADVANCED SEMINAR IN APPLIED MATHEMATICS
1-4 credits
Prerequisite: Permission. May be repeated for a total of 12 credits. For students seeking graduate degrees in Applied Mathematics. Advanced projects and studies in various areas of applied mathematics.

705 PRELIMINARY RESEARCH
1-1.5 credits
Prerequisite: Permission. (May be repeated.) Completion of qualifying examination and approval of Student Advisory Committee. Preliminary investigation of Ph.D. dissertation topic.

707 DOCTORAL DISSERTATION
1-1.5 credits
Prerequisite: Permission. (May be repeated.) Completion of candidacy examination and approval of Student Advisory Committee. Original research for a Ph.D. candidate.

MODERN LANGUAGES
3500:

590 WORKSHOP
2 credits
May be repeated. Group study of special topics in modern languages.
FRENCH 3520:
502 ADVANCED FRENCH GRAMMAR 3 credits
Prerequisite: 302 or equivalent. Advanced study of normative French grammar with emphasis on syntax, morphology, grammatical structure, and phonetic principles.

567 FRENCH LITERATURE OF THE MIDDLE AGES AND THE RENAISSANCE 4 credits
Prerequisite: 305 or 306 or equivalent. Reading and discussion of selected Medieval and Renaissance literary works. Conducted in French.

511 17TH CENTURY FRENCH LITERATURE 4 credits
Prerequisite: 305 or 306 or equivalent. Reading and discussion of selected works in poetry, drama, and novels. Conducted in French.

515 18TH CENTURY FRENCH LITERATURE 4 credits
Prerequisite: 305 or 306 or equivalent. Reading and discussion of selected authors; emphasis on the Philosophes. Conducted in French.

519 19TH CENTURY FRENCH LITERATURE 4 credits
Prerequisite: 305 or 306 or equivalent. Reading and discussion of selected works pertaining to romantic, realistic, and naturalistic movements. Conducted in French.

522 SPECIAL TOPICS IN ADVANCED LANGUAGE SKILLS OR CULTURE ON LITERATURE 1-4 credits
Prerequisite: 305 or 306 or equivalent. (May be repeated.) Development of specialized language skills or reading of significant works of literature or culture not studied in other courses.

527 20TH CENTURY FRENCH LITERATURE 4 credits
Prerequisite: 305 or 306 or equivalent. Reading and discussion of the most representative works of period. Conducted in French.

560 SELECTED THEMES IN FRENCH LITERATURE 3 credits
(May be repeated. Conducted in French. Prerequisite: 305 and 306 or equivalent. Reading and discussion of literary works selected according to an important theme.

571 FRENCH LANGUAGE READING PROFICIENCY 4 credits
Designed to develop proficiency in reading comprehension. Prerequisites for graduate reading examinations. Does not count toward major.

5833 INDIVIDUAL READING IN FRENCH 1-4 credits
Prerequisite: 302 and permission of the French section. Individual reading in French, offered at the graduate level. (May be repeated for a total of eight credits.)

607 SELECTED TOPICS IN THE MOVEMENT OF IDEAS IN FRENCH LITERATURE 4 credits each
Selection of ideas instrumental in shaping French thought and culture.

661 FRENCH TEACHING PRACTICUM 2 credits
Prerequisite: teaching assistantship or permission. Orientation and practice of particular teaching skills of students who are teaching French. Periodical review and evaluation. Credits may not be applied toward degree requirement.

6833 INDIVIDUAL READING AND RESEARCH IN FRENCH 1-4 credits each
Prerequisite: 302 and permission of Department Chair. Independent study and research in specific areas. Considerable reading and writing required.

699 MASTER'S THESIS 4 credits

GERMAN 3530:
522 SPECIAL TOPICS IN ADVANCED LANGUAGE SKILLS, CULTURE, AND LITERATURE 1-4 credits
Prerequisite: 301 and graduate standing. Development of specialized language skills, acquisition of readings in German literature or culture. (May be repeated for a total of eight credits.)

671 GERMAN LANGUAGE READING PROFICIENCY 4 credits
Designed to develop proficiency in reading comprehension.

5933 INDIVIDUAL READING IN GERMAN 1-4 credits each
Prerequisite: 305 or equivalent. Individual reading in German, offered at the graduate level. (May be repeated for a total of eight credits.)

SPANISH 3580:
505 SPANISH LINGUISTICS: PHONOLOGY 4 credits
Prerequisite: 303 or instructor’s permission. Descriptive study of Spanish phonetics and phonology, comparison of Spanish and English sounds, historical aspects, regional accents and the language habits of speakers of Spanish. Conducted in Spanish.

506 SPANISH LINGUISTICS: SYNTAX 4 credits
Prerequisite: 303 or instructor’s permission. Descriptive study of Spanish syntax, introduction to theories of grammar, overview of Spanish semantics and pragmatics. Conducted in Spanish.

509 CULTURAL ManifestATION IN MEDIEVAL AND RENAISSANCE SPAIN 4 credits
Prerequisite: 407 or 408 or permission of instructor. Comparative study of representative artistic and literary works of the Medieval and Renaissance periods. Conducted in Spanish.

511 SPAIN DURING THE BAROQUE PERIOD 4 credits
Prerequisite: 407 or 408 or instructor’s permission. A comparative study of the different cultural manifestations during the 17th century in Spain. Conducted in Spanish.

512 CERVANTES: DON QUICHOTE 4 credits
Prerequisite: 407 or 408 or permission of instructor. Reading and analysis of Don Quijote as the modern novel in the historical context of Renaissance and Baroque aesthetics. Conducted in Spanish.

513 THE DON JUAN MYTH IN SPANISH CULTURE 4 credits
Prerequisite: 407 or 408 or permission of instructor. Study of the evolution of the Don Juan myth from its origins to its latest versions in the 20th century.

514 CULTURAL POLITICS IN THE RIVER PLATE 4 credits
Prerequisite: 407 or 408 or permission of instructor. Course will examine the military dictatorships of the twenties and seventies in Argentina and Uruguay by looking at how these regimes affect culture.

515 THE AGE OF REACTIONS AND THE ROMANIC REVOLUTION IN SPAIN 4 credits
Prerequisite: 407 or 408 or permission of instructor. Study of the Enlightenment and the Romantic movement as reflected in the works of the major artists and writers of these periods. Conducted in Spanish.

516 REPRESENTING REALITY IN 19TH CENTURY SPAIN 4 credits
Prerequisite: 407 or 408 or permission of instructor. A comparative study of the major literary and artistic movements in Spain from Realism to Modernism. Conducted in Spanish.
PHYSICS 3650:

500 HISTORY OF PHYSICS 3 credits
Prerequisites: 292 or 292.
Study of origin and evolution of major principles and concepts characterizing contemporary physics.

506 PHYSICAL OPTICS 3 credits
Prerequisites: 300 and 3450.335. Propagation, reflection, and refraction of electromagnetic waves; superposition, polarization, interference and diffraction, Fresnel and Fraunhofer diffraction, coherence theory, and quantum optics.

510 VACUUM SCIENCE AND TECHNOLOGY 3 credits
Prerequisite: 300. An interdisciplinary course stressing the fundamentals and applications of vacuum science, including selection of materials, pressure measurement and vacuum attainment, safety precautions, etc.

531 MECHANICS I 3 credits
Prerequisites: 292 and 3450.336. Mechanics at intermediate level. Newtonian mechanics, motion of a particle in one dimension, central field problems, system of particles, conservation laws, rigid bodies, gravitation.

532 MECHANICS II 3 credits
Prerequisites: 300. Advanced mechanics at the senior or beginning graduate level, moving coordinate systems, mechanics of continuous media, Lagrange's equations, tensor algebra and stress analysis, rotation or rigid bodies, Lorentz theory.

538 ELECTROMAGNETICS I 3 credits
Prerequisites: 292, 3450.335 or permission of instructor. Electricity and magnetism at intermediate level. Electrostatics and magnetostatics, electric field, scalar potential, dielectrics, Laplace's and Poisson's equations, current, magnetic field, vector potential, magnetic materials, induction.

537 ELECTROMAGNETICS II 3 credits
Prerequisites: 420/520. Special relativity, four vectors, Maxwell's equations in covariant form, propagation, reflection and refraction of electromagnetic waves, multipole radiation.

541 QUANTUM PHYSICS I 3 credits
Prerequisites: 420/520. Introduction to quantum theory. Schroedinger equation, angular momentum, perturbation theory, variational principle, bound states, scattering theory, radiative interaction, spin and the Pauli Principle.

542 QUANTUM PHYSICS II 3 credits
Prerequisites: 441/541. Applications of quantum mechanics to atomic, nuclear and solid state physics. Tunneling and alpha decay, radioactive potential, Hydrogen and Helium atoms, interatomic forces, quantum statistics.

551 ADVANCED LABORATORY I 3 credits
Prerequisite: 323 or permission of instructor. Experimental techniques applicable to research-type problems in courses 625, 637, 641, 642, FTA spectroscopy, optical spectroscopy, lasers, STM, and thin-film growth and characterization.

552 ADVANCED LABORATORY II 3 credits
Prerequisite: 441 or permission of instructor. Experimental projects applicable to contemporary physics. Dude and dye lasers, laser feedback, chaos, NMR, electron tunneling, and fiber optics.

556 TECHNIQUES OF PHYSICS INSTRUCTION 1 credit
Teaching assistants are introduced to current research in learning physics, shown applications for their labroom, and trained in skills needed as a laboratory teaching assistant.

558 DIGITAL DATA ACQUISITION 2 credits
Prerequisites: 252 or 292. Designed to introduce science and mathematics students to use of digital techniques of interfacing instruments to microcomputers. Physical measurements and device control emphasized.

560 INTRODUCTION TO SOLID-STATE PHYSICS 3 credits
Prerequisite: 441 or permission of instructor. Account of basic physical processes occurring in solids, with emphasis on fundamental interaction between these processes and periodicity of crystalline lattice.

561 METHODS OF MATHEMATICAL PHYSICS I and II 3 credits each
Prerequisites: 292, 3450.335 and senior or graduate standing in a physical science or engineering major, Generalized coordinates, tensors, Calculus of variations, vector spaces, linear transformations, matrices, eigenvalues, Hilbert space, boundary value problems, transcendental functions, complex variables, analytic functions, Fourier series, integral equations.

588 SELECTED TOPICS: PHYSICS 14 credits
(Prerequisite: permission. Consideration of selected topics, procedures, techniques, materials or apparatus of current interest in physics.)

590 WORKSHOP 14 credits
(Prerequisite: permission. Further investigations of various selected topics in physics under guidance of faculty member.)

597 INDEPENDENT STUDY 14 credits
(Prerequisite: permission. Further investigations of various selected topics in physics under guidance of faculty member.)

598 PHYSICS COLLOQUIUM 1 credit
Lectures on current research topics in physics by invited speakers. May be repeated, but only one credit counts toward M.S. degree. Credit/Noncredit.

602 COMPUTER PHYSICS: NUMERICAL SOLUTIONS TO PHYSICS PROBLEMS I 3 credits
Prerequisite: permission. Review of FORTRAN and basic topics in computer science. Numerical solutions to physics problems, including Newton's and Schrodinger's equations. Treatment of problem reduction of experimental data, plotting, simulation.

603 COMPUTER PHYSICS: NUMERICAL SOLUTIONS TO PHYSICS PROBLEMS II 3 credits
Prerequisite: 602 or permission. Data reduction, Laplace transforms, treatment of approximations in selected problems. Subject matter determined by selected faculty member in consultation with student. Graduate credit requires significant additional work which may include additional research paper.

615 ELECTROMAGNETIC THEORY I 3 credits
Prerequisite: 431/531. Electric and magnetic fields, Maxwell's equations, magnetic and electric boundary conditions, solutions of Maxwell's equations, scattering of charged particles, radiation from moving charges, bremstrahlung, multiple fields.

625 QUANTUM MECHANICS I 3 credits
Prerequisites: 441/541, 458/558 or permission of instructor. Basic concepts of quantum mechanics, representation theory, particle in a central field, addition of angular momenta and spins, Clebsch-Gordan coefficients, perturbation theory, scattering, transition probabilities.

626 QUANTUM MECHANICS II 3 credits

641 LAGRANGIAN MECHANICS 3 credits

651 STATISTICAL MECHANICS 3 credits
Prerequisites: 442/542 or permission of instructor. Fundamental principles of statistical mechanics. Gibbs, Fermi and Bose Statistics, solids, liquids, gases, phase equilibrium, chemical reactions.

669 CRITICAL PHENOMENA AND PHASE TRANSITIONS 3 credits
Prerequisites: 426, 491, 496, or permission of instructor. Modern theory of critical phenomena. Landau theory. Spin systems, binary mixtures, polymers and liquid crystals, Multicomponent systems. Multicritical points, Renormalization, Epstein-polynomial critical exponents.

670 SOLID STATE PHYSICS I 3 credits
Prerequisites: 470, 625 or permission of instructor. Theory of physics of crystalline solids. Properties of reciprocal lattice and Bloch's theorem. Lattice dynamics and specific heat, Electron states, cellular method, tight-binding method, Green's function method.

671 SOLID STATE PHYSICS II 3 credits

689 SPECIAL PROBLEMS IN THEORETICAL PHYSICS 3 credits
(Independent Study) Prerequisite: permission. Intended to facilitate expansion of special areas of interest in theoretical physics, by consultation with faculty member and independent study beyond available course work.

691 SEMINAR IN THEORETICAL PHYSICS 13 credits
(Prerequisite: permission.)

GRADUATE RESEARCH 15 credits
Prerequisite: permission. Candidates for M.S. degree may obtain up to five credits for faculty supervised research projects. Grades and credit received at completion of such projects.

SPECIAL TOPICS: PHYSICS 14 credits
(Prerequisite: permission. Enables student who needs information in special areas, in which no formal course is offered, to acquire knowledge in these areas.)

MASTER'S THESIS 1 credit
Prerequisite: permission. With approval of department, one credit may be earned by candidate for M.S. Degree upon satisfactory completion of a master's thesis.

DOCTORAL RESEARCH 1-20 credits
(Independent Study) Prerequisite: approval of the Student Advisory Committee for Ph.D. research in physics, philosophy, chemistry, polymer science, applied mathematics or theoretical engineering. Original research by a Ph.D. candidate in various disciplines under the guidance of physics faculty.

POLITICAL SCIENCE 3700:

502 POLITICS AND THE MEDIA 3 credits
Examination of relationships between the areas, the news media and political decision makers.

503 POLITICS IN THE MIDDLE EAST 3 credits
The rise of the state system in the Middle East after World War I: an analysis of the geopolitical, ideological forces influencing the political behavior of the people of the Middle East. In-depth study of selected political systems.

510 INTERNATIONAL DEFENSE POLICY 3 credits
Prerequisite: At least one of the following: 220, 220, 3400.340, 360, 407, 408. Introduction to the political use of military forces. Major focus on methodological, conceptual, and ethical dilemmas encountered in developing and implementing defense policy.
660 SEMINAR ON CIVIL LIBERTIES AND THE JUDICIAL PROCESS 3 credits
Prerequisites: six credits of political science or permission. Civil liberties and judicial process viewed in political context. Readings and research on selected topics.

661 SEMINAR IN PUBLIC POLICY AGENDA AND DECISIONS 3 credits
Prerequisites: six credits of political science or permission. Reading and research on the development of public policy issues and modes of decision making used by policy makers.

672 CRITICAL PERSPECTIVES ON POLITICAL INFLUENCE AND ORGANIZATIONS 3 credits
Prerequisites: permission. Examination of how public concerns and demands are resolved or diffused. A theoretical and applied look at parties, interest groups, public opinion, media, and politics.

690 SPECIAL TOPICS IN POLITICAL SCIENCE 1-3 credits
Prerequisites: six credits of political science or permission. Graduate-level examination of selected topics in American politics, comparative politics, international politics, international relations or political theory.

695 INTERNSHIP IN GOVERNMENT AND POLITICS 3 credits
This course is intended for students interested in government. It is targeted at a total of 9 credits. Prerequisite: Permission of graduate advisor supervised individual placement with a political office holder, party group, governmental agencies, law firms and other organizations providing professional-level work.

696 TOPICS IN MASTER’S RESEARCH 1-3 credits
Prerequisites: permission of advisor. May be repeated for a total of 9 credits. No more than six credits may be applied to degree requirements. Research in suitable topics in political science or applied political science culminating in an Essay of Distinction. Credit/No Credit.

697 INDEPENDENT RESEARCH AND Readings 1-4 credits
(Independent study is not allowed more than six credits toward the master’s degree in political science). Credit/Non Credit.

699 POLITICAL SCIENCE PRACTICUM 3 credits
Prerequisite: permission of instructor. Professional seminar required of new graduate students. May not be applied toward degree requirements. Covers disciplinary fields, teaching, research practices, career tracks and program selection. Credit/Non Credit.

700 MASTER’S THESIS 6-9 credits
Prerequisite: admission to the Graduate School. Application of psychological theory to the effective management of human resources in an organization, including recruitment, selection, training and retention of personnel.

700 Personality 4 credits
Prerequisite: admission to the Graduate School. Consideration of current conceptualizations of the normal personality with emphasis on methods of measurement, experimental findings and research techniques.

510 PSYCHOLOGICAL TESTS AND MEASUREMENTS 4 credits
Prerequisite: admission to the Graduate School. Consideration of the nature, construction and use of tests and measurements in industry, government and education. Includes aptitude and achievement tests, rating scales, attitude and opinion analysis.

520 PSYCHOLOGICAL TESTS AND MEASUREMENTS 4 credits
Prerequisite: permission. Examination of how public concerns and demands are resolved or diffused. A theoretical and applied look at parties, interest groups, public opinion, media, and politics.

530 PSYCHOLOGICAL DISORDERS OF CHILDREN 4 credits
Prerequisite: admission to the Graduate School. Survey of syndromes, etiology, diagnoses and treatments of major psychological conditions ranging from transient maladjustments to psychosis.

531 HUMAN RESOURCE MANAGEMENT 4 credits
Prerequisite: admission to the Graduate School. The application of psychological theory to the effective management of human resources in an organization, including recruitment, selection, training and retention of personnel.

544 ORGANIZATIONAL THEORY 4 credits
Prerequisite: admission to the Graduate School. The application of psychological theory to macro-level processes in organizations including leadership, motivation, task performance, organizational structure and performance.

546 PSYCHOLOGY OF SMALL GROUP BEHAVIOR 4 credits
Prerequisite: admission to the Graduate School. Intensive investigation of factors affecting behavior and performance in small groups including effects of personality, social structure, task, situation and social-cognitive variables.

550 COGNITIVE DEVELOPMENT 4 credits
Prerequisite: admission to the Graduate School. Theories and methods of research in cognitive processes including concept formation/categorization, information processing and Piagetian assessment tasks.

560 HISTORY OF PSYCHOLOGY 3 credits
Prerequisite: admission to the Graduate School. Psychology in pre-scientific period and detail of development of systematic viewpoints in 19th and 20th Centuries.

570 WORKSHOP IN PSYCHOLOGY 1-3 credits
Prerequisite: admission to the Graduate School. May be repeated. May not be used to meet undergraduate or graduate major requirements in psychology. Group studies of special topics in psychology.

601 PSYCHOLOGICAL RESEARCH USING QUANTITATIVE AND COMPUTER METHODS 1-4 credits
Prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or special nondegree students with permission. Psychological research problem applying quantitative computer methods. Topics include research design, sampling, controls, threats to validity, hypothesis testing, psychological measurement, error, robustness and power.

602 CORE I: SOCIAL PSYCHOLOGY 2 credits
Prerequisite: graduate standing or permission of instructor. Introduction to empirical research and theories on the processes of psychological processes related to interpersonal behavior, focusing on topics like attitude change, social influence, and protocol behavior.

603 CORE II: COGNITIVE PSYCHOLOGY 2 credits
Prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or permission. Presentation of selected topics in the psychology of memory, thinking, problem solving and other related cognitive processes.

604 CORE III: INDIVIDUAL DIFFERENCES 2 credits
Prerequisite: graduate standing in psychology or the collaborative doctoral program in counseling psychology or permission. Presentation of selected topics in the psychology of personality and of evidence for and against the role of nature and experience in influencing psychological development and assessment.
721 APPLIED COGNITIVE AGING PSYCHOLOGY: INFORMATION PROCESSING

Prerequisites: 724 graduate standing in psychology; or permission of instructor. Perception, learning, and problem solving, attention, selectivity in adulthood and their effects on areas such as environmental design, mobility, independence, neuropsychological assessment, and everyday cognitive performance.

722 APPLIED COGNITIVE AGING PSYCHOLOGY: HIGHER PROPERTIES

Prerequisites: 724 graduate standing in psychology; or permission of instructor. Memory, comprehension, decision processes, reasoning, and their relation to everyday life in areas such as dementia, communication, judgment, awareness, expertise, wisdom, and creativity.

723 APPLIED COGNITIVE AGING PSYCHOLOGY: RESEARCH

Prerequisites: 724 graduate standing in psychology; or permission of instructor. Intensive reading in selected content area; design and conduct of a complete research study. (May be repeated for a total of 81 credits.)

724 APPLIED COGNITIVE AGING PSYCHOLOGY: CURRENT ISSUES

Prerequisite: 727 or permission of the instructor. Examination of applied, theoretical, methodological, and analytic issues of current importance to the field of cognitive aging psychology. (May be repeated for a total of 10 credits.)

725 APPLIED COGNITIVE AGING PSYCHOLOGY: COGNITIVE NEUROPSYCHOLOGY

Prerequisites: 640 or instructor permission. An advanced course that acquaints graduate students with the most recent literature in cognitive neuropsychology within the context of aging research. (May be repeated for a total of 6 credits.)

726 APPLIED DEVELOPMENTAL PSYCHOLOGY

Prerequisites: 727 graduate standing in psychology, or permission of instructor. Examination of methodological, evaluative, and contextual variables related to the work of adults. (May be repeated for a total of 12 credits.)

727 INDUSTRIAL GEROONTOLOGY

Prerequisites: 680, graduate standing in psychology, or permission of instructor. Study of age-related issues in work involving adult and older adult workers. Topics include personnel selection, training, motivating and appraising older employees; health and safety; job design, work force diversity, and immigration; and health care systems. (May be repeated for a total of 2 credits.)

728 ADVANCED DEVELOPMENTAL PSYCHOLOGY

Prerequisites: 690, graduate standing in psychology, or permission of instructor. Examination of developmental psychology in terms of behavioral and psychological theories, research, and psychological assessment of individuals and populations. (May be repeated for a total of 2 credits.)

729 TRAINING

Prerequisites: 690, graduate standing in psychology, or permission of the instructor. Review of techniques employed by industrial organizations. Topics include personnel selection, placement and promotion; survey of objective and subjective criteria used in performance appraisal, including tests, validation and training effectiveness. (May be repeated for a total of 3 credits.)

730 NEUROPSYCHOLOGY

Prerequisites: 660, graduate standing in psychology and permission of instructor. Examination of the role of brain function and dysfunction in understandings of human behavior, as well as consideration of techniques to evaluate these programs. (May be repeated for a total of 3 credits.)

731 PROFESSIONAL ATTITUDES AND VALUES IN INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

Prerequisites: 660, graduate standing in psychology, or permission of instructor. Scientific method and its specific application to psychology. Topics include data collection, validity, reliability, use of general linear model and its alternatives and power analysis. (May be repeated for a total of 4 credits.)

732 COMPUTER APPLICATIONS IN PSYCHOLOGICAL RESEARCH

Prerequisites: graduate standing in psychology or permission of instructor. Practices in the application of computers to psychological research including data collection, analysis and interpretation. Also covers computer simulation of decision making including use of different models. (May be repeated for a total of 3 credits.)

733 ORGANIZATIONAL CHANGE AND TRANSFORMATION

Prerequisites: 660 or permission of instructor. Survey of theories and introduction to practical methods of organizational change and transformation used to increase organizational effectiveness and to improve work life. (May be repeated for a total of 3 credits.)

734 INFORMATION PROCESSING AND INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

Prerequisites: 660, graduate standing in psychology, or permission of instructor. Considers the impact of current theories in cognitive psychology on industrial/organizational psychologists as they analyze, plan, develop, and implement new programs. (May be repeated for a total of 2 credits.)

735 PERSONNEL PSYCHOLOGY AND THE LAW

Prerequisite: 660. Issues in personnel psychology which have legal implications are reviewed. The impact of recent court decisions are evaluated in staffing and compensation. (May be repeated for a total of 3 credits.)

736 ADVANCED COUNSELING PRACTICUM

Prerequisites: 671, 672, 673 and permission of instructor. This course provides graduate students in counseling with actual client contacts and supervisory experiences under the guidance of faculty supervision. (May be repeated for a total of 3 credits.)

737 COUNSELING PSYCHOLOGY PRACTICUM

Prerequisites: 795 (five hours) or 5600.575 (five hours). Advanced counseling psychology students will have supervised training with clients in a variety of settings and will focus on supervisory development of specialized theoretical applications. (May be repeated for a total of 3 credits.)
SOCIOLOGY 3850:

510 SOCIAL STRUCTURES AND PERSONALITY
3 credits
Prerequisite: 100 or permission. Interpersonal relationships between political and economic forces. Personality treated as both result and determinant of social structure and process. Lecture.

511 SOCIAL INTERACTION
3 credits
Prerequisite: 100 or permission. Theoretical and empirical analysis of processes by which individuals, groups, and social structures and processes. Lecture.

512 SOCIALIZATION: CHILD TO ADULT
3 credits
Prerequisite: 100 or permission. Theoretical and empirical analysis of processes by which individual, adolescent, and adult learn social and cultural requirements necessary to function in new social structures, changing roles and society in general.

521 RACIAL AND ETHNIC RELATIONS
3 credits
Prerequisite: 100 or permission. Analysis of structure and dynamics of race and ethnic relations from a variety of perspectives emphasizing both historical and contemporary issues. Lecture.

522 SOCIOLOGY OF WOMEN
3 credits
Prerequisite: 100 or permission. Examination of research and theories pertaining to women's status in society, including economic conditions, the relationship between structures and experience, and other gender-related issues. Lecture.

525 SOCIOLOGY OF URBAN LIFE
3 credits
Prerequisite: 100 or permission. Emergence and development of urban society. Examination of urban social structure from prehistoric times to the present. Lecture.

529 THE VICTIM IN SOCIETY
3 credits
Prerequisite: 100 or permission. An analysis of theories of victimization and the consequences of victimization.

530 JUVENILE DELINQUENCY
3 credits
Prerequisite: 100 or permission. Analysis of social structure and process from which delinquency develops. Emphasis on current and past research. Lecture-discussion.

531 CORRECTIONS
3 credits
Prerequisite: 320 or 420. Theories, beliefs, and practices of community and institutional correction systems, including past and present research. Emphasis on various life styles of urban subcultures. Lecture-discussion.

532 THEORIES OF SOCIETY
3 credits
Prerequisite: 100 or permission. Examination of three additional credits of sociology courses or permission. Social origins and consequences of law and legal processes. Emphasis on use of laws, social change and aspects of legal professions. Lecture.

544 SOCIAL ISSUES IN AGING
3 credits
Prerequisite: 100 or permission. A look into the major issues and problems facing older persons. Special attention is given to the unmet needs of the elderly as well as an examination of current social policy and programs to meet these needs.

550 SOCIOLOGY OF MENTAL ILLNESS
3 credits
Prerequisite: 100 or permission. The social history of the mental hospital, theories of etiology, and the nature of the duality of mental illness. Community-based treatment models, the organization of mental health services, the role of personal networks and social supports.

560 SOCIOLOGICAL THEORY
4 credits
Prerequisite: 100 or permission. An overview and examination of theoretical issues in sociology. Study of both classical and contemporary sociological theorists.

561 PROSEMINAR IN SOCIOLOGY
3 credits
Prerequisite: 100 or permission. Teaching assistant or permission. Introduction to professional aspects of sociology and major areas of study/research in the field. Not approved as credit toward a degree.

602 FAMILY AND SOCIETY
3 credits
Examination of the interplay of family and society, family as both independent/dependent variable, at micro/macro levels. Development and impact of family policies is discussed.

604 RESEARCH DESIGN AND METHODS
3 credits
Prerequisite: 100 or permission. An intensive analysis of problems of research design, i.e., those encountered in thesis preparation. (Same as KUS 672211) Seminar.

613 SOCIOLOGY OF PROGRAM EVALUATION AND PROGRAM IMPROVEMENT
3 credits
Prerequisite: 100 or permission. Program Evaluation as a evolves with program development. Seminar.

615 EPIDEMIOLOGIC METHODS IN HEALTH RESEARCH
3 credits
Prerequisite: permission. Designed to introduce the student to methods of developing and understanding information concerning the distribution of illness and injury in society and evaluation of interventions to reduce the burden.

625 SOCIOLOGY OF SENTIMENTS AND EMOTIONS
3 credits
Prerequisite: permission. A sociological perspective is employed to analyze and understand the production, distribution and utilization of socially created sentiments and emotions. (Same as KUS 672435) Seminar.

631 SOCIAL PSYCHOLOGY
3 credits
Prerequisite: 100 or permission. An intensive examination of social psychological theory and research, both classic and contemporary. Provides a foundation for background of working knowledge of social psychological data. (Same as KUS 724335) Seminar.

634 PERSONALITY AND SOCIAL SYSTEMS
3 credits
Prerequisite: 100 or permission. Examination of contemporary theory and research on linkages between personality and society, social development in modernization, social class and occupations and sex roles. (Same as KUS 724340) Seminar.

639 SOCIOLOGY OF GENDER
3 credits
Prerequisite: permission. Examination of theories and research on gender origins, characteristics and changes. Emphasis on empirical research on gender role patterns and processes in various industrial societies.

645 SOCIAL ORGANIZATION
3 credits
General survey of major theories, concepts and roles pertaining to creating, maintaining and dissolving of social organization at various levels of size and complexity. (Same as KUS 725440) Seminar.

646 SOCIAL INEQUALITIES
3 credits
Prerequisite: permission. Seminar dealing with social classes and status with special reference to the structure of social classes. (Same as KUS 725450 Seminar.

648 COMPLEX ORGANIZATIONS
3 credits
Prerequisite: permission. Organizations as social systems, their effect on economic problems of economists. Seminar.

649 CRISIS IN ORGANIZATIONS
3 credits
Examination of work as behavioral phenomenon in human societies, contrasts with non-work and leisure, significance of occupations, professionals and work organizations in work organization. (Same as KUS 725476 Seminar.

651 SEMINAR IN RESEARCH TECHNIQUES
3 credits
Prerequisite: permission. Analysis of the research and social research with special reference to research design and contemporary issues. (Same as KUS 725470) Seminar.

656 SOCIOLOGY OF HEALTH CARE
3 credits
Prerequisite: permission of instructor. A study of the role of the medical sociologist with special emphasis on analysis of health and medical care in the contemporary urban. United States. (Same as KUS 725453) Seminar.

657 URBAN HEALTH CARE
3 credits
Prerequisite: permission. Seminar on various urban social structures and processes and organization and functioning of healthcare delivery systems in urbanized nations. Seminar.

658 FIREBACK
3 credits
Prerequisite: permission. Examination of nature and types of deviance. Problems and issues in theory and research. (Same as KUS 725477 Seminar.

659 POLITICAL SOCIOLOGY
3 credits
Prerequisite: 100 or permission. Relationships between urban social structures and social processes. Emphasis on current and past research. Lecture.

664 SOCIOLOGY OF CRIMINAL BEHAVIOR
3 credits
Prerequisite: permission. Analysis of the relationship of crime and deviance to social structure and social processes. Emphasis on current and past research. Lecture.

666 SOCIOLOGICAL ANALYSIS OF REACTIONS
3 credits
Prerequisite: permission. Analysis of theories of deviance, ecological, class structural, sub- structures and race research. Seminar.

667 SOCIOLOGY OF LAW
3 credits
Prerequisite: permission. Seminar in sociological law. Lecture-discussion.

677 PROGRAM EVALUATION
3 credits
Prerequisite: permission. Seminar in evaluation of social and political programs. Lecture-discussion.

688 POPULATION
3 credits
Prerequisite: 100 or permission. A comparison of aging in various cultures and societies around the world.

689 POLITICAL SOCIOLOGY
3 credits
Prerequisite: permission. Seminar in sociological law. Lecture-discussion.

690 SPECIAL PROBLEMS IN AGING
3 credits
Prerequisite: permission. Seminar in sociological law. Lecture-discussion.

692 SPECIAL PROBLEMS IN AGING
3 credits
Prerequisite: permission. Seminar in sociological law. Lecture-discussion.

694 SOCIAL CHANGE
3 credits
Prerequisite: permission. Seminar in sociological law. Lecture-discussion.

696 MASTER'S RESEARCH PAPER
2-4 credits
May be repeated. (Same as KUS 725480) Seminar.

697 READING IN CONTEMPORARY SOCIOLOGICAL LITERATURE
1-3 credits
Prerequisite: advanced student only. Methodological problems in reading advanced sociological literature. Seminar.

700 COLLEGE TEACHING OF SOCIOLOGY
2 credits
Prerequisites: teaching assistant or permission. Training and experience in college teaching of sociology. Not accepted toward a degree.

706 MULTIVARIATE TECHNIQUES IN SOCIOLOGY
3 credits
Prerequisites: 630 and 640, or permission. An introduction to multivariate techniques. Seminar.

707 PROFESSIONALIZATION IN SOCIOLOGY
3 credits
Prerequisite: 706 or permission. Seminar on historical development and professionalization of sociology. Seminar.

708 ADVANCED DATA ANALYSIS
3 credits
Prerequisite: 706 or permission. Seminar on historical development and professionalization of sociology. Seminar.

709 ADVANCED DATA ANALYSIS
3 credits
Prerequisite: 706 or permission. Seminar on historical development and professionalization of sociology. Seminar.

714 EXPERIMENTAL AND QUASI-EXPERIMENTAL RESEARCH IN SOCIOLOGY
3 credits
Prerequisites: 630 and 640, or permission. Seminar on historical development and professionalization of sociology. Seminar.

717 SOCIAL SURVEY METHODS
3 credits
Prerequisites: 630 and 640, or permission. Seminar on historical development and professionalization of sociology. Seminar.

720 COLLEGE TEACHING OF SOCIOLOGY
2 credits
Prerequisites: teaching assistant or permission. Training and experience in college teaching of sociology. Not approved as credit toward a degree.

724 MULTIVARIATE TECHNIQUES IN SOCIOLOGY
3 credits
Prerequisites: 630 and 640, or permission. Seminar on historical development and professionalization of sociology. Seminar.

725 PROFESSIONALIZATION IN SOCIOLOGY
3 credits
Prerequisite: permission. Seminar on historical development and professionalization of sociology. Seminar.

726 ADVANCED DATA ANALYSIS
3 credits
Prerequisite: 706 or permission. Seminar on historical development and professionalization of sociology. Seminar.

727 EXPERIMENTAL AND QUASI-EXPERIMENTAL RESEARCH IN SOCIOLOGY
3 credits
Prerequisites: 630 and 640, or permission. Seminar on historical development and professionalization of sociology. Seminar.
<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>621 URBAN SOCIETY AND SERVICE SYSTEMS</td>
<td>3</td>
<td>Prerequisite: permission. Analysis of social bases of urban society, hierarchies, social problems, relationships to planning, public services.</td>
</tr>
<tr>
<td>622 PUBLIC WORKS ADMINISTRATION</td>
<td>3</td>
<td>Basic knowledge of the health service delivery system is provided for planners and administrators in the public sector.</td>
</tr>
<tr>
<td>624 EMERGENCY MANAGEMENT POLICY IMPLEMENTATION AND ANALYSIS</td>
<td>3</td>
<td>Prerequisite: permission. Examines implementation of emergency management policy in federal, state, and local levels. Analyzes current policy initiatives in this emerging field.</td>
</tr>
<tr>
<td>625 STRATEGIC PERSPECTIVES IN EMERGENCY MANAGEMENT</td>
<td>3</td>
<td>Prerequisite: permission. Examines emergency management problems and policy-making for disaster management and emergency preparedness.</td>
</tr>
<tr>
<td>626 EMERGENCY MANAGEMENT</td>
<td>3</td>
<td>Students will gain knowledge of the grant-seeking and awarding processes. Focuses on public funding opportunities and public organizations in the states.</td>
</tr>
<tr>
<td>680 COMPATIBLE URBAN SYSTEMS</td>
<td>3</td>
<td>Prerequisite: permission. Conceptual schemes and methodology for comparative urban analysis, focusing on a number of major cities selected from each continent.</td>
</tr>
<tr>
<td>687 RESEARCH FOR FUTURES PLANNING</td>
<td>3</td>
<td>Prerequisite: permission. Focuses on issues that confront public managers in utilizing information systems to support institutional decision making.</td>
</tr>
<tr>
<td>697 SPECIAL TOPICS IN SOCIAL ORGANIZATION</td>
<td>1-3</td>
<td>May be repeated for a minimum of 3 credits. Special topics in urban studies. May be used to meet graduate major requirements in urban studies.</td>
</tr>
<tr>
<td>698 INDIVIDUAL STUDIES</td>
<td>3-4</td>
<td>May be repeated for a minimum of 9 credits. Individual study; content area not readily subsumable under other headings.</td>
</tr>
<tr>
<td>699 DOCTORAL DISSERTATION</td>
<td>3-5</td>
<td>May be repeated for a minimum of 30 credits. Dissertation.</td>
</tr>
</tbody>
</table>

**PUBLIC ADMINISTRATION AND URBAN STUDIES: 3980:**

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>590 WORKSHOP</td>
<td>1-3</td>
<td>May be repeated. Group studies of special topics in urban studies. May not be used to meet graduate major requirements in urban studies. May be used for elective credit only.</td>
</tr>
<tr>
<td>600 BASIC QUANTITATIVE RESEARCH</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>601 ADVANCED RESEARCH AND STATISTICAL METHODS</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>602 HISTORY OF URBAN DEVELOPMENT</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>603 LEGAL FOUNDATIONS OF PUBLIC ADMINISTRATION</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>604 INTRODUCTION TO THE PROFESSION OF PUBLIC ADMINISTRATION</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>605 NATIONAL URBAN POLICY</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>606 INTERGOVERNMENTAL POLICY</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>607 ETHICS AND PUBLIC SERVICE</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>608 PUBLIC ORGANIZATION</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>609 PERSONNEL MANAGEMENT IN THE PUBLIC SECTOR</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>610 LEADERSHIP AND DECISION-MAKING</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>611 CIVIC PARTICIPATION</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>612 SOCIAL SERVICES PLANNING</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>613 URBAN SOCIETY AND SERVICE SYSTEM</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>614 EMERGENCY MANAGEMENT POLICY IMPLEMENTATION AND ANALYSIS</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>615 STRATEGIC PERSPECTIVES IN EMERGENCY MANAGEMENT</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>616 EMERGENCY MANAGEMENT</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>617 RESEARCH FOR FUTURES PLANNING</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>618 COMPATIBLE URBAN SYSTEMS</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>619 SPECIAL TOPICS IN SOCIAL ORGANIZATION</td>
<td>1-3</td>
<td>May be repeated for a minimum of 3 credits. Special topics in urban studies. May be used to meet graduate major requirements in urban studies.</td>
</tr>
<tr>
<td>620 INDIVIDUAL STUDIES</td>
<td>3-4</td>
<td>May be repeated for a minimum of 9 credits. Individual study; content area not readily subsumable under other headings.</td>
</tr>
<tr>
<td>621 URBAN SOCIETY AND SERVICE SYSTEM</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>622 PUBLIC WORKS ADMINISTRATION</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>624 EMERGENCY MANAGEMENT POLICY IMPLEMENTATION AND ANALYSIS</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>625 STRATEGIC PERSPECTIVES IN EMERGENCY MANAGEMENT</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>626 EMERGENCY MANAGEMENT</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>627 EMERGENCY MANAGEMENT</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>628 EMERGENCY MANAGEMENT</td>
<td>3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
<tr>
<td>629 MASTER'S THESIS</td>
<td>1-3</td>
<td>Examines the role of quantitative techniques in planning and public administration.</td>
</tr>
</tbody>
</table>
697 ADVANCED RESEARCH METHODS I 3 credits
Prerequisite: Master's level statistics or permission. Introduction to statistical techniques and methodologies in doctoral and postdoctoral research. Emphasis on conceptual and methodological interrelationships.

619 ADVANCED RESEARCH METHODS II 3 credits
Prerequisite: 700 or equivalent. Continuation of 709. Emphasis placed upon conceptual and methodological interrelationships of recent statistical techniques as well as applications of these techniques through computer analysis of urban data sets.

702 URBAN THEORY I 3 credits
Prerequisite: Permission. Review of major theoretical tradition examining urban problems. Emphasis on understanding and applying the theories to urban problems.

703 URBAN THEORY II 3 credits
Prerequisite: 702. Review of major professional disciplines dealing with urban problems. Emphasis on the integration of theory and practice.

704 PUBLIC BUREAUCRACY 3 credits
Prerequisite: Permission. Analysis of bureaucratic operations and the implementation of public policy, including specific examples of human service organizations and the democratic theory debate.

765 ECONOMICS OF URBAN POLICY 3 credits
Prerequisite: Master's level knowledge of macroeconomics and microeconomics of special cities. Use of research tools of economic analysis in seminar format to examine options available to urban policy makers in operation of public services and economic development of cities.

798 PROGRAM EVALUATION 3 credits
Prerequisite: Permission. Advanced treatment of topics in program evaluation.

807 URBAN PLANNING AND MANAGEMENT STRATEGIES 3 credits
Prerequisite: Permission. Analysis of urban planning policy and strategies for implementation in public policy formulation. Emphasis on use of planning processes as integrative mechanisms.

808 URBAN POLICY THE HISTORICAL PERSPECTIVE 3 credits
Prerequisite: Permission. Case study of major ideas about the city from Aristotle to the 20th Century and their impact on urbanization on society and public policy.

809 SYSTEMS AND PROCESSES OF POLICY ANALYSIS 3 credits
Prerequisite: Permission. Analysis of administrative processes within public organizations and local and national government organizations on urban community.

811 QUALITATIVE RESEARCH METHODS 3 credits
Prerequisites: 700 and 701. Critical examination of Social Science Research methodologies such as case study analysis, open-ended survey techniques and other means of creating non-statistically generated data.

817 SEMINAR IN PUBLIC ADMINISTRATION 3 credits
Prerequisite: Permission. In-depth review and critique of major intellectual traditions, concepts and theories underlying public administration in the United States.

818 SEMINAR IN POLICY ANALYSIS AND EVALUATION 3 credits
Prerequisite: Permission. In-depth review and critique of major intellectual traditions, concepts and theories underlying urban and regional planning in the United States.

819 SEMINAR IN URBAN AND REGIONAL PLANNING 3 credits
Prerequisite: Permission. In-depth review and critique of major intellectual traditions, concepts and theories underlying urban and regional planning in the United States.

820 COMPARATIVE PLANNING STRATEGIES 3 credits
Prerequisite: 715 or permission. Review and analysis of alternative planning theories, institutions, and implementation strategies in a variety of national settings.

830 ETHICS IN GOVERNMENT 3 credits
This course will explore the differences between individual and collective responsibility, public and private morality and the nexus between democracy and moral development.

831 THEORIES OF PUBLIC BUDGETING AND FINANCE 3 credits
Prerequisite: 711. Examines the theories and perspectives that have shaped how government raises and allocates funds.

832 GOVERNANCE AND ADMINISTRATION 3 credits
Prerequisite: Permission. Review and analysis of the organizational behavior and administrative theories that support modern public personnel systems.

833 THEORIES OF PUBLIC SECTOR HUMAN RESOURCE MANAGEMENT 3 credits
Prerequisite: Permission. Examination of the organizational behavior and administrative theories that support modern public personnel systems.

834 CONCEPTUAL AND LEGAL FOUNDATIONS OF PUBLIC ADMINISTRATION 3 credits
Prerequisite: Permission. An examination of the major legal and constitutional issues that underlie public administration today.

835 COMPARATIVE ADMINISTRATION 3 credits
Prerequisite: Permission. Examination of the various political and administrative frameworks within which public administrators function.

836 LEADING PUBLIC ORGANIZATIONS 3 credits
Prerequisite: Permission. Examination of the various theories of organizational leadership and their application in public organizations.

840 SURVEY/RESEARCH METHODS IN THE PUBLIC SECTOR 3 credits
Prerequisite: Permission. Examination of the techniques and methods used by public organizations to improve public service provision. Critiques of methodologies based upon information needs and citizens surveyed.

888 URBAN POLICY STUDIES 14 credits
May be repeated for a maximum of 16 credits. Prerequisite: Permission of instructor. Selected topics for specialized instruction given at Kent, Youngstown, and/or Cleveland State universities to assist toward a UA degree either as a required or an elective course.

899 PRO-SEMINAR 3 credits
Prerequisite: Permission. Successfully pass all comprehensive examinations. Seminar to discuss topics related to research and writing the dissertation. Discussion of alternative methodology, style, and perspectives. Credit/No credit.

999 URBAN TUTORIAL 3 credits
Prerequisite: Permission. In-depth study of a particular approved field within urban studies and public affairs under supervision of tutor. May be repeated once. Credit/No credit.

100 DOCTORAL DISSERTATION 3 credits
Prerequisite: Advancement to Candidacy and 798. Open to properly qualified student accepted as candidate for Doctor of Philosophy degree. Student must register for dissertation credit if such semester of dissertation is accepted. Minimum of 12 credits required. May be repeated. Credit/No credit.

120 ELECTROCHEMICAL ENGINEERING 3 credits
Prerequisites: 221, 292. Electrochemical engineering principles as applied to the study of electrode processes and to the design of electrochemical reactors. Topics include electrochemistry, thermodynamics, cell polarizations, Faraday's Laws, electrode kinetics, transport processes in electrolyte systems, current distributions, reactor design, experimental methods, commercial processes, and fuel cells.

122 SEPARATION PROCESSES IN BIOCHEMICAL ENGINEERING 3 credits
Prerequisites: 211, 221. Advanced treatment of separation/analytical techniques pertinent to bioprocesses, with emphasis on the engineering considerations for large-scale operations.

126 TRANSPORT PHENOMENA 3 credits
Prerequisites: 221, 222 or permission. Systematic presentation of continuum: energy and mass (microscopic and macroscopic levels in conjunction with illustrative examples and analogies).

129 CHEMICAL REACTION ENGINEERING 3 credits
Prerequisite: 330 or permission. Kinetics of homogeneous and heterogeneous systems. Reactor design for ideal and non-ideal flow systems.

130 CLASSICAL THERMODYNAMICS 3 credits
Prerequisite: 222. Discussion of laws of thermodynamics and their application. Presentation and correlation of thermodynamic data. Phase and reaction equilibria.

140 SURFACE SCIENCE IN CHEMICAL ENGINEERING 3 credits
Prerequisites: 330, 331. Introduction to the study of the fundamental aspects and techniques pertinent to the design and operation of processes and equipment design, catalytic reactions, mass and heat transfer, surface characterization techniques (contact angle, ellipsometry, XPS), and surface engineering methods (SAMs, self-assembly).

150 BIOCHEMICAL ENGINEERING 3 credits
Application of chemical engineering principles to biological processes which produce desirable compounds or destroy unwanted or hazardous substances.

160 PHYSICAL PROPERTIES OF STRUCTURAL BIOPOLYMERS 3 credits
Prerequisite: Permission. Use of research tools and methodologies to examining the physical properties of biopolymers from a material science perspective ranging to a rational design of biomaterials.

161 CHEMICAL PROCESS DYNAMICS 3 credits
Prerequisite: 300. Examination of the impact of chemical processes in the design and operation of chemical process systems, including models based on transport phenomena principles, population balance methods, and system analysis.

163 CHEMICAL ENGINEERING ANALYSIS 3 credits
Prerequisites: 322, 225, 330. Mathematical analysis of problems in transport processes, chemical reactions, and control systems. Solutions for these problems and their practical significance are stressed. Heuristic proofs will be given for necessary theory development.

165 NONLINEAR DYNAMICS AND CHAOS 3 credits
Prerequisite: 300, 205. Description and analysis of complex behavior exhibited by nonlinear systems. Emphasis is on the numerical methods to quantify chaos.

170 COLLOIDS—PRINCIPLES AND PRACTICE 3 credits
Prerequisite: Permission of instructor. Colloid science and applications in chemical and bioengineering dispersion systems. Interfacial behavior, interfacial thermodynamics, colloid applications, biomolecular applications and characterization techniques.

174 APPLIED SURFACTANT SCIENCE 3 credits
Prerequisite: 310. The basics of surfactant science, the chemical engineering applications of surfactants including use in polymerization media, separations, emulsion, microemulsion, and a thermodynamic model.

175 ADVANCED POLYMERIC ENGINEERING 3 credits
Prerequisite: 322 or 320. Reaction polymers for polymerization, polymer characterization, polymer processing, polymer rheology.

184 ADVANCED PLANT DESIGN 3 credits
Prerequisite: Permission. Topical treatment of process and equipment design, scale-up, optimization, process synthesis, process economics, case problems.

187 RENEWABLE RESOURCES FOR ENVIRONMENTALLY BENOIC CHEMISTRY 3 credits
Prerequisite: Permission. Focus is on chemical and biochemical processing technologies, including the presentation of fuels, material, and specialty chemicals from renewable resources.

188 HETEROGENEOUS CATALYSIS 3 credits
Prerequisite: 330. Kinetics and mechanisms of heterogeneous and homogenous catalytic reactions; characterization and design of heterogeneous catalysts.

190 TOPICS IN CHEMICAL ENGINEERING 3 credits
May be repeated for a total of six credits. Prerequisite: Permission. Topics selected from new and emerging areas of chemical engineering, such as electrowet chemical engineers, coal and synthetic fuels processing, bioengineering, and pulsatile heat and mass transfer phenomenology and application techniques.

197 CHEMICAL ENGINEERING REPORT 3 credits
Prerequisite: Permission of advisor. A relevant problem in chemical engineering is studied. Required for students electing non-thesis option. Final report must be approved by advisor and advisory committee.
527 WATER QUALITY MODELING AND MANAGEMENT 3 credits
Prerequisite: 223. Analysis of simulation of the physical, chemical and biochemical processes affecting stream quality. Development of management strategies based upon the application of water quality modeling techniques to environmental systems.

528 HAZARDOUS AND SOLID WASTE 3 credits
Prerequisite: consent of instructor. Hazardous and solid waste engineering. Analysis of generated and management practices. Storage and disposal methods and their potential use in non-technical consents.

531 COMPUTER METHODS OF STRUCTURAL ANALYSIS 3 credits
Stress analysis using finite elements, finite element methods, interactive graphics, beam stiffness concepts and matrix formulation; simple and complex structural systems modeling, vibration analysis.

533 OPTIMUM STRUCTURAL DESIGN 3 credits
Prerequisite: 208. Basic concepts in structural optimization. Mathematical programming methods including unconstrained minimization, multidimensional minimization and constrained optimization.

534 ADVANCED MECHANICS OF MATERIALS 3 credits

535 TRANSPORTATION PLANNING 3 credits
Prerequisite: 861. Theory and techniques for development, analysis and evaluation of transportation systems plans. Emphasis on understanding and using tools and professional methods available to solve transportation planning problems, especially in urban areas.

536 HIGHWAY DESIGN 3 credits
Prerequisite: 861. Study of modern design of geometrical and pavement features of highways. Design criteria and pavement use. Graduate students will produce a complete highway design project.

539 TRANSIT ENGINEERING 3 credits
Prerequisite: 861. Theoretical concepts of public transportation. Planning and administration of public transportation systems. Emphasis on vehicle operation, passenger characteristics, pavement design, methods of restoration for rigid and flexible pavements.

541 TRAFFIC ENGINEERING 3 credits
Prerequisite: 361. Vehicle and urban travel characteristics, traffic flow theory, traffic studies, accident analysis and safety, traffic signal planning, traffic control and transportation administration.

546 ADVANCED HIGHWAY DESIGN 3 credits
Prerequisite: 554. Advanced concepts in highway design. Includes survey data input, digital terrain modeling, cross section template, horizontal and vertical design, earthwork computations, and advanced topics.

548 HIGHWAY MATERIALS 3 credits
Prerequisites: 361, 380 or permission. Properties of aggregates, manufacture and properties of Portland cement concrete, properties of asphaltic pavements, design and testing of hot mix asphalt pavement mixes and of surface treatments. Laboratory preparation of specimens and determination of properties. Graduate student requirement. Graduate students will be required to perform an eight-hour Andy laboratory excavation of asphalt surfacing and to prepare a paper on a highway materials topic.

551 UNDERGROUND CONSTRUCTION 3 credits
Prerequisite: 563. Description of practice and techniques of underground construction. Selection of proper method for individual jobs. Design of underground coverings, support systems for tunnelling.

559 DYNAMICS OF STRUCTURES 3 credits

560 STABILITY AND SOIL BEHAVIOR 2 credits
Prerequisite: 564. Advanced analysis of soil behavior, particularly behavior of soft soils. Development of management strategies based upon the application of soil behavior to structural systems. Development of management strategies based upon the application of soil behavior to structural systems.

562 VELOCITY METHODS OF ELASTOPLASTICITY 3 credits
Prerequisites: 562, 542. Work and complementary work. Strain energy and complementarity problem, virtual work, and Castigliano's theorems. Variational methods. Application of boundary value problems in elasticity. Selection topics in energy methods and elasticity

563 ADVANCED CONCRETE STRUCTURE 3 credits
Prerequisite: 564. Basic concepts. Design of two-layer roof girder, shear development length, column, pier, design of highway bridge girder, pretensioned, post-tensioned, continuous girders, arches, volume change forces, connections.

564 MULTISTOREY BUILDING DESIGN 3 credits
Prerequisite: 401. Floor systems, staggered truss system, beam design, reinforced frame design, arches, rigid frame design, and partial slab systems, earthquake design.

565 FIRE PROTECTION 3 credits
Prerequisite: 401. Study of fire safety and fire protection systems, fire design, and fire protection systems. Emphasis on fire protection systems and fire design.

566 ENVIRONMENTAL ANALYSIS 3 credits
Prerequisite: 401. Study of environmental design and environmental protection systems, fire design, and fire protection systems. Emphasis on fire protection systems and fire design.

567 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

568 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

569 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

570 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

571 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

572 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

573 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

574 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

575 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

576 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

577 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

578 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

579 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

580 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

581 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.

582 INTRODUCTION TO COMPUTATIONAL METHODS 3 credits
Prerequisites: 564 or equivalent. Fundamentals of computer applications,compromise of mechanical, electrical, and computer science, problem statement, and problem solving. Description of applications of computer systems to computational science and engineering.
654 POWER ELECTRONICS LABORATORY AND DESIGN PROJECT 2 credits
Prerequisite: 480/563 or equivalent. Experimenting on different types of power electronic converters, DC/DC, DC/AC, AC/AC, AC/DC. Design project to include design, simulation, building, and testing of a power electronic circuit.

586 ELECTRIC MOTOR DRIVES 3 credits
Prerequisite: 361. Application of electric machines, choice of motor for particular drive. Application of power semiconductor switches in electric machinery.

590 TOPICS IN ELECTRICAL ENGINEERING 1-3 credits
(May be taken more than once.) Prerequisite: permission of department chair. Special topics in electrical engineering.

600 ADVANCED MICROCOMPUTER SYSTEMS 3 credits
Prerequisite: 365 or permission. Discussion of multiprocessing, numerical data processors, microcomputer systems, bus architecture, microprocessor architecture, multiple-level protection and virtual memory, as supported by commercial microprocessor.

631 CIRCUIT ANALYSIS 3 credits
Prerequisite: 331. Applications of operational methods, time domain analysis, state variable methods and matrix techniques applied in circuit analysis. Reusability and synthesis of linear point impradance and transfer functions.

641 RANDOM SIGNAL ANALYSIS 3 credits
Prerequisite: 467. Analysis, interpretation and smoothing of engineering data through applications of statistical and probabilistic methods.

643 INFORMATION THEORY AND CODING 3 credits
Prerequisite: 341 or permission. Sources, channels, entropy, mutual information, source coding theorem and channel coding theorem. Channel coding theorem for waveform channels. Introduction to rate-distortion theory.

644 CHANNEL CODING 3 credits
Prerequisite: 641 or permission. Algebraic structure of error-control codes, techniques for encoding and decoding. Coverage of the major classes of linear block codes and convolutional codes.

646 DIGITAL SIGNAL PROCESSING 3 credits
Prerequisite: 331. Relations between continuous- and discrete-time Fourier expansions. Sampling, filtering, sampling rate conversion. Operator concepts in signal processing, all-pass systems, F FT, digital filter design.

647 DIGITAL SPECTRAL ANALYSIS AND SIGNAL MODELING 3 credits
Prerequisite: 546 or permission of instructor. Methods and theory of spectral analysis and signal models based on the spectral density. Application includes speech processing, optimal filtering, biomedical systems, digital communications.

648 DETECTION AND ESTIMATION THEORY 3 credits

650 STATISTICAL COMMUNICATION THEORY 3 credits
Prerequisite: 641 or permission. Fundamental principles of transmission of digital information over noisy channels. Optimum receivers. Bandwidth and dimension. Capacity of the bandlimit white Gaussian noise channel.

655 ELECTROMAGNETIC THEORY I 3 credits
Prerequisite: permission of instructor. Electrostatics: uniqueness theorem, boundary-value problems, field equations, introduction to potential theory. Magnetic scalar and vector potentials, Maxwell's equations, Lorentz force, EM potentials, Stratton-Chu formu1a, radiation, dyadic Green's functions.

656 ELECTROMAGNETIC THEORY II 3 credits
Prerequisite: 650 or permission of the course instructor. Scattering, TEM waves, guided wave transmission, polarization, electromagnetic boundary conditions, modulator and amplifier characteristics, microwave and millimeter wave devices.

682 COMPUTATIONAL ELECTROMAGNETICS 3 credits
Prerequisite: 650 or permission of the course instructor. Analytic and numerical techniques for electromagnetic fields, conformal mapping, finite difference method, finite element method, and the method of moments.

685 ADVANCED ANTENNA THEORY AND DESIGN 3 credits
Prerequisite: 453/563 or equivalent. Basic properties and recent advances of microstrip antennas. Analysis and design of reflector antennas. Analysis and synthesis of linear and non-linear arrays.

686 WIRELESS COMMUNICATIONS 3 credits
Prerequisite: 546. Theory and analysis of wireless communication systems, wireless propagation, signal transmission over noise, transmission, demodulation, multipath channel, characteristics, diversity, cellular, and PCS services and standards.

688 DESIGN OF DIGITAL SYSTEMS 3 credits
Prerequisite: 506. Algorithmic logic circuits in modern digital electronic computers and digital communication systems. Computer organization and control, input-output devices and interface standards, advanced topics in computer architecture.

692 TOPICS IN ELECTRONICS 3 credits
Prerequisite permission of department chair. Discussions of recent advances in electronics.

694 INTEGRATED CIRCUIT DEVICES 3 credits
Prerequisite: 502, 562, or equivalent. Develops physical and analytical descriptions of solid-state electronic devices leading to models of Silicon and III-V diodes and bipolar transistor.

671 DIGITAL CONTROL SYSTEMS 3 credits
Prerequisite: 546/677 or permission of instructor. Theory, techniques for analysis, design of discrete control systems. 2-Transform technique, stability analysis, frequency response, optimization. Digital computer control.

673 NONLINEAR CONTROL 3 credits
Concurrent 672. A prerequisite to control methods. This course covers students with qualitative insights into nonlinear systems as well as techniques for controlling such systems. Topics include describing functions, Popov and circle criteria, jump resonances, subharmonics, phase plane, conservative systems. Lyapunov theory, bifurcation of attractors, and routes to chaos.

674 CONTROL SYSTEM DESIGN 3 credits
Prerequisite: 673 or permission of instructor. Advanced control methods. Bibliography on control theory, advanced control methods. Bibliography on control theory, advanced control methods. Bibliography on control theory, advanced control methods.

675 SYSTEM SIMULATION 3 credits
Prerequisite: 472 or permission of the instructor. This course is designed to provide the control engineer with tools to simulate known behaviors of systems on digital computer. Techniques include linear transfer methods, nonlinear methods, stiff systems, optimization, parallel computing and simulation languages.

677 OPTIMAL CONTROL I 3 credits
Prerequisite: 674. Formulation of optimal control problems. Application of variational calculus, maximum principle and optimality principle to control problems. Computational techniques in optimization.

680 DYNAMICS AND CONTROL OF POWER ELECTRONIC CIRCUITS 3 credits
Prerequisite: 480/563 or equivalent. Averaged and sampled-data models for rectifiers and DC/AC converters. Control methods for the design of the various control models about the cyclic steady-state. Feedback controls using classical and modern approaches.

686 POWER SYSTEM ANALYSIS 3 credits
Prerequisite: 480/563. Short-circuit and load flow analysis of power systems with emphasis on computer solution. Transient machine analysis.

687 POWER SYSTEM STABILITY 3 credits
Prerequisite: 486. Stability and transient stability of power systems with emphasis on computer solution.

692 ECONOMICS OF POWER SYSTEMS 3 credits
Prerequisite: 686. Analysis and operation of power system for economic dispatching using a linear programming approach.

694 PROTECTIVE RELAYING 3 credits
Prerequisite 480. Principles and application of relay as applied to protection of power systems.

695 SURGE PROTECTION 3 credits
Prerequisite: 480. Phenomenon of lightning and surging failures on electrical systems. Protection of systems and apparatus by line design, application of protective devices and installation.

696 DYNAMICS OF ELECTRICAL MACHINES 3 credits
Prerequisite: graduate status in Electrical Engineering. Voltage and mechanical differential equations of electric machines, analytical and numerical methods for solution of system of machine differential equations.

697 POWER ELECTRONICS II 3 credits
Prerequisite: 480/563 or equivalent. Effects of the nonlinearities of the power circuit components, basic principles and design of linear, switched, and hybrid circuits, power and linear-operating systems. MOSFETs, Thyristors, Power MOS-FET devices. Semiconductor Devices: Power MOS-FET. Elements on the states that characterize these devices from the lower power semiconductor devices.

698 SPECIAL PROBLEMS 1-3 credits
(May be taken more than once, subject to approval of department chair. For qualified graduate students. Supervised research or investigation in novel field of training or experience. Credits dependent upon nature and extent of project.

699 MASTER’S RESEARCH 3 credits
Prerequisite: Permission of advisor. (May be repeated.) Research on a suitable topic in electrical engineering culminating in a master's thesis.

700 MASTER’S THESIS 3 credits
Pre-requisite: permission of department chair. Thesis and thesis on some suitable topic in electrical engineering.

740 FUNCTIONAL ANALYTIC METHODS IN SYSTEM THEORY 3 credits
Prerequisite: 461/561. Functional analysis methods for graduate students in communication, control, and mathematics.

753 TOPICS IN ELECTROMAGNETICS 3 credits
Prerequisite: 651. Introduction to advanced techniques in fields. Topics include application of Green’s function techniques and related boundary value problems.

755 MODUL REDUCTION TECHNIQUES FOR CONTROL SYSTEMS 3 credits
Prerequisite: 641 or permission of the instructor. Classical, modern, and optimal techniques for control system design. Reduced order design for linear and non-linear, finite and infinite dimensional systems. Minimal realizations of multi-variable systems are also considered.

756 ADVANCED LINEAR CONTROL SYSTEMS 3 credits
Prerequisite: 696/701 and a course in stochastic processes or equivalent. Covers topics related to the design of robust control systems. The synthesis of control systems with a stable closed-loop system will be considered. The stability properties of control systems for design is included.

757 ROBUST CONTROL 3 credits
Prerequisite: 674. Input-output and state-space generalizations of robust control systems, and design techniques based on the algebraic Riccati equation, decentralization and related control design methodologies.

758 OPTIMAL CONTROL II 3 credits
Prerequisite: 677 Advanced state-feedback optimal control. Output-feedback issues, loop transfer recovery, optimal observer design, reduced-order controllers, frequency weight, and decentralized control.

759 ADAPTIVE CONTROL 3 credits
Prerequisite: 671. Methods of control systems and control methodologies. Theory of optimal control.

763 INTERDISCIPLINARY SEMINAR 3 credits
Prerequisite: 696. Course offered by the department chair. Interdisciplinary seminar on recent advances in control systems.

775 ADVANCED TOPICS IN CONTROL 3 credits
Prerequisite: 775. Discussions of recent advances in control systems.

780 ADVANCED SEMINAR 3 credits
Prerequisite: 672. Course offered by the department chair.

781 PHD SEMINAR 3 credits
Prerequisite: 671. Course offered by the department chair.

788 PRELIMINARY RESEARCH 1-5 credits
May be repeated. Preparation for Preliminary examination.

797 DOCTORAL DISSERTATION 1-5 credits
May be repeated. Preparation for Preliminary examination.

799 DISSERTATION DEFENSE 1-5 credits
May be repeated. Preparation for Preliminary examination.
542 INDUSTRIAL AUTOMATIC CONTROL 3 credits
Prerequisites: 441 or permission. Operation of basic control mechanisms. Study of mechanical, hydraulic, pneumatic, control systems, including application areas, tuning of control designs, optimum performance of systems. Case studies on control applications from industry, e.g., toilets, furnaces, process heaters.

543 OPTIMIZATION METHODS IN MECHANICAL ENGINEERING 3 credits
Prerequisites: 610 or permission. Development and method of solution of optimization problems in mechanical engineering. The use of dynamic programming and information theory in optimization involving computer utilization and applications.

547 ROBOT DESIGN, CONTROL, AND APPLICATION 3 credits
Prerequisites: 321 or permission and 441 or permission. Robot design and control. Kinematic transformations, mechanical and electrical systems, path hierarchy and dynamics, control, and sensing in robotics. The automated factory with robot applications.

550 INTRODUCTION TO COMPUTATIONAL FLUID FLOW AND CONVECTION 3 credits
Prerequisites: 35 or permission and 360 or permission. Numerical modeling of fluid/mass flow systems. Numerical solution techniques: flow, heat transfer, and thermal boundary layer equations. Flow simulation using advanced heat transfer/fluidflow packages.

562 PRESSURE VESSEL DESIGN 3 credits
Prerequisites: 336 or permission. Introduction to modern pressure vessel technologies. Concepts include basic structural considerations, materials and their environment and design-construction features.

563 COMPUTER AIDED DESIGN AND MANUFACTURING 3 credits
Prerequisites: 356 or permission; 165 or permission. The use of computer systems to assist in the creation, modification, analysis, or optimization of engineering designs, and to plan, manage, and control manufacturing plants.

568 GAS DYNAMICS 3 credits
Prerequisite: 449/549. Derivation of equations for multi-dimensional incompressible flow of a continuous fluid. Method of characteristics, ideal fluid theory, one dimensional unsteady flow.

571 THERMODYNAMICS 3 credits
Prerequisite: 35 or equivalent. Extension and generalization of basic laws of thermodynamics with application to a variety of physical and biological systems. Introduction to irreversible thermodynamics, the third law and statistical thermodynamics.

580 FINITE ELEMENT ANALYSIS 3 credits
Prerequisites: 622, Introductory development of finite element method. Is used to applied to various topics from continuum mechanics. Areas covered include plane, axisymmetric and 3-D stress analysis; finite element formulation; parallel problems and geometric and material nonlinearities.

581 DYNAMICS OF VISCOS FLOW 3 credits
Prerequisite: 35 or equivalent. Derivation and solution of equations governing laminar viscous flow. Applications include unsteady flow, flow in viscous fluids, parallel flows, lubrication theory and laminar boundary layers.

582 COMPUTATIONAL FLUID DYNAMICS 3 credits
Prerequisite: 622 or permission of instructor. Study of numerical methods in fluids, including error and stability, finite difference, finite element, control point methods, high Reynolds number fluids.

586 CONDUCTION HEAT TRANSFER 3 credits
Prerequisite: 336 or permission of instructor. Study of one-, two- and three-dimensional heat conduction. Development of analytical techniques for analysis and design.

587 CONVECTION HEAT TRANSFER 3 credits
Prerequisite: 336 or permission. Heat transfer from laminar, turbulent, internal flows, Convective heat transfer at high velocities. Heat transfer to liquid metals, high Reynolds number fluids.

589 RADIATION HEAT TRANSFER 3 credits
Prerequisite: 35 or equivalent. Study of thermal radiation laws. Black and real systems, geometric factors, grey enclosures, high grey systems, diffuse radiation, radiation equipment.

591 BOLTING HEAT TRANSFER AND TURBOPHASE FLOW 3 credits
Prerequisite: 35 or permission. Methods of transfer in components such as bolts, heat exchangers, and steam generators, with bolting and leak tightness of mechanical connection; slip ratio, critical heat flux and inelasticities in boiling flow systems.

592 EXPERIMENTAL STRESS ANALYSIS 3 credits
Prerequisite: 422/522. Dynamic strain gage methods. Transducer design. Moire fringe techniques in photospectroscopy.

593 INTRODUCTION TO TIRE MECHANICS 3 credits
Prerequisite: permission. Topics include tire as a vehicle component: tire traction and wear, tread and rubber structures, tire performance and advanced tire models.

596 CONTINUUM MECHANICS 3 credits
Prerequisite: 336 or permission. Analysis of stress and deformation at a point. Derivation of fundamental field equations of fluid and solid mechanics using variational principles of dynamics, conservation of mass and energy, Development of constitutive laws.

597 APPLIED STRESS ANALYSIS 3 credits
Prerequisite: 622. Continuation of 622 with specific application to civil mechanics. Development of energy theorems due to K. R. Reissner, V. K. K. and generalization of Hamilton's principle. Solutions to static and dynamic problems.

598 FUNDAMENTAL OF FRACTURE MECHANICS 3 credits
Prerequisites: 622 or permission of instructor. Methods of analysis in elastic-plastic fracture mechanics. Examination of cohesive elements. Thermoelastic fracture.

599 ANALYSIS OF MECHANICAL COMPONENTS 3 credits
Prerequisite: 337 or equivalent. Theories of failure and plastic flow. Fatigue, creep analyses and introduction to fracture mechanics.

601 THEORY OF ENGINEERING MATERIALS 3 credits
Prerequisite: 622 or permission. Plasticity and cyclic behavior; dislocation networks and their interaction; deformation and microstructural interaction; corrosion fatigue; crack propagation; shock loading; rapid solidification; environmental effects.

607 ADVANCED MATERIALS AND MANUFACTURING PROCESSES 3 credits
Prerequisite: 390. Manufacturing processes for advanced materials: classification; technological aspects of bulk deformation; forming joining, forming machining, molding, powder forming, pultrusion, rapid solidification; environmental aspects; technical analysis.

608 MECHANICAL BEHAVIOR OF MATERIALS 3 credits
Prerequisite: 390 or permission. Mechanical behavior of composite material; engineering materials; metal castings; deformation; dislocation effects and deformation, strengthening mechanisms; thermomechanical processing; mechanical testing.

609 NONLINEAR MECHANICS 3 credits
630 VIBRATIONS OF DISCRETE SYSTEMS 3 credits
Prerequisite: 434(541) or equivalent. Study of vibrations of multidegrees of freedom systems including free and forced vibrations, damped and undamped, with emphasis on vibrations and matrix iteration techniques, application to seismic design and shock design.

631 KINETIC DESIGN 3 credits
Prerequisite: 321 and permission of instructor. The geometry of constrained motion. Analysis of realistic part motion using vectors and the digital computer. Curvature theory. Synthesis of linkages and gearing. Introduction to computer-aided design.

632 RELIABILITY IN DESIGN 3 credits
Prerequisite: 327 or equivalent and 4370/44(6). The reliability determination of mechanical components and systems and their use in design. Distribution, reliability determination, normal and log-normal theories, Weibull theory, life-spectrum analysis, renewal theory and confidence limits.

633 COMPUTERIZED MODAL ANALYSIS OF STRUCTURES 3 credits
Prerequisite: 330 or equivalent. Analytical theory and measurement techniques, digital signal processing concepts, structural dynamic theory, model parameter estimation with hands-on experience in the application of modal measurement methods in vibration analysis.

634 ADVANCED DYNAMICS OF ROTATING MACHINERY 3 credits
Prerequisite: 4370/44(6) or equivalent. Dynamic behavior and simulation of complex rotating machinery systems. Stability study, transient and stability analysis with inertia, gyroscopic, imbalance, rotation, distortion and interaction effects.

635 STRESS WAVES IN SOLIDS AND FLUIDS 3 credits

642 SYSTEM ANALYSIS AND CONTROL DESIGN 3 credits
Prerequisite: 440 or equivalent. Uniform models of modeling and response analysis, controllability and observability, stability theory and analysis of linear and nonlinear engineering processes. Design of feedback control for optimum performance for multivariable real-time control applications.

644 DISTRIBUTED CONTROL SYSTEM DESIGN AND APPLICATIONS 3 credits
Prerequisite: 440 or equivalent. Digital and continuous control algorithms. Process control function modeling and simulation. Safety assessment, diagnosis and troubleshooting control systems. Case studies and experiments from various engineering disciplines.

645 PROCESS IDENTIFICATION AND COMPUTER CONTROL 3 credits
Prerequisite: 440 or equivalent. Digital and continuous control algorithms. Process control function modeling and simulation. Safety assessment, diagnosis and troubleshooting control systems. Case studies and experiments from various engineering disciplines.

650 EXPERT SYSTEMS IN CONTROL AND MANUFACTURING 3 credits
Prerequisite: 440 or equivalent. Develop expert systems for process control, computer integrated lqyability manufacturing and robotics.

657 NEURAL AND FUZZY CONTROL SYSTEMS 3 credits
Prerequisite: 440 or equivalent. Analysis and design of intelligent control systems. Neural networks and fuzzy sets for pattern identification and control design. Applications and case studies in industry.

659 TRIBOLOGY 3 credits
Prerequisite: 440 or equivalent. Tribology fundamentals of friction lubrication and wear treated: includes basic theory, advanced topics, applications to bearings, seals, gears, cams. Specific topics include adhesive and abrasive friction, boundary lubrication, fluid film lubrication and bearings, roller element bearings, bearing dynamics.

660 ENGINEERING ANALYSIS 3 credits
Prerequisite: 3.5 in engineering. Study of analysis techniques as applied to specific engineering problems. Applications include beam deflections, acoustics, heat conduction and hydrodynamic stability.

661 CORD MECHANICS 3 credits
Prerequisite: 622. Elastic and viscoelastic theory of wire rope is derived from thin rod theory. Applications are discussed with respect to wire rope bioengineering, biocompatibility and tissue compatibility with target applications.

662 INTEGRATED FLEXIBLE CELLULAR MANUFACTURING SYSTEMS DESIGN AND CONTROL 3 credits
Prerequisite: 440 or equivalent, or by permission of instructor. The analysis of integrated flexible systems of computerized manufacturing systems, design of automated manufacturing components and simulation of flexible manufacturing systems. Applications to manufacturing and robotics.

663 MEASUREMENTS METHODS AND EXPERIMENTAL ERROR IN THERMOFLUID SCIENCES 3 credits
Prerequisites: Knowledge of fluid mechanics, heat transfer and computer science. Course covers various elements of experimental error analysis, optical and optical ray tracing, principles of testing, methods and devices for fluid flow quantization and temperature measurement. Laboratory work with hands-on experience.

666 SPECIAL TOPICS IN MECHANICAL ENGINEERING 1-4 credits
Prerequisite: Permission. For qualified candidates for graduate degree. Subsidized research in the student's major field of training or experience. Credit depends upon nature and extent of project as determined by advisor and department chair.

667 ENGINEERING REPORT 2 credits
Prerequisite: Permission of advisor. A relevant problem in mechanical engineering for students electing the nonthesis option. The final engineering report must be approved by the advisor and the advisory committee.

668 MASTER'S RESEARCH 1-15 credits
Prerequisite: Permission of advisor. Subject to the specific topic in mechanical engineering culminating in a master's thesis.

669 MASTER'S THESIS 1-15 credits
Prerequisite: Permission of advisor. Supervised research in a specific area of mechanical engineering.

704 FINITE ELEMENT ANALYSIS 3 credits
Prerequisites: 300, 325, 330, 340, 360 and 370. Uses the finite element method to solve problems of statics, consolidation, eigenvalue analysis, and other problems. Topics covered: negative stiffness, vibration, Buckling and postbuckling, large strains, thin shells, plates, beams, trusses, and frames. Solution of problems in mechanics and engineering. Application of computer program to finite element analysis.

705 FINITE ELEMENT ANALYSIS II 3 credits

704 FINITE ELEMENT ANALYSIS II 3 credits

710 DYNAMICS OF VISCOS FLOW II 3 credits
623 PROCESSING OF BIOMEDICAL SIGNALS 3 credits
Prerequisites: Graduate standing in the College of Engineering and BIT or equivalent. Concepts for the analysis of biological and biomedical signals including discriminant and principal component analysis, histograms, correlograms and data displays.

624 IMAGE PROCESSING FOR BIOMEDICAL DATA 3 credits
Image sampling, quantization, transmission, and reconstruction including smoothing and sharpening, Restoration using filters and Weiner filters. Edge detection and thresholding with region growing for segmentation.

630 BIOMEDICAL COMPUTING 3 credits
Prerequisite: 4300:206 or equivalent. Computer applications in healthcare, clinical laboratories, AMIF, medical records, direct order entry, A.D.A. conversion, patient monitoring, peripheral devices and interface, diagnostic algorithms, automated ECG, ECG systems.

632 DIAGNOSTIC IMAGING TECHNIQUES 3 credits
Advanced Diagnostic Imaging techniques as applied to Digital Radiography, Computed Tomography, MRI, Nuclear Medicine, Ultrasound Imaging, magnetic resonance imaging (MRI), microvessels, confocal microscopy, angiography.

635 BIOMEDICAL OPTICS 3 credits
Application of waveguide principles and optical fibers on the engineering design and manufacture of instrumentation, techniques, and applications for medical diagnostic imaging, and treatment of optical. 636 MEDICAL IMAGING DEVICES 3 credits
Imaging modalities including radion, magnetic resonance, and sound. The formation of images. Specific devices including computer tomography, magnetic resonance, ultrasonic, gamma cameras and IR.

635 BIOMEDICAL NANO-TECHNOLOGY 3 credits
Prerequisite: permission of instructor. Engineering principles of nanotechnology as applied to the design of instrumentation, systems and techniques, aimed to explore biomolecules and biostats at the microscopic level, at one billion of a meter.

640 SPINE MECHANICS 3 credits

641 SOFT CONNECTIVE TISSUE BIOMECHANICS 3 credits

642 HARD CONNECTIVE TISSUE BIOMECHANICS 3 credits
Prerequisites: 3000:561 or equivalent. 4300:470 or equivalent. Permission. Physical properties and functional biomechanics of bone. Theology and mechanics of fracture and healing. Mechanics of external and internal fixators. Tissue joint implants and reconstruction techniques.

644 MUSCLE MECHANICS AND OPTIMIZATION 3 credits
Prerequisite: Graduate standing in the College of Engineering or by permission. Human locomotor joint kinematics, muscle mechanics and modeling. The principles of optimization as applied to muscle forces along with muscle anatomy and physiology.

650 MECHANICS IN PHYSIOLOGY AND MEDICINE 3 credits

651 KINETICS OF THE HUMAN BODY 3 credits
Prerequisites: 4600:321 or equivalent, graduate standing in the College of Engineering, by permission. Analytical methods used to model and quantify human body motion. Three-dimensional kinematics, joint coordinate systems, functional anatomy, segment center of mass and orientation.

655 CARDIOVASCULAR DYNAMICS 3 credits
Prerequisites: 3000:561, 552 or equivalent, 4300:320 or equivalent. Analysis of blood pumping action, pressure/volume characteristics, pressure-volume and flow characteristics, clinical implications. Use of modeling and direct measurement techniques. Clinical implications of disease.

656 CARDIOVASCULAR DIAGNOSTIC TECHNIQUES 3 credits
Prerequisites: 3050:561, 552 or equivalent. Cardiovascular disease conditions: instrumentation and techniques (both invasive and noninvasive) used for diagnosis. Direct interaction with active clinical laboratories.

656 CARDIOVASCULAR THERAPEUTIC TECHNIQUES 3 credits
Prerequisites: 651. Cardiovascular disease conditions and procedures for correction of congenital defects, valve failure, heart and arterial bypass grafting and laser non-invasive catheterized procedures.

653 TRANSPORT PHENOMENA IN BIOLOGY AND MEDICINE 3 credits
Prerequisites: 4300:203, 320 or 4600:320, 315 or equivalent. Basic definitions, cellular organelle mass and momentum transport, compartment modeling, mass transfer in physiological systems and artificial kidneys and lung devices. Design optimization. Analysis of heat and mass transfer.

665 REHABILITATION ENGINEERING 3 credits
Prerequisites: graduate standing in engineering, mathematics, or science; permission of the instructor. Design for rehabilitation, interfacing the motor and nonmotor impaired, quantitative assessment techniques, prosthetics and orthotics, biofeedback, mechanical engineering.

666 BIOMATERIALS AND LABORATORY 4 credits
Corequisite: Biomedical Materials Laboratory. Material uses in biological applications. Effect of physio-chemical environment and sterilization on material properties. Contaminated and uncontrolled degradation. Effect of materials on soft tissue, hard tissue and blood. Laboratory experiments using materials designed for biophysical use and demonstration of biology/materials interactions.

663 ARTIFICIAL ORGANS 3 credits
Prerequisite: graduate standing in the College of Engineering or permission of instructor. Study of the rationale for the engineering and clinical aspects required for the design and variety of artificial organs, with emphasis on the artificial heart and artificial kidney.

670 MATHEMATICAL MODELING IN BIOLOGY AND MEDICINE 3 credits
Prerequisite: graduate standing in mathematics, or physics; or permission of instructor. Modernity of pharmacokinetics, cardiovascular, neuromuscular, and immune system, and artificial organ interaction. Deterministic and stochastic approaches.

685 MEDICAL DEVICES AND ARTIFICIAL ORGANS 3 credits
Prerequisite: Graduate standing in engineering, mathematics, or science; or permission of instructor. Design of medical devices and artificial organs, requirements, safety considerations, supply constraints, optimization techniques, government regulations, and legal liability.

687 COLLOQUIUM 3 credits
May be repeated. Prerequisite: permission of instructor. Current topics or supervisory study in the area of biomedical engineering. Credit hours depend upon the nature and extent of the course or the project. Credit/No credit.

698 MAJOR'S RESEARCH 1-6 credits
Prerequisite: Permission of advisor. May be repeated. Research on a suitable topic in biomedical engineering culminating in a master's thesis.

699 MAJOR'S THESIS 1-6 credits
Prerequisite: permission of advisor. Supervised research in the specific area of biomedical engineering.

730 FABRICATION AND DESIGN OF MICROSERVICES 3 credits

745 IMAGE DETECTORS AND SENSORS 3 credits
An introduction to the course designed to develop a deep knowledge of detection and sensing systems for Medical Imaging and Diagnostic Application.

765 PRELIMINARY RESEARCH 1-16 credits
May be repeated. Prerequisite: Approval of the dissertation director. Preliminary investigations prior to the submission of a dissertation proposal to the Interdisciplinary Doctoral Committee.

805 DOCTORAL DISSERTATION 1-6 credits
Prerequisite: acceptance of research proposal by the Interdisciplinary Doctoral Committee and approval of the dissertation director. Original research by the doctoral student.

### Education

**EDUCATIONAL FOUNDATIONS AND LEADERSHIP 5100:**

- **512 DESIGN AND PRODUCTION OF EDUCATIONAL MATERIALS**
  - 3 credits (2 clinical hours)
  - Design, adaptation and preparation of instructional materials using graphics, transparency production, video equipment, computer authoring software, mounting and laminating processes, photography and other media.

- **514 ORGANIZING AND SUPERVISING EDUCATIONAL MEDIA PROGRAMS**
  - 3 credits
  - Prerequisite: 510.0 or permission of instructor. Procedures for planning, organizing and evaluation educational media programs including media facilities and services.

- **515 INTRODUCTION TO INSTRUCTIONAL COMPUTING**
  - 3 credits
  - Examines the use of word processing, spreadsheets, databases, graphics, telecommunications and authoring software in both educational and business settings and evaluates instructional and applications software.

- **516 WORKSHOP 1-2 credits**
  - 1-2 credits
  - Individual work under staff guidance or curriculum problems, utilization of community resources, planning of curriculum units.

- **519 EDUCATIONAL INSTITUTES**
  - 14 credits
  - Special course designed as in-service upgrading programs, frequently provided with the support of curriculum units.

- **520 PHILOSOPHIES OF EDUCATION**
  - 3 credits
  - Examination of basic philosophical problems underlying educational situations that confront society. Provides foundation for understanding of questions of modern society and education.

- **521 COMPARATIVE AND INTERNATIONAL EDUCATION**
  - 3 credits
  - Comparative study of selected national school systems with reference to factors that shape their characteristics. Different theoretical approaches used in study of comparative education are also examined.

- **526 TOPICAL SEMINAR IN THE CULTURAL FOUNDATIONS OF EDUCATION**
  - 3 credits
  - May be repeated for a total of six credits. Issues and subjects related to study of educational theories and practices. Different topics will be offered from section to section.

- **526 PLANNING FOR TECHNOLOGY 1-2 credits**
  - 1-2 credits
  - Prerequisite: 520 or permission of instructor. Emphasizes the process of planning for the use of technology in the school. Includes plans for faculty support and interactive arrangements of computer sets up.

- **530 ADULT EDUCATION**
  - 2 credits
  - Survey course for teachers and administrators. Historical background including influences and their relation to developments in the field. Emphasis on background and social value of current programs.

- **530 PSYCHOLOGY OF INSTRUCTION FOR TEACHING AND LEARNING**
  - 3 credits
  - Prerequisite: 520 or 522 or 521 or equivalent. Current theories and research in the areas of cognition and learning, education, and motivation that underlie approaches to teaching in any context.

- **532 SEMINAR: EDUCATIONAL PSYCHOLOGY**
  - 3 credits
  - May be repeated for a total of six credits. Prerequisite: 520 or equivalent. In-depth study of research in selected areas of learning, development, evaluation and motivation.

- **533 TOPICAL SEMINAR IN COMPUTER-BASED EDUCATION**
  - 3 credits
  - May be repeated for a total of six credits. Prerequisite: 520 or equivalent. In-depth study of research in selected areas of learning, development, evaluation and motivation.

- **534 INDUSTRIAL DESIGN**
  - 3 credits
  - The theory and application of Instructional Design (ID) is a systematic approach to the analysis, design, development, evaluation, and implementation of effective instruction.

- **535 WEB-BASED LEARNING SYSTEMS 1-2 credits**
  - 1-2 credits
  - The purpose of this course is to help students become proficient in the design and development of web-based learning systems for training and education.

- **537 HYPERMEDIA**
  - 3 credits
  - The purpose of this course is to introduce students to a variety of Hypermedia tools and technologies. Web-based and CD-ROM. Students will also be introduced to a variety of authoring para-

- **538 VISUAL LITERACY**
  - 3 credits
  - This course will combine a basic understanding of design principles and concepts with research findings on the use of visuals in the learning process.
695 MASTER'S PROBLEM
3 credits
Prerequisites: permission of advisor. Research and study related to a specific problem or project.

696 MASTER'S TECHNOLDGV PROJECT
3 credits
Prerequisites: permission of advisor. Current trends and practices in educational technology.

637 PHILOSOPHIES OF EDUCATIONAL TECHNOLOGY
3 credits
To introduce students to the many philosophies of educational technologies and the manner in which information technology especially influences our pedagogy.

640 TECHNIQUES OF RESEARCH
3 credits
Research methods and techniques commonly used in education and behavioral sciences: preparation of research reports, include laboratory, historical, survey and experimental research.

642 TOPICAL SEMINAR IN MEASUREMENT AND EVALUATION
3 credits
(May be repeated for a total of six credits) Topics of current interest and need will be emphasized. The student will develop extended competence with current measurement and evaluation techniques.

648 MULTICULTURAL COUNSELING
3 credits
Prerequisites: EDU 530, 543 or permission of instructor. An examination of multicultural counseling theory and research necessary to work with culturally diverse people.

649 INDIVIDUAL AND FAMILY DEVELOPMENT ACROSS THE LIFE SPAN
3 credits
An exploration of individual and family development. Emphasis will be placed on understanding the relationship between the individual and his/her family.

650 FIELD EXPERIENCE: MASTER'S
1-3 credits
Prerequisites: permission of department chair and instructor. Area determined in accordance with student's program and professional goals.

659 MASTER'S TECHNOLOGY PROJECT
3 credits
Prerequisites: permission of advisor. Prepare and test a technology learning package that includes any combination of text, graphic, video, color motion, and the provision for interaction by the target students.

679 INDEPENDENT STUDY
1-6 credits
May be repeated for a total of six credits. Prerequisite: permission of department and instructor. Specific area of study determined in accordance with student's program and professional goals.

680 MASTER'S PROBLEM
1-4 credits
Prerequisite: permission of advisor. In-depth study of a research problem in education. Student must be able to demonstrate critical and analytical skills in dealing with problems in educational development.

689 MASTER'S THESIS
1-6 credits
Prerequisite: permission of department chair and instructor. In-depth study of research problems within humanistic and behavioral foundations.

701 HISTORY OF EDUCATION IN AMERICAN SOCIETY
3 credits
Prerequisites: 600 and 603. Historical study of educational development in America from colonial times to the present.

703 SEMINAR: HISTORY AND PHILOSOPHY OF HIGHER EDUCATION
3 credits
Prerequisites: 600 or equivalent. History and philosophy related to the growth and development of higher education in the Western world. Major emphasis given to higher education in the United States.

705 SEMINAR: SOCIAL,PHILOSOPHICAL, FOUNATIONS OF EDUCATION
3 credits
Prerequisites: 600 with a grade of B or better. Historical development of educational philosophy in the United States and other countries.

710 ADULT LEARNING, DEVELOPMENT, AND MOTIVATION
3 credits
Emerging theories of instiugation of adult learning; stage theories of adult cognitive, conceptual and moral development; life cycle development; adult life transitions.

721 LEARNING PROCESS
3 credits
Study of principles underlying classroom learning processes with particular emphasis on teaching and learning of nine cognitive behavioral concepts: cognitive, motor, social and affective.

723 TEACHER BEHAVIOR AND INSTRUCTION
3 credits
Prerequisites: 600. Intensive study of theoretical and empirical literature involving teacher and pupil behavior. An in-depth study of a specific instructional role.

740 RESEARCH DESIGN
3 credits
Topics include: proposal statement, research questions, literature review, choosing a sample, selecting an appropriate research design and data collection method and ethical and legal issues.

741 DATA COLLECTION METHODS
3 credits
Emphasis on selecting, developing, and administering common data collection methods in education and the social sciences including criterion referenced and norm referenced achievement tests, attitude inventories, questionnaires, interviews, focus groups, observations, and content analysis.

742 STATISTICS IN EDUCATION
3 credits
Statistical methods and techniques used in educational measurement and in educational research. Emphasis on hypothesis testing.

743 ADVANCED EDUCATIONAL STATISTICS
3 credits
Prerequisite: 511. Emphasis on interpreting advanced statistics in education and the social sciences.

785 RESEARCH PROJECT IN SPECIAL AREAS
3 credits
Prerequisites: permission of department chair and instructor. Critical and in-depth study of specific problem in educational foundations.

801 RESEARCH SEMINAR
3 credits
Prerequisites: 640 and 741. Permission of department chair and instructor. Intensive study of research methods leading to application to education. Emphasis on developing a dissertation proposal.

801 INDEPENDENT STUDY
14 credits
(May be repeated for a total of eight credits.) Prerequisite: permission of department chair and instructor. Specific area of inquiry within humanities and behavioral foundations of education determined in advance by student and faculty advisor.

5170: GENERAL ADMINISTRATION

590,1,2,3 WORKSHOP
1-3 credits
Individual work under staff guidance on current problems, utilization of community resources, planning of curriculum units.

594 EDUCATIONAL INSTITUTIONS
1-4 credits
Special course designed as in-service upgrading programs, frequently provided with the support of outside experts.

599 PRINCIPLES OF EDUCATIONAL ADMINISTRATION
3 credits
Prerequisite: 510/540. A perspective of educational leadership and the context in which it operates, with emphasis on the processes, tasks, roles and relationships involved. Field based research required.

602 MANAGEMENT OF PHYSICAL RESOURCES
3 credits
A comprehensive view of the principles, practices, and new dimensions involved in the planning and development of educational facilities.

603 MANAGEMENT OF HUMAN RESOURCES
3 credits
An orientation to the major dimensions of the personnel function.

604 SCHOOL COMMUNITY RELATIONS
3 credits
Prerequisites: 510 and 510/540. An analysis of the principles, practices, and methods that facilitate the interaction between the school's internal and external publics. Field based research required.

605 EVALUATION IN EDUCATIONAL ORGANIZATIONS
3 credits
Prerequisites: 601 and 510/540. An examination of the general concepts, models, practical applications and considerations involved in the evaluation of educational organizations.

607 SCHOOL LAW
3 credits
Prerequisites: 601 and 510/540. An examination of the legal principles underlying educational administration in the United States as reflected in statutory provisions, court decisions and administrative orders. Field based research required.

609 SCHOOL FINANCE AND ECONOMICS
3 credits
A study of financial operations of school systems, including taxes, other sources of revenue, expenditures, budgeting, and financial management.

640 PRINCIPLES OF CURRICULUM DEVELOPMENT
3 credits
Prerequisites: 510 and 510/540. This course is intended to help the student develop the performance competencies necessary to engage in curriculum decision making.

641 PRINCIPLES OF EDUCATIONAL SUPERVISION
3 credits
Prerequisites: 601 and 510/540. An introduction to the school function that improves instructional performance through direct assistance, curriculum, staff and program development and research.

643 ADMINISTRATION OF PUPIL SERVICES
3 credits
Prerequisites: 601 and 510/540. Overview of pupil services including analysis of the nature and development of each component and program and discussion of current issues and trends. Field based research required.

620 THE PRINCIPALSHIP
3 credits
An examination of leadership as it relates to the development and maintenance of a school climate and culture conducive to teaching and learning.

697 INDEPENDENT STUDY
1-3 credits
Prerequisites: permission of advisor and supervisor of the independent study. Area of study determined by student's needs. (May be repeated for a total of six credits.)

704 ADVANCED PRINCIPLES OF DECISION MAKING
3 credits
Study of evaluation processes and considerations and decision making techniques necessary to engage in curriculum decision making.

710 DECISION MAKING IN EDUCATIONAL ADMINISTRATION
3 credits
Decision making is portrayed as a central function of the educational administrator with an understanding of the process and the consequences of decision making.

710 THE SUPERINTENDENCY
3 credits
An orientation to the superintendency role and an examination of the strategies for dealing with the major relational and functional aspects of the superintendency.

716 EDUCATIONS IN ECONOMICS
3 credits
Issues related to the changing marketplace of public, private, and higher education institutions as they relate to the urban environment.

718 ADVANCED PRINCIPLES OF CURRICULUM DEVELOPMENT
3 credits
A second course in curriculum development with an emphasis on performance competencies needed to engage in curriculum planning and decision making.

730 ADVANCED SCHOOL LAW
3 credits
An advanced study of the law as it pertains to the function and role of the administrator as instructional leader: discipline, building, facilities, and auxiliary services manager.

735 ADVANCED EVALUATION OF EDUCATIONAL ORGANIZATIONS
3 credits
An evaluation course to help educational leaders plan and assess educational priorities and outcomes.

730 SEMINAR EDUCATIONAL ADMINISTRATION
1-3 credits
May be repeated. Prerequisites: permission of instructor. Topics selected in areas of concern to students, practicing administrators in public, private educational institutions, organizations.

730 RESIDENCY SEMINAR
3 credits
Focus on open research in administration and educational administration theory.

730 SEMINAR RESIDENCY
3 credits
Prerequisites: 510. Focus on recent research in administration and educational administration theory.

732 PROFESSIONAL RELATIONS IN EDUCATIONAL ORGANIZATIONS
3 credits
A course in educational public relations intended to help educational leaders facilitate the development of professional relations with colleagues, school boards, and the public.

734 THEORIES OF EDUCATIONAL SUPERVISION
3 credits
Prerequisites: 510. Emphasis on supervisory models, staff development, and the organizational environment's impact on the administrative process.

735 SEMINAR: URBAN EDUCATIONAL ISSUES
3 credits
A study of the applications of educational organization and social contexts, particularly as they relate to educational settings. Research project required.

736 POLICIES OF EDUCATION
3 credits
Emphasis on recent efforts to bring about reform at all levels of the educational enterprise and to conceptual and research findings.

785,6 INTERNSHIP IN EDUCATIONAL ADMINISTRATION
1-6 credits
Prerequisites: 601 and 510/540. An internship is completed at a two-semester internship in a school district chosen by the student and his/her advisor.
ELEMENTARY

500 POSTSECONDARY ADMINISTRATION 5190: 3 credits
Prerequisites: 501; 530; 535, and 5100:520. An examination of the instructional design in workforce education and training and assessing research in effective performance-based program needs, assessment, and evaluation processes.

550 CURRICULUM AND INSTRUCTIONAL STUDIES 5500:

500 POSTSECONDARY LEARNER 3 credits
Prerequisites: 501; permission of instructor. Describes characteristics of the postsecondary learner, analyzes issues, factors, and strategies pertinent to successful facilitation of learning in a variety of postsecondary learning environments.

501 LEARNING WITH TECHNOLOGY 1 credit
An overview of information learning and research technologies used and applied in workforce education and training by practitioners/learners for learning, research, and evaluation.

505 WORKPLACE EDUCATION FOR YOUTH AND ADULTS 3 credits
Prerequisite: 501; permission of instructor. How and what is prepared for current workforce education for youth and adults. Includes study of social, economic, and political influences that impact youth and adult education.

515 TRAINING IN BUSINESS AND INDUSTRY 3 credits
Prerequisite: 607. An analysis of instructional design in a business setting. Foundation for students interested in business or training supervision positions.

520 POSTSECONDARY INSTRUCTIONAL TECHNOLOGY 3 credits
Prerequisites: 501. Exploration of educational development, and evaluating instructional technology and media used in postsecondary learning environments.

530 SYSTEMATIC CURRICULUM DESIGN FOR POSTSECONDARY INSTRUCTION 3 credits
Prerequisites: 501; and integration of instruction. Development of postsecondary curriculum using sound instructional systems design principles and instructional technologies.

535 SYSTEMATIC INSTRUCTIONAL DESIGN IN POSTSECONDARY EDUCATION 3 credits
Prerequisites: 501; 530; 5100:520. An examination of instructional design and learner outcome assessment.

541 EDUCATIONAL GENETICOLGY SEMINAR 3 credits
Designed for student performance in the development of instructional, including assessment for development and implementation of courses, seminars, occupational training programs, and workshops for older people.

550 HOMEGE ECONOMICS JOB TRAINING 3 credits
Prerequisites: senior standing, permission of instructor. Concept development in home economics. Job training, program development, operational procedures, skill and knowledge identification, training projects, job placement, and analysis. Individualized student guides. In-school and on-the-job observation.

560 SPECIAL TOPICS: WORKFORCE EDUCATION/TRAINING 3 credits
May be repeated for a maximum of 6 credits hours in conjunction with a change in topic. Prerequisites: permission of the instructor. Group study of special topics of critical, contemporary concern in workforce educational/training.

560, 12 WORKSHOP 3 credits each
Individual work under staff guidance on curriculum problems, utilization of community resources, planning of curriculum unit.

564 EDUCATIONAL INSTITUTES 3 credits
Special courses designed to advance upgrading programs, frequently provided with the support of national foundations.

560 SURVEY OF POSTSECONDARY INSTITUTIONS 3 credits
Prerequisites: 501; or permission of instructor. Instructs students to the nature, purpose, and philosophy of postsecondary institutions. Includes an examination of two-year colleges, technical schools, proprietary schools, and other higher education institutions offering courses at the postsecondary level.

565 ADVANCED SYSTEM DESIGN NEEDS ASSESSMENT AND EVALUATION 3 credits
Prerequisites: 501, 530, 535, and 5100:520. An examination of the instructional design in workforce education and training and assessing research in effective performance-based program needs, assessment, and evaluation processes.

560 POSTSECONDARY TEACHER LEADERSHIP 3 credits
Prerequisites: 501, 530, 535, or permission of instructor. An examination of the role and challenge of the postsecondary teacher leader. In-depth study of instruction, supervision, and evaluation of postsecondary instructors. Professional development, as related to school leadership and management issues.

570 MULTICULTURAL EDUCATION IN THE UNITED STATES 3 credits
In-depth study of multicultural dimensions of American education. Comparisons of urban, suburban, and rural educational settings with reference to socioeconomic differences.
604 FIELD EXPERIENCE: CLASSROOM INSTRUCTION 1-2 credits
Prerequisite: admission to student teaching; prerequisite: 694, instructional experience in the 7-12 classroom to apply theory and research to practice. (May be repeated for a maximum of 12 credits.)

605 FIELD EXPERIENCE: MASTER'S 16 credits
Prerequisites: permission of advisor and department chair. Experience in an educational setting to apply theory and teaching to practice.

606 MASTER'S PROJECTS 16 credits
Prerequisites: permission of advisor and department chair. In-depth investigation of specific problems pertinent to student's area of concentration and research.

607 INDEPENDENT STUDY 13 credits
Prerequisites: permission of advisor and department chair. Selected areas of independent investigation as determined by advisor and related to student's academic needs.

608 MASTER'S THESIS 4-6 credits
Prerequisites: 560:640 and permission of advisor and department chair. In-depth study of research problem in student's area. Student must be able to demonstrate necessary competency to deal with research problem in education.

720 ASSESSMENT OF READING DIFFICULTIES 3 credits
Prerequisites: 625. Examination of formal and informal assessments and intervention strategies for children with reading difficulties.

745 DIAGNOSIS AND TREATMENT OF PERFORMANCE DIFFICULTIES IN ELEMENTARY SCHOOL MATHEMATICS 3 credits
Prerequisite: 645. Examination of implications of contemporary mathematics learning theory on diagnostic-remedial process.

746 CURRICULAR PRACTICES IN ELEMENTARY MATHEMATICS 5 credits
Prerequisite: 645. Nature and utility of mathematics' knowledge and skills experienced by selected children. Supervised practical and independent work with children in conjunction with staff from other departments.

754 CURRENT RESEARCH AND THEORY IN SCIENCE EDUCATION 3 credits
Prerequisite: 650 or 651. Intensive examination of contemporary theory and research literature in science teaching and learning by middle school students.

780 SEMINAR IN CURRICULAR AND INSTRUCTIONAL STUDIES 1-3 credits
(May be repeated). Intensive examination of a particular area of curriculum and instruction.

800 PROFESSIONAL SEMINAR IN CURRICULAR AND INSTRUCTIONAL STUDIES 3 credits
Prerequisite: permission to either the Ph.D. in Elementary Education or the Ph.D. in Secondary Education. Learners will develop individualized programs of study and plan their doctoral studies. An overview of processes and procedures will be addressed.

812 ADVANCED STUDY AND RESEARCH IN TEACHING INSTRUCTION 3 credits
Prerequisite: 6 hours of graduate courses in reading or permission of instructor. Supervision of an individual research problem in curriculum and instruction. (May be repeated for a maximum of 9 credits.)

821 SUPERVISION AND CURRICULUM DEVELOPMENT IN READING INSTRUCTION 3 credits
Prerequisites: 632. Reading diagnostic course in reading or permission of instructor. Reading diagnostic course for reading program in all curriculum areas; examination of students' literature and related instructional reading by supervisors and consultants.

830 DOCTORAL SEMINAR IN CURRICULAR AND INSTRUCTIONAL STUDIES 3 credits
Prerequisite: admission to the Ph.D. program in either Elementary Education or Secondary Education. Intensive examination of a particular area of teacher education. (May be repeated with change in topic of up to a total of 9 credits.)

850 DOCTORAL FIELD EXPERIENCE 1-6 credits
(May be repeated for a total of 6 hours.) Prerequisites: permission of advisor and department chair. In-depth investigation of a particular problem in curriculum and instruction.

860 INDEPENDENT STUDY 1-6 credits
Prerequisites: permission of advisor and department chair. Area of study determined by student's needs.

879 DOCTORAL DISSERTATION 1-20 credits
Prerequisites: permission of advisor and department chair. Study and in-depth analysis of a problem in curriculum and instruction.

PHYSICAL EDUCATION 5500:

500 MUSCULOSKELETAL ANATOMY I: UPPER EXTREMITY 3 credits
Prerequisites: 3100:200, 201, 202, 203 and 5500:201. Designed to address the upper portions of the musculoskeletal system in comprehensive detail. Includes articulations, synovial, tendinous, fascial, ligamentous, and vascular structures.

501 MUSCULOSKELETAL ANATOMY II: LOWER EXTREMITY 3 credits
Prerequisites: 3100:200, 201, 202, 203 and 5500:201. Designed to address the lower portions of the musculoskeletal system in comprehensive detail. Includes articulations, synovial, tendinous, fascial, ligamentous, and vascular structures.

502 SPORTS PLANNING/PROGRAMMING 3 credits
Prerequisites: 5500:211. Introduction to sports programming and planning. Focus on marketing strategies, tactics, and development in sport delivery systems.

503 MODIFICATIONS AND ELEMENTS OF ADAPTED PHYSICAL EDUCATION 3 credits
Prerequisites: completion of all physical education courses in comprehensive detail. Includes articulations, synovial, tendinous, fascial, ligamentous, and vascular structures.

540 INJURY MANAGEMENT FOR TEACHERS AND COACHES 3 credits
Prerequisite: 5550:211. Introduction to injuries, preventative measures, basic rehabilitative techniques, and safety of individual performers. Legal issues associated with prevention of injury.

541 ADVANCED ATHLETIC INJURY MANAGEMENT: UPPER EXTREMITY 4 credits
Prerequisites: 5500:210, 201, 202, 203, and 5550:240. This course is designed to cover injury assessment, evaluation, and rehabilitation of upper extremity injuries as well as general medical philosophies of the upper extremity.

542 THERAPEUTIC MODALITIES AND PHARMACOLOGY 3 credits
Prerequisites: 5550:210, 201, 202, 203, and 5550:240. This course is designed to develop techniques and skills of Sports Medicine personnel in the selection and implementation of therapeutic modalities and drug therapies.

551 ASSESSMENT AND EVALUATION IN ADAPTED PHYSICAL EDUCATION 3 credits (50 clinical hours)
Prerequisites: Permission of advisor; investigation analysis, and selection of appropriate assessment instruments, as well as methodology for determining instructional objectives and activities for handicapped students. Three lecture hours.
OUTDOOR EDUCATION

5560:

5560 APPLICATION OF OUTDOOR EDUCATION TO THE SCHOOL CURRICULUM 4 credits Provides knowledge, skills and techniques useful in application of outdoor education to school curriculum.

5562 RESOURCES AND RESOURCE MANAGEMENT FOR THE TEACHING OF OUTDOOR EDUCATION 4 credits Resources and instructional techniques which are applicable to outdoor education; and in-depth study of methods and designs, unique to the process of teaching.

5564 OUTDOOR PURSUITS Investigation and participation in practical experiences in outdoor pursuits.

5565 WORKSHOP: OUTDOOR EDUCATION Practical application of current research or curricular practices involving expert resource persons in outdoor education.

5566 COMMUNITY LIFE AND PERSONNEL SERVICES IN HIGHER EDUCATION 3 credits Practical experience with current research or curricular practices involving expert resource persons in outdoor education.

5567 FIELD EXPERIENCE: MASTER'S 6 credits Prerequisite: permission of advisor. Participation and documentation of field professions experience related to outdoor education.

5568 INDEPENDENT STUDY 4 credits Prerequisite: permission of advisor. Independent study related to a problem in outdoor education or related discipline.

5570 MASTER'S THESIS 4 credits An original composition demonstrating independent scholarship in a discipline related to outdoor education.

HEALTH EDUCATION

5570:

5570 COMMUNITY HEALTH 2 credits Study of current public health problems. Organization and administration of other agencies and their roles in the solution of community health problems.

5571 COMPREHENSIVE SCHOOL HEALTH 4 credits Varies with admission to Graduate School. The course explains and presents comprehensive school health curricula for K-12. The three components of a comprehensive school health program are presented; instruction, services, and the environment.

5572 METHODS AND MATERIALS OF HEALTH EDUCATION 2 credits Prerequisite: permission of instructor. Planning, organization, use of instructional resources and delivery of health programs and teaching processes (K-12).

5573 PRACTICUM IN HEALTH EDUCATION 2 credits Prerequisite: permission of instructor. The practicum in Health Education is an on-site placement in a community health organization, agency, or resource.

EDUCATIONAL GUIDANCE AND COUNSELING

5600:

5600 COUNSELING PROBLEMS RELATED TO ILLNESS-THREATENING ILLNESS AND DEATH 3 credits Prerequisites: 643 and 660. Consideration of the global issues, current research, coping behavior, support systems and family and individual needs in regard to illness-threatening situations.

5601, 2 WORKSHOP Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.

5602 WORKSHOP Special instruction designed as in-service and/or upgrading individuals on current issues and practices in counseling.

5603 COUNSELING INSTITUTE In-service programs for counselors and other helping professionals.

5604 SEMINAR IN COUNSELING 1 credit Preparation: counseling majors must elect 600 prior to electing 660 and/or 665. The first 6 credits of 660 course work. Structured group experience designed to help a student assess selection of counseling as a profession.

5605 INTRODUCTION TO COUNSELING 2 credits Utilization of counseling and counseling principles including organization, operation and evaluation of guidance programs developed for non-counseling majors.

5606 COUNSELING SKILLS FOR TEACHERS 3 credits Prerequisites: 631 or 633 or permission. The study and practice of selected counseling techniques that can be applied by teachers in working with students, parents and colleagues.

5607 ISSUES IN SEXUALITY FOR COUNSELORS 3 credits A seminar covering, in addition to changing current topics, sexuality across the lifespan, diversity and sexual orientation, and assessment.

5608 COUNSELING YOUTH AT RISK 3 credits This course is designed to prepare counselors and other helping professionals to work with at-risk children and adolescents in school and community settings.

5609 INTRODUCTION TO PLAY THERAPY 3 credits Prerequisites: 631, 633 or permission. The study and practice of selected counseling techniques that can be applied by teachers in working with students, parents and colleagues.

5631 FAMILY COUNSELING/ THERAPY ETHICS AND PROFESSIONAL IDENTITY 3 credits This course is designed to help students learn about marriage and family counseling theory as a distinct profession and about it corresponding ethical codes.

5632 ELEMENTARY/SECONDARY SCHOOL COUNSELING 3 credits Survey of school counseling. In-service training and practical experiences in counseling.

5633 COMMUNITY COUNSELING 3 credits Overview of community and college counseling services; their evaluation, philosophy, organization and administration.

5640 COUNSELING THEORY AND PHILOSOPHY 3 credits Examination of major counseling systems including client-centered, behavioral and existential approaches; philosophical and theoretical underpinnings of selected systems.

5641 TESTS AND APPRAISAL IN COUNSELING 4 credits Prerequisites: 5100, 640. Study of the nature of tests and appraisal in counseling including reliability, validity, test construction and selection, administration, scoring, and basic interpretation of selected measures.

5642 MULTICULTURAL COUNSELING 3 credits Prerequisites: 643 or permission of instructor. An exploration of multicultural counseling theories and research relevant to counseling culturally diverse people.

5643 CAREER DEVELOPMENT AND COUNSELING ACROSS THE LIFE-Span 3 credits Overview of career development and choice over the lifespan. Personal, family, and societal changes that affect this process, career choice, and implementation are discussed.

5644 INDIVIDUAL AND FAMILY DEVELOPMENT ACROSS THE LIFE SPAN 3 credits An exploration of individual and family development. Emphasis will be placed on understanding the relationship between the individual and family.

5645 COUNSELING AND PERSONNEL SERVICES IN HIGHER EDUCATION 2 credits Prerequisites: 635 or permission of instructor. Counseling services as related to psychological needs and problems of the college student.

5646 TECHNIQUES OF COUNSELING 2 credits Prerequisites: 634 or permission. Study and practice of selected counseling techniques and skills with emphasis on interviewing, listening, leading and establishing a counseling relationship.

5650 COUNSELING 3 credits Prerequisites: 643 and 665, 7360-7371 or 770 (703) or permission. Emphasis is placed on providing the student with the knowledge and understanding of the theory, research and techniques necessary for conducting group counseling sessions.

5655 MARRIAGE AND FAMILY COUNSELING/ THERAPY 3 credits An overview of the theory and techniques of marital and family therapy, including exposure to the history, terminology, and contributions of significant persons in the field.

5670 CONSULTANT COUNSELING 3 credits Prerequisites: 631, 651 or permission. Examination of consultation models with focus on process and product.
The University of Akron 2001-2002

710 THEORIES OF SYSTEMS THEORY

675 RESEARCH ON THESEORIES, APPLIED WORK IN VOCATIONAL AND VOCATIONAL COUNSELING. TOPICS

669 SYSTEMS THEORY

718 RESEARCH ON THESEORIES, APPLIED WORK IN VOCATIONAL AND VOCATIONAL COUNSELING. TOPICS

FUTURE DIRECTIONS: ADULTS WITH MODERATE TO INTENSIVE EDUCATIONAL NEEDS

560 FAMILY DYNAMICS

3 credits

ADDITIONAL EDUCATIONAL NEEDS

567 ASSESSING THE NEEDS OF MINORITY AND/OR INTERNATIONAL STUDENTS

524 DEVELOPMENTAL CHARACTERISTICS OF INDIVIDUALS WITH MODERATE/INTENSIVE EDUCATIONAL NEEDS

2 credits

551 SPECIAL EDUCATION PROGRAMMING: MILD/MODERATE

3 credits

563 SPECIAL EDUCATION PROGRAMMING: MODERATE/INTENSIVE

3 credits

551 SPECIAL EDUCATION PROGRAMMING: MILD/MODERATE

505 ADDITIONAL EDUCATIONAL NEEDS

563 SPECIAL EDUCATION PROGRAMMING: MODERATE/INTENSIVE

4 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

571 INDEPENDENT STUDY

3 credits

571 INDEPENDENT STUDY

1-20 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

4 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

2 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION

3 credits

547 DEVELOPMENTAL CHARACTERISTICS OF MODERATE TO MODERATELY MENTAL RETARDATION
691 COLLABORATION ASSESSMENT
Prerequisite: permission of advisor. Designed to provide on-the-job experience in education.
Review and discussion of issues raised during teaching experience.

563 MANAGEMENT STRATEGIES IN SPECIAL EDUCATION
Prerequisites: 446/546 and 7800-328. The assessment of children (three to eight) and their environment who are at risk for disabilities or currently in special education.

566 RECREATIONAL PROGRAMS FOR EXCEPTIONAL INDIVIDUALS
Prerequisite: 440/540. Study experience which examines crafts and outdoor recreational programming for exceptional individuals.

567 BEHAVIORAL MANAGEMENT
Prerequisites: 475/575. Advanced techniques for remedying problematic behavior, establishing effective interaction and evaluating research relevant to classroom management. Behavioral theories will be assessed.

570 CLINICAL PRACTICUM IN SPECIAL EDUCATION
Prerequisite: permission of instructor; concurrent 460 and 485. Provides a pre-student teaching experience for students in the area of assessment, program planning, instructional planning and presentation, classroom management, adaptations, and collaboration with parents and other educational professionals.

571 CLINICAL PRACTICUM IN SPECIAL EDUCATION
Prerequisites: 440/540, 560/460, and one of the following: 560/441, 443, 445, 446. Content emphasizing the development of application strategies with a variety of behavioral management models for modification of behaviors with exceptional individuals.

584 ADVANCED BEHAVIOR MANAGEMENT
Prerequisites: 465/565. Advanced techniques for remediating problematic behavior, establishing effective interaction and evaluating research relevant to classroom management. Behavioral theories will be assessed.

591 SEMINAR: INVITATIONAL STUDIES IN SPECIAL EDUCATION
May be repeated for a total of 3 credits. Prerequisites: certification in an area of specialization. Topic study with a varied array of practitioners. Staffing will be invited members of faculty and contributing professionals active in the management of exceptional children.

592 SEMINAR: SPECIAL EDUCATION CURRICULUM PLANNING
Prerequisite: certification in an area of specialization. Study of curriculum planning practices unique to special education classes and services. Appropriate curriculum objectives for selected areas of instruction as well as effective organizational programs examined.

593 SEMINAR: SUPERVISION OF INSTRUCTION
Prerequisite: certification in an area of specialization. Study of administration and supervision practices unique to special education classes and services.

594 COLLABORATION AND CONSULTATION SKILLS FOR SPECIAL EDUCATORS
Prerequisite: admission to graduate program in special education or permission of the instructor. Advanced consideration of the roles and responsibilities of parents, professionals and individuals with disabilities in the development and implementation of educational interventions and related issues.

595 INCLUSION MODELS AND STRATEGIES
Prerequisite: admission to graduate program in special education. Special education, history, theory, philosophy, legislative mandates, models, strategies, curriculum modifications, methods/materials adaptations which support the inclusion of students with disabilities. Emphasis on collaboration and teaming.

596 RESEARCH APPLICATIONS IN SPECIAL EDUCATION
Prerequisite: admission to graduate program in special education and 560/460. An examination of quantitative and qualitative research methodology and its application to the field of special education. Applied research is an essential component of the course.

597 SEMINAR: LEGAL ISSUES IN SPECIAL EDUCATION
Prerequisite: permission to graduate program in special education and 5170/270 or permission of instructor. A culminating seminar for graduate students in special education designed to study, examine and reflect upon the legal aspects of historical and current trends, issues and practices.

598 SEMINAR: SOCIOETHICAL ISSUES IN SPECIAL EDUCATION
Prerequisites: admission to graduate program in special education, 611, or permission of instructor. A culminating seminar for graduate students in special education designed to study, examine and reflect upon the social and ethical aspects of historical and current trends, issues and practices.

601 STUDENT TEACHING SEMINAR
1 credit
Prerequisites: 550/245 and 5500/286 or permission of advisor. Taken concurrently with Student Teaching. Review and discussion of issues raised during teaching experience.

602 STAFF TEACHING. SCHOOL AULOGY
6 credits
Prerequisite: Permission of advisor. Directed teaching under supervision of a special education specialist or University supervisor.

603 STAFF TEACHING: SPEECH PATHOLOGY
6 credits
Prerequisite: Permission of advisor. Directed teaching under supervision of a special education specialist or University supervisor.

604 RESEARCH PROJECT IN SPECIAL AREA (SCHOLARLY PAPER)
3 credits
Prerequisite: Cursory outstanding experience in master’s program. An indepth study of an identified topic in a scholarly paper.

605 FIELD EXPERIENCE: MASTER’S
14 credits
May be repeated for a total of eight credits. Designed to provide pro-adjunct experience in a special education program on an individual basis. (Repeat requirement).

607 INDEPENDENT STUDY
13 credits
May be repeated for a total of nine credits. Prerequisites: permission of advisor and supervisor of independent study. Specific area of investigation determined in accordance with student’s needs.

608 MASTER’S PROBLEM
24 credits
Prerequisite: permission of advisor. In-depth study of a research problem in education. Student must be able to demonstrate critical and analytical skills in dealing with a problem in special education.

609 MASTER’S THESIS
4 credits
Thorough study and analysis of depth of an educational problem, field experience in special area, synthesis of existing knowledge in relationship to a specific topic.
ACCOUNTING 6200:

520 ADVANCED ACCOUNTING 3 credits
Prerequisites: 6200:327 and 332. Examination of accounting theory emphasizing accounting for business combinations, partnerships, foreign operations, nonprofit entities and consolidated statements.

530 TAXATION I 3 credits
Prerequisite: 320 or 621. Federal tax law related to individuals. Master of Taxation students will not be able to take this course to satisfy tax electives in the Master of Taxation program.

531 TAXATION II 3 credits
Prerequisite: 430:530 or permission. Federal income tax law related to partnerships, corporations, trusts and estates; also includes an overview of state and gift tax law.

540 AUDITING 3 credits
Prerequisites: 320 and 321, 430, 456 and 6600:221. Must be taken prior to or concurrently; or permission of instructor. Audits auditing standards and procedures used by independent auditors in determining whether a firm has fairly presented its financial position.

570 GOVERNMENTAL AND INSTITUTIONAL ACCOUNTING 3 credits
Prerequisite: 320 or 601. Theory and procedures involved in application of fund accounting, budgetary control, appropriations and various accounting systems to governmental units, educational, medical and other nonprofit institutions.

580 ACCOUNTING PROBLEMS 2 credits
Prerequisite: 320, independent research on advanced accounting problems - a student's specific area of interest.

588 CPA PROBLEMS: AUDITING 2 credits
Prerequisite: 440:540 or permission of instructor. Preparation for auditing section of CPA examination, focusing on auditing principles, standards and ethics and situations encountered by independent auditors.

590 CPA PROBLEMS: THEORY 2 credits
Prerequisite: permission of instructor. Preparation for theory section of CPA examination, focusing on current developments and use of basic accounting theory to solve advanced auditing problems.

595 SPECIAL TOPICS IN ACCOUNTING 3 credits
Prerequisite: Permission of instructor. Opportunity to study special topics and current issues in accounting. May be repeated with a change of subject but not to exceed 6 credits.

599 WORKSHOP IN ACCOUNTING 3 credits
May be repeated. Prerequisite permission of instructor. Group study of accounting under faculty guidance. May not be used to meet undergraduate or graduate accounting major requirements, but may be used for elective credit only with permission of instructor or department.

601 FINANCIAL ACCOUNTING 3 credits
Introductory course for student with no accounting background. Examines accounting principles as applied to financial problems of firms.

603 BUSINESS SYSTEMS WITH PROCESSING APPLICATIONS 3 credits
Prerequisite: 601. Introduction to basic concepts in computer technology, steps in system development and logic of designing accounting systems by using a business-oriented language or related software.

606 APPLICATIONS DEVELOPMENT FOR FINANCIAL SYSTEMS 3 credits
Prerequisites: 601 and 6020:609. Analysis, design and development of financial and control applications, using object oriented languages, integrated development environments (IDE), and object analysis and design methodology.

607 FINANCIAL DATA COMMUNICATIONS AND ENTERPRISE INTEGRATION 3 credits
Prerequisites: 6200:601, 650:606 and 6500:622. In-depth study of contemporary methodologies, technologies, and standards used to integrate business processes and systems across departments, organizations and geographical boundaries.

610 PROCESS ANALYSIS AND COST MANAGEMENT 3 credits

615 ENTERPRISE RESOURCE PLANNING AND FINANCIAL SYSTEMS 3 credits
Prerequisite: 501. Detailed examination of issues related to acquisition, implementation, and use of financial modules in enterprise resource planning applications, with emphasis on risk assessment and project management.

621 CORPORATE ACCOUNTING AND FINANCIAL REPORTING I 3 credits
Prerequisite: 601. An examination of generally accepted accounting principles in theory and application, as well as financial statement preparation.

622 CORPORATE ACCOUNTING AND FINANCIAL REPORTING II 3 credits
Prerequisite: 621. A continuation of 620:621 which examines generally accepted accounting principles in theory and practice, as well as financial statement preparation.

627 SURVEY OF FEDERAL TAXATION 3 credits
Prerequisite: 602 or equivalent. Introduction to federal taxation for students who have not completed more than one undergraduate or graduate tax course. Examines individual and business taxation. Preparation of this course will not count towards fulfilling the requirements of the Master of Taxation degree.

628 BASIC TAX RESEARCH 2 credits
Prerequisite: Completion of M Tax foundation courses. Designed to develop basic research competence involving federal income, estate and gift tax laws.

631 CORPORATE TAXATION I 3 credits
Prerequisite: completion of M Tax foundation courses. Detailed examination of tax problems of corporations and their shareholders: formation, distribution, redemption, liquidation and penalty taxes covered.

632 TAXATION OF PROFESSIONAL CORPORATIONS 3 credits
Prerequisite: completion of M Tax foundation courses. Explores federal tax implications of gains and losses derived from sales, exchanges and other dispositions of property.

633 ESTATE AND GIFT TAXATION 2 credits
Prerequisite: completion of M Tax foundation courses. Examines provisions of federal estate and gift tax laws and tax consequences of testamentary and lifetime transfers.

634 CORPORATE TAXATION II 3 credits
Prerequisite: completion of M Tax foundation courses. Comprehensive examination of transfer taxes.

640 ADVANCED AUDITING 3 credits
Prerequisite: 440:540. Conceptual foundation and current research on professional and internal auditing. Includes government regulation and litigation, statistics, computer systems as well as current and prospective developments in auditing.

641 TAXATION OF PARTNERSHIPS 3 credits
Prerequisite: completion of M Tax foundation courses. Examines intensively provisions of subchapter K and S of Internal Revenue Code and uses of partnerships for tax planning.

642 CORPORATE TAXATION II 3 credits
Prerequisite: 631. Continuation of 631. Studies problems related to taxation of corporations and their shareholders: formation, distribution, redemption, liquidation and tax planning.

643 FOREIGN INCOME AND TAXATION 3 credits
Prerequisite: completion of M Tax foundation courses. Attention focused on timing of income and deductions for individuals, including marriage and payment of taxes on foreign source income.

645 INCOME TAXATION OF DECEDENTS, ESTATES AND TRUSTS 2 credits
Prerequisite: 633. An in-depth examination of the decedent's income and estate tax planning with emphasis on the use of charitable gifts and trusts.

646 ADVANCED INDIVIDUAL TAXATION 3 credits
Prerequisite: 440:530. In-depth study of some of the more involved areas of individual income taxation.

647 CONSOLIDATED TAX RETURNS 2 credits
Prerequisite: completion of M Tax foundation courses. Intensive study of tax provisions concerning consolidation of corporate taxable entities.

648 QUALIFIED PENSIONS AND PROFIT SHARING 3 credits
Prerequisite: completion of M Tax foundation courses. Nature, purpose, and operation of various forms of deferred compensation examined with much emphasis on pension and profit-sharing plans.

649 TAX PRACTICE AND PROCEDURE 2 credits
Prerequisite: completion of M Tax foundation courses. In-depth study of administration and procedures of Internal Revenue Service and responsibilities of tax practitioners.

650 STATE AND LOCAL TAXATION 3 credits
Prerequisite: 631. Examines common types of taxes imposed by state and local governments and includes taxation of multistate businesses.

651 ESTATE PLANNING 2 credits
Prerequisite: 633. Considers entire process of planning the estate with due regard for disposal of property, tax minimization, and meeting financial and administrative costs.

652 UNITED STATES TAXATION AND TRANSNATIONAL OPERATIONS 2 credits
Prerequisite: completion of M Tax foundation courses. Examines United States taxation of foreign income of domestic corporations, citizens and residents, as well as United States income of nonresident aliens and foreign corporations.

653 TAX-EXEMPT ORGANIZATIONS 2 credits
Prerequisite: completion of M Tax foundation courses. Analysis of tax aspects of tax-exempt organizations, including nature of and limitations of its exemption.

654 BUSINESS PLANNING 2 credits
Prerequisite: 631. Uses cases depicting complex problems to get student to integrate knowledge of litigation.

655 INDEPENDENT STUDY IN TAXATION 1-3 credits
Prerequisite: permission of instructor. Intensive study of particular topic or limited number of topical topics not otherwise offered in course. May be repeated for a total of six credits.

656 ADVANCED INFORMATION SYSTEMS 3 credits
Prerequisites: 603 or equivalent. Advanced study of accounting information systems and their integration with related systems. Includes government and commercial systems.

659 NON-QUALIFIED EXECUTIVE COMPENSATION 3 credits
Prerequisite: 634. Various non-qualified executive compensation items are analyzed: the effects on the recipients and payer entities are determined discussed.

660 E-BUSINESS RISKS, CONTROLS, AND ASSURANCE SERVICES 3 credits
Prerequisite: 650:620. An examination of the unique risks, controls, and assurance services needed to protect and gauge the ebusiness environment.

661 ASSURANCE SERVICES WITH DATA WAREHOUSING AND DATA MINING 3 credits
Prerequisites: 601, 605, 658, and 6500:605. Application of data warehousing, data mining and intelligent agent concepts to designing and developing systems for assurance services, fraud, and error detection, and risk mitigation.

662 INFORMATION SYSTEMS AUDIT AND CONTROL PROJECT 3 credits
Prerequisites: 640, 642, 643, and 645. Comprehensive, hands-on information systems audit and control project approved by the instructor.

663 ADVANCED TAX RESEARCH AND POLICY 3 credits
Prerequisite: 620 and completion of four other tax courses in Phase II. Extensive involvement in current federal, estate, trust, gift and tax laws.

664 RESEARCH AND QUANTITATIVE METHODS IN ACCOUNTING 3 credits
Prerequisites: 620:6350, 650:6580 or equivalent. Survey of research techniques, statistical analysis, and data bases with applications to accounting and business functional areas.

665 CORPORATE PERFORMANCE EVALUATION AND CONTROL SYSTEMS 3 credits
Prerequisite: 630. Investigation of the role of financial information systems in developing strategic thought, measuring results, and monitoring management and policy goals and objectives.

666 INTERNATIONAL ACCOUNTING 3 credits
Prerequisite: 630. Examination of accounting theory and practice from an international perspective with emphasis on multinational investment, business and auditing activities and reporting.

667 SIMULATION IN TAXATION 3 credits
(May be repeated for a total of six credits.) Prerequisites: completion of M Tax foundation courses. Program of studies in the tax area of student's choice, in which a finished report is possible.

668 SELECTED TOPICS IN TAXATION 1-3 credits
(May be repeated for a total of six credits.) Prerequisites: completion of M Tax foundation courses. Provides study in contemporary issues in taxation that are not covered in current courses.

669 GRADUATE INTERNSHIP IN ACCOUNTING 2 credits
Prerequisites: 621, 622, 630, 632, 634 and 635. This course provides an opportunity for graduate accounting students to apply classroom knowledge to practice problems in a professional working environment.

670 INDEPENDENT STUDY IN ACCOUNTING 1-3 credits
(May be repeated for a total of six credits.) Focus on special topics of study and research in accounting on an independent basis.
ENTREPRENEURSHIP 6300:

560 ENTREPRENEURSHIP 3 credits
Prerequisite: 6500/508. Exploration of financing, legal, taxation, and insurance issues involved with entrepreneurial ventures.

570 MANAGING ENTREPRENEURIAL GROWTH 3 credits
Prerequisites: 6500/509 and 6500/600. Interdisciplinary capstone course focusing on the problems and opportunities associated with the management of entrepreneurial growth in existing entrepreneurial ventures. Includes a field project.

FINANCE 6400:

538 INTERNATIONAL BANKING 2 credits
Prerequisite: 371 or 602. Examination of recent trends in the expansion of international banking activities and associated revenue maximizing strategies.

591 WORKSHOP IN FINANCE 1-3 credits
May be repeated. Group studies or special topics. May not be used to meet undergraduate or graduate major requirements in finance. May be used for elective credit only with permission of instructor or department.

602 MANAGERIAL FINANCE 3 credits
Prerequisite: 6500/600 or equivalent. Taken concurrently with 6500/601. Emphasis on financial decision making related to go/no go of firm, especially the investment decision, the financial decision, and the dividend decision.

623 LEGAL ASPECTS OF BUSINESS TRANSACTIONS 3 credits
Prerequisite: 620 or equivalent. Advanced legal analysis of contracts, UCC, debtor-creditor relationships, business organizations, property, and government regulation.

631 FINANCIAL MARKETS AND INSTITUTIONS 3 credits
Prerequisite: 602 or equivalent. A study of market financial markets and financial institutions with an emphasis on the decision making processes in a rapidly changing, but regulated operating environment.

633 MANAGEMENT OF FINANCIAL INSTITUTIONS 3 credits
Prerequisites: 602 and 6500/602. Policy determination, administrative decision making in banks, savings and loans, and securities industry.

640 FINANCIAL PLANNING FOR INDIVIDUALS 3 credits
Prerequisite: 602. Study of issues involved in personal financial planning including topics such as taxation, insurance, liquid asset and credit management, asset acquisition and financing, and estate planning.

645 INVESTMENT ANALYSIS 3 credits
Prerequisite: 602 or equivalent. Study of the economic and market forces that influence security prices. Techniques of analysis used in evaluating the use of financial models for short and long run profitability decisions.

647 DERIVATIVES 3 credits
Prerequisite: 602 or equivalent. A study of the applications and practice of options, futures, and other speculative markets.

649 PORTFOLIO MANAGEMENT 3 credits
Prerequisite: 645 or permission of instructor. Advanced techniques used by sophisticated institutional investors.

650 TECHNOLOGIES OF FINANCIAL ANALYSIS 3 credits
Prerequisites: 3250/650 and 6400/602. Current techniques and methods of financial analysis are examined, including the use of financial models for short and long run profitability decisions.

655 GOVERNMENT AND BUSINESS 3 credits
Prerequisite: 600. Public institutions and the issues and policies that are considered from an economic, legal, ethical, political framework.

674 STRATEGIC FINANCIAL DECISION MAKING 3 credits
Prerequisites: 6400/602 and 6500/602. Examines the role of financial decision makers as strategic consultants with other business functions with integrative risk management as a unifying theme.

676 MANAGEMENT OF FINANCIAL STRUCTURE 3 credits
Prerequisite: 602 or equivalent. Analysis of financial structure and its impact on determination of volume and composition of sources of funds. Primary attention directed to cost of capital for specific sources of financing.

678 CAPITAL BUDGETING 3 credits
Prerequisite: 602 or equivalent. Attempt to integrate various theories of capital budgeting into comprehensive conceptual scheme. Theoretic concepts and practical applications. Emphasized for better understanding of capital problems.

681 MULTINATIONAL CORPORATE Finances 3 credits
Prerequisite: 602 or equivalent. Financial policies and practices of companies involved in multinational operations. Consideration of working capital and permanent assets, effect on investment and capital budgeting for the global firm.

685 E-BUSINESS: LEGAL ISSUES 3 credits
Study of the application of law to emerging e-commerce form of business with concentration on emerging law and policy.

686 E-BUSINESS: STRATEGIC STRATEGY AND PLANNING 3 credits
Prerequisite: minimum of six credits of E-Business foundation courses. Study of finance issues relating to analysis, evaluation, planning, long and short term financing, and management of E-business projects.

688 SELECTED TOPICS IN FINANCE 3 credits
May be repeated for a total of six credits. Prerequisite: 602 or equivalent. Provides study of contemporary issues and areas not covered in current finance graduate courses.

691 INTERNATIONAL MARKETS AND INVESTMENTS 3 credits
Prerequisites: 602 or equivalent. A study of international financial markets with an emphasis on international investments and risks in a rapidly changing global economy.

697 INDEPENDENT STUDY IN FINANCE 1-3 credits
May be repeated for a total of six credits. Focus on special topics of study and research in finance on an independent basis.

698 INDEPENDENT STUDY: BUSINESS LAW 1-3 credits
May be repeated for a total of six credits. Focus on special topics of study and research in the legal aspects of business administration.

MANAGEMENT 6500:

508 ENTREPRENEURSHIP 3 credits
Prerequisites: upper or graduate standing and 301 or 600 or equivalent. Emphasizes the behavior and environment for entrepreneurship. Focuses on classic and contemporary entrepreneurship and the importance of personal values and strategies. Case studies. Prerequisite: 371 or 602. 1 credit paper is required.

510 SELECTED TOPICS IN ENTREPRENEURSHIP 1-3 credits
Prerequisites: upper or graduate standing and 301 or 600 or equivalent. Facilitates coordinated exploration of international study of entrepreneurship, introduction of entrepreneurship to large organizations, or application of student's entrepreneurial skills. Six-hour limit.

571 MANAGEMENT PROJECT 3 credits
Prerequisite: 670. Student applies modern management principles, practices, theory to actual problem in industry.

580 INTRODUCTION TO HEALTH-CARE MANAGEMENT 3 credits
Prerequisite: upper or graduate standing. Students are required to take 301 or 600 or have completed 301 or 600 or equivalent and take this course for credit. An introductory course for health professionals covering principles and concepts of management applied in health services organizations. For those registered for graduate credit, a major research paper is required.

587 HEALTH SERVICES OPERATIONS MANAGEMENT 3 credits
Prerequisite: 580 or 590 or equivalent. Permission of instructor. Application of operations and systems analysis to health services organizations.

588 SPECIAL TOPICS IN HEALTH SERVICES ADMINISTRATION 1-3 credits
Prerequisite: permission of instructor. Special topics in health services administration e.g. management focusing on historical and contemporary managerial organizational and policy/strategy issues as related to health-care organizations and health-care systems. Separate topics may be repeated for a maximum of six credits. For those registered for graduate credit, a major research paper is required.

600 MANAGEMENT AND ORGANIZATIONAL BEHAVIOR 3 credits
Covers major concepts and theories of organizational behavior: concepts, functions, processes, and as well as human behavior in organizations.

601 QUANTITATIVE DECISION MAKING 3 credits
Prerequisite: finite mathematics. Applies quantitative techniques to business decisions. Topics covered include probability estimation and hypothesis testing, simple and multiple regression and correlation analysis, analysis of variance and nonparametric statistics.

602 COMPUTER TECHNIQUES FOR MANAGEMENT 3 credits
Prerequisites: 600 or equivalent. Introduction to the use of integrated spreadsheet software, database management software, and the analysis and design of management information systems.

605 BUSINESS APPLICATIONS DEVELOPMENT 3 credits
The analysis and automation of standard business processes with examples from diverse business functions. Students will integrate these applications for business decision making.

606 E-BUSINESS FOUNDATIONS 3 credits
Provides an understanding of the foundations of Electronic Business focusing on business and application issues.

622 E-BUSINESS TECHNOLOGIES 3 credits
Prerequisite: 602 or 600. The course provides a foundation in internet related technologies for successfully managing an e-business. Students will be required to design and implement a functional e-business prototype.

629 E-BUSINESS PROJECT 2 credits
A capstone course that integrates the foundation and functional courses. Student teams will apply project management methods as they design and develop an e-business project.

630 MANAGEMENT INFORMATION SYSTEMS 3 credits
Prerequisite: 602 or equivalent. Introduction to information systems design, management information systems, data base management, their relationships to organizational decision making, and their relationships to problem solving and the organization.

641 BUSINESS DATABASE SYSTEMS 3 credits
Prerequisite: 602. Introduction to issues underlying the design, implementation, and management of business databases.

642 SYSTEMS SIMULATION 3 credits
Prerequisites: 529, 602. Manufacturing or service sector systems are analyzed and modeled in a computer environment. Experimental designs, statistical significance of results, model verification and validation will be discussed.

643 ANALYSIS AND DESIGN OF BUSINESS SYSTEMS 3 credits
Prerequisite: 602. A hands-on treatment of the methods used to develop different types of business information systems.

644 KNOWLEDGE MANAGEMENT 3 credits
Prerequisite: 602. This course examines the role of knowledge and its management within the information technology environment.

645 ADVANCED MANAGEMENT INFORMATION SYSTEMS 3 credits
Prerequisite: 640. 641, 642, 648. Coverage of new issues in corporate information resource management as well as other issues faced by a chief information officer requires a prior understanding of technical content in databases, analysis and design, and networking.

646 PROCESS REDESIGN WITH ENTERPRISE RESOURCE PLANNING 3 credits
Prerequisite: 602. An introduction to the use and management of telecommunication resources to support the activities of the organization.

650 FUNDAMENTALS OF HUMAN RESOURCE ADMINISTRATION 3 credits
Prerequisites: 600. A broad survey of the fundamental principles, research findings and practices related to the acquisition, development, maintenance and effective utilization of a business firm's human resources.

651 MANAGEMENT OF ORGANIZATIONAL TRANSFORMATION 3 credits
Prerequisite: 600 or equivalent. A comprehensive study of innovative new organizations designed to increase human satisfaction and productivity through changes in human management.

652 ORGANIZATIONAL BEHAVIOR 3 credits
Prerequisite: 600 or equivalent. Study of factors which influence human behavior in business organizations. Emphasizes on application of individual and group behavior, motivation, leadership and communication in organizations.

653 ORGANIZATIONAL THEORY 3 credits
Prerequisite: 600. Examines the structure, design and overall effectiveness of a business organization from a macro perspective.

654 INDUSTRIAL RELATIONS 3 credits
Prerequisite: 600. Study of rights and duties of management in dealing with labor and economic consequences of union and management policies and practices.
656 MANAGEMENT OF INTERNATIONAL OPERATIONS
Prerequisite: 600 or equivalent. Deals with institutional environment of international business; parameters within which the international system hold the system together and which individual business people cannot materially alter.

657 THE LEADERSHIP ROLE IN ORGANIZATIONS
Prerequisite: 600. Analysis and development of leadership theory and thought. Identification of leaders in both internal and external labor markets.

658 STRATEGIC HUMAN RESOURCES MANAGEMENT
Prerequisite: 600 or equivalent. The formulation, design and implementation of strategic human resource practices and systems for business organizations. Emphasis is on the competitive cost advantages and productivity gains.

659 INTERNATIONAL HUMAN RESOURCES MANAGEMENT
Prerequisite: 600. A survey course focused on the analysis, identification, and resolution of human resource problems in business firms with global operations.

660 EMPLOYMENT REGULATION
Prerequisite: 600 or equivalent. A broad overview of the federal legislation regulating the business firm's human resource management function.

661 COMPARATIVE SYSTEMS OF EMPLOYEE AND LABOR
Prerequisite: 600. A survey course examining how industrial relations systems and employment practices across national boundaries impact upon the employment relationship of business firms with global operations.

662 APPLIED OPERATIONS RESEARCH
Prerequisite: 600 or equivalent. Survey of basic techniques of operations research. Stresses application to functional area of business.

663 DATA ANALYSIS FOR MANAGERS
Prerequisite: 600 or equivalent. Design, evaluation and interpretation of research in business and organizations. Integrates quantitative and behavioral concepts and processes encountered in conducting such research, including ethical issues.

664 APPLIED INDUSTRIAL STATISTICS
Prerequisite: 600 or equivalent. Applications of multiple regression including determining "best" set of independent variables and correlation models. Analysis of variance models including multifactor models. Experimental designs including randomized block and Latin square designs.

665 MANAGEMENT OF TECHNOLOGY
Survey of the principles and management practices of technology driven organizations are discussed with concepts, models and case studies for managers of technology intensive operations.

666 POLYMERIC MANUFACTURING DECISIONS
Introduction to polymer concepts, production processes, and uses of polymeric materials in an ethically comprehensible interdisciplinary instruction. Industrial cases study help integrate enterprises wide innovation and technology management related decisions.

670 MANAGEMENT OF OPERATIONS
Prerequisite: 600 or 602 or equivalent. An overview of the issues directly related to the management of operations at the strategic, tactical, and operational levels of the organization.

671 ADVANCED OPERATIONS RESEARCH
Prerequisite: 602. Designed to present in more depth and breadth certain topics surveyed in 662. Designed to present in more depth and breadth certain topics surveyed in 662. Emphasis on the applications of these techniques to student's own business situations.

672 QUALITY AND PRODUCTIVITY TECHNIQUES
Prerequisite: 600. Introduction to techniques for improving productivity and quality, including statistical process control (SPC), material requirements planning (MRP), Just-in-Time (JIT) inventory control and management of the program.

674 ADVANCED QUALITY AND PRODUCTIVITY TECHNIQUES
Prerequisite: 600. Topics in advanced techniques in statistical process control, experimental design, and decision making. Emphasis on quality training. Emphasis on the applications of these techniques to student's own business situations.

675 SUPPLY CHAIN MANAGEMENT
Prerequisite: 600. Focusses on the integration of activities and information flows across multiple organizations that comprise the supply chain, and the relationships among members of the supply chain.

676 MANAGEMENT OF PRODUCTION AND OPERATIONS
Surveys the management of inputs required to transform inputs into products or services. The topics include: management of internal and external resources, management of supplier relationships, and modern management of production systems.

677 PROJECT MANAGEMENT
Prerequisite: 600, 601, 602. Provides working knowledge of tools and methods available to project managers including computerized analysis of network models to aid in the planning and control functions.

680 HEALTH SERVICES SYSTEMS MANAGEMENT
Prerequisite: 600, 609 or 605 or equivalent or permission of instructor. Study of health services organizations, comparative delivery systems, the role of third-party payors and government policies in health care. Seminar format; major research paper required.

681 HEALTH SERVICES RESEARCH PROJECT
Prerequisite: 601 or permission of instructor. In-depth field study in health services administration with applications to research and analysis skills. Course requires research literature and a major research paper.

688 INDEPENDENT STUDY IN HEALTH SERVICES ADMINISTRATION
(May be repeated for a total of six credits) Prerequisite: 652. Selected topics in historical, contemporary, and special application to functional research.

689 BUSINESSTRAEGY AND POLICY: DOMESTIC AND INTERNATIONAL
Prerequisite: to be final course in M.B.A. program. A case-oriented course which focuses on implementing theoretical knowledge acquired in core business courses. Student and instructor analyze, evaluate, formulate organization objectives and strategies within and international environmental contexts.

691 INDEPENDENT STUDY IN MANAGEMENT
(May be repeated for a total of six credits) Prerequisite: 652. Selected topics in study and research in management on an independent basis.

MARKETING 6600:

540 PRODUCT AND BRAND MANAGEMENT
Prerequisite: 650. Applied inventory to new product development, product life cycle management, products mix strategies, brand positioning, brand image and branding.

550 STRATEGIC RETAIL MANAGEMENT
Prerequisite: 600 or permission of instructor. Investigation of strategic and tactical retail decisions and their applications to the organization and control of a sales force. Graduate credit requires additional research paper.

575 BUSINESS NEGOTIATIONS
Examine business negotiation principles and practices, and builds skills in the process of negotiating business agreements.

590 SALES MANAGEMENT
Develops analytical and managerial skills through case studies and other learning activities relating to the organization and control of sales forces. Grad. credit requires additional research paper.

591 GLOBAL SALES STRATEGY
Analyzes the concepts and complexities of selling on a global basis. Covers international aspects of selling, sales management, and negotiations.

596 MARKETING CONCEPTS
Prerequisite: 600. Designed to presenting buyer behavior, environmental influences, target marketing, product development, distribution, promotion, and pricing for business firms and nonprofit organizations within a global context.

600 STRATEGIC MARKETING MANAGEMENT
Prerequisite: 600 or equivalent. Managerial assessments of opportunities, threats as explored are the development and management of appropriate strategic marketing plans, and their implementation.

603 MARKETING OF SERVICES
Prerequisite: 600 or permission of instructor. Examines marketing strategies within the service industry. Focuses on both profit and nonprofit work, including transportation, financial, and nonprofit (e.g. education, social organizations). Product support services are also covered.

620 BUSINESS RESEARCH METHODS
Prerequisites: 660, 661 and 602. Covers the scientific methods as well as the gathering and analysis of information to identify opportunities and solve problems within a business organization.

630 CONSUMER BEHAVIOR
Prerequisite: 600. Examines the marketplace behavior of individuals, households and organizations. Focus is placed on integrating theoretical models with managerial applications.

655 MARKETING COMMUNICATIONS
Prerequisite: 600. The total range of marketing communication tools are examined individually and as the context of planning, developing, and implementing a systematic and integrated marketing communications program.

670 COMPETITIVE BUSINESS STRATEGY
Prerequisite: 600. Investigation of competitive business strategy from an industry perspective. The course presents a framework which can be used to understand and develop competitive strategies.

688 APPLICATIONS OF MARKETING THEORY
Prerequisite: 600. Examines marketing theories and their applications to business problems solving and decision making. Selected readings and field projects are used to enhance the student's managerial skills.

697 INDEPENDENT STUDY IN MARKETING
(May be repeated for a total of six credits) Focus on special topics of study and research in marketing on an independent basis.

PROFESSIONAL 6700:

598 PROFESSIONAL RESPONSIBILITY
Prerequisite: Nine graduate credits. Seminar on the professional responsibilities of business men and women to make them and the business organization in which they work more responsible decision makers.

692 INTERNATIONAL BUSINESS
Prerequisite: Nine graduate credits. Enhances understanding of global business issues, present relevant trends and updates, facilitates cross-cultural interaction, and explores applied practices of international business.

694 APPLIED BUSINESS DOCUMENTATION AND CONTACT
This course is designed to offer a practical approach to the skills and strategies for handling specialized documents, contact protocols, and business presentations.

695 INTERNSHIP IN BUSINESS
1-3 credits
Prerequisite: permission of instructor. On-the-job experience with cooperating private and public business organizations. Individual assignments made by supervising faculty member. Periodic reports and research papers required. Credit/No credit.

696 SPECIAL TOPICS IN PROFESSIONAL DEVELOPMENT
1 credit
Prerequisite: 695. Special topics and current issues. May be repeated with change of subject, not to exceed 4 credits.

698 COLLOQUIUM IN BUSINESS
1-2 credits
Prerequisite: permission of graduate director. Study of business administration through seminar of several lectures in business research and practice. A broad range of topics in business research and issues will be discussed by guests, faculty and graduate students. May be repeated, but will not satisfy degree requirements Credit/No credit.

INTERNATIONAL BUSINESS 6800:

605 INTERNATIONAL BUSINESS ENVIRONMENTS
Prerequisites: All MBA foundation courses. This course is intended to develop an understanding of the global business environment, its boundaries and the integrated functions of the multinational corporation.

630 INTERNATIONAL MARKETING POLICIES
Explores the problems of formulating and implementing marketing strategies and tactics within complex and changing multinational organizations and international markets. A planning framework is emphasized.
685 MULTINATIONAL CORPORATIONS
A course designed to develop an understanding of global businesses, their functions, structures, and strategic operations. 3 credits

690 SEMINAR IN INTERNATIONAL BUSINESS
A course covering major issues in international business. 3 credits

697 INDEPENDENT STUDY IN INTERNATIONAL BUSINESS
(If required by the student for a total of 6 credits) Prerequisites: Graduate standing and permission of instructor. Focus on special topics of research and investigation in international business. 1-3 credits

Fine & Applied Arts

ART

7100:

590 ART IN THE UNITED STATES BEFORE WORLD WAR II
Survey, 13 lecture-credit hours. Introduction to the development of art in the United States from earliest evidence to World War II. 3 credits

601 SPECIAL TOPICS IN HISTORY OF ART
A lecture course focusing on a particular period, place, or artist. May be repeated when a different subject is indicated. 1-3 credits

524 MUSICOLOGY
Lecture course dealing with museum operations, including collections, staffing, administration, storage, and conservation and presentation. 3 credits

505 HISTORY OF ART SYMPOSIUM
May be repeated for credit when a different subject is indicated. Prerequisite: One history course beyond 201 or permission of instructor. Lecture, individual research and evaluation of group presentations related to a specific time period or an artistic problem. 1-3 credits

590 WORKSHOP IN ART
May be repeated for credit when a different subject or level of investigation is indicated. 1-4 credits

591 ARCHITECTURAL PRESENTATIONS I
Prerequisites: Junior-level or permission. Studio practice in architectural design and presentation. 3 credits

592 ARCHITECTURAL PRESENTATIONS II
Prerequisites: 4925/9. Continuation of concepts covered in Architectural Presentations I with additional work in color rendering techniques. Emphasis of a variety of rendering mediums. 3 credits

597 INDEPENDENT STUDIES
May be repeated. Prerequisites:艺术 majors: advanced standing in an area chosen and permission of instructor. For non-art majors: permission of instructor. Independent investigation in depth of aesthetic and technical problems within a studio selected area of specialization. Student must present in writing a proposed study plan and time schedule for instructor approval. 1-3 credits

598 SPECIAL PROBLEMS IN HISTORY OF ART
May be repeated for credit when a different subject or level of investigation is indicated. Prerequisites: 14 credits in art history and permission of instructor. Individual research in an art history centered around limited topic, such as specific time period, history of specific techniques, a single artist or movement in art history. No more than 10 credits will be counted toward major. 3 credits

FAMILY AND CONSUMER SCIENCES

7400:

569 NUTRITION COMMUNICATION AND EDUCATION SKILLS
4 credits
Prerequisite: 242 and 313; 3 or 3.6. Theory and development of communication and education skills essential to dietetic practice; interpersonal communication; interviewing; nutrition counseling. 4 credits

569 FAMILY LIFE PATTERNS IN THE ECONOMICALLY DEPRESSED HOME
2 credits
Study of family life orientation and lifestyle patterns among economically depressed with emphasis on nutrition, psychological and socioeconomic depression on family members throughout family life span. 2 credits

523 ADVANCED FOOD PREPARATION
Prerequisite: 140 or 246 or permission of instructor. Study of advanced techniques of food preparation. Preparation and application to interpretation of classic and foreign cuisines. Emphasis on individualized experience, skill development and evaluation of procedures and results. 3 credits

504 ADOLESCENCE IN THE FAMILY CONTEXT
Prerequisites: 252, 163 or permission of instructor. The influence of adolescent behavior on the family and the influence of the family environment on adolescent development. 3 credits

556 FAMILY FINANCIAL MANAGEMENT
Prerequisite: 140, 246, 165 or permission of instructor. Analysis of family financial problems and the resolution, decision making, and financial practices behavior. Cases, exercises, problems and computer analysis. 3 credits

518 HISTORY OF INTERIOR DESIGN I
The study of furnishings, interiors, and architecture from antiquity through the eighteenth century, with emphasis on the socio-cultural influences shaping their development. 4 credits

519 HISTORY OF INTERIOR DESIGN II
The study of eighteenth-century through the nineteenth-century furnishing and interiors, with emphasis on the socio-cultural influences shaping their development. 4 credits

480 EXPERIMENTAL FOODS
Prerequisites: 242 and 300. Theory and methods used in experimental food studies. Analytical procedures in sensory and instrumental evaluation of food quality. Individual research emphasized. Lecture-laboratory. 3 credits

520 PROFESSIONAL IMAGE ANALYSIS
Prerequisites: Senior status. Comparison of theories associated with projecting and maximizing an appropriate professional image consistent with career goals and objectives. 3 credits

524 NUTRITION AND THE LAW
Prerequisite: 425. Study of the physiological basis for nutritional requirements, interesting factors which affect growth, development, metabolism and nutritional status from conception through the life cycle. 3 credits

526 ADVANCED TEXTILES
Prerequisite: 521. Evaluation of physical, aesthetic, comfort, care and durability properties of textile products and testing procedures to determine suitability for desired end uses. 3 credits

527 CLOTHING ISSUES IN TEXTILES AND APPAREL
Prerequisite: 526. The examination of textiles and apparel industries emphasizing an economic perspective. 3 credits

532 INTERIOR TEXTILES AND PRODUCT ANALYSIS
Prerequisite: 526. Examination, specification, and analysis of products for interiors with emphasis on trade classifications, selection criteria, economic factors, and legislative concerns. 3 credits

535 PRINCIPLES AND PRACTICES OF INTERIOR DESIGN
Prerequisites: 143 or 145 or 434. Study of the fundamental aspect of interior design, business procedures, marketing of home furnishings and principles and psychology of marketing home furnishings. 3 credits

536 TEXTILE CONSERVATION
Prerequisites: 121, 123, 127 Principles and practices of textile conservation with emphasis on procedures appropriate for collectors and small historical agencies. 3 credits

537 HISTORIC COSTUME
Study of western costume and textiles from antiquity to 1830, with emphasis on social-cultural influences. 3 credits

538 HISTORY OF FASHION
Prerequisite: 127. Study of western fashion, styles, and designers from the nineteenth century to present, with emphasis on socio-cultural influences. 3 credits

551 CHILD IN THE HOSPITAL
Prerequisite: 246, course or permission of instructor. Seminar dealing with clinical needs and special problems of hospitalized child and family. Literature related to effects, interaction, illness, stress and evaluation of strategies for coping. 4 credits

554 PRACTICUM EXPERIENCE IN A CHILD LIFE PROGRAM
Prerequisite: 455/551. Field experience in a pediatric program and classroom activities including critical analysis of a current function program and program administration. 3 credits

560 ORGANIZATION AND SUPERVISION OF CHILD-CARE CENTERS
Theories and principles and procedures involved in establishing and operating centers for infants, toddlers, preschool and school-age children. 3 credits

561 CASE MANAGEMENT FOR CHILDREN AND FAMILIES I
Provides an overview of Case Management based in a multi-systems collaborative context. Includes roles, values, principles, state and service systems, and service coordination. 3 credits

562 CASE MANAGEMENT FOR CHILDREN AND FAMILIES II
Prerequisite: 461/561. Provides in-depth exploration of case management principles and practice. Emphasis on process and function, assessment, case-systems service planning and coordination, advocacy, and cultural diversity. 3 credits

566 PRACTICUM IN CROSS-SYSTEMS CASE MANAGEMENT FOR CHILDREN AND FAMILIES
Prerequisites: 461/561, 462/562. For 600-level, to apply experience in cross-systems case management in extending the food supply and the physical and biological effects of processing and storage, onsite tours of processing plants. 3 credits

567 CULTURAL DIMENSIONS OF FOOD
Prerequisite: 462/562. Exploration of cultural geography and socio-cultural influences on development of food habits. Emphasis on evolution of diet, effects of religion, education, gender roles, media. 3 credits

575 ANALYSIS OF FOOD
Prerequisite: 250/50. General chemistry or equivalent. Comprehensive course in the theory and practice of food analysis by classical and modern chemical and instrumental methods. Principles emphasized by experimentation and demonstration. 3 credits

576 DEVELOPMENTS IN FOOD SCIENCE
Prerequisite: 248. Study of the chemistry and physics of food components, affecting characteristics of foods. Critical evaluation of current work and applied research emphasized. 3 credits

581 COMMUNITY NUTRITION I-LECTURE
Prerequisite: 248/548. Speech analysis of socio-cultural aspects of community assessment, program implementation and evaluation, and applications for nutrition services. 1 credit

581 COMMUNITY NUTRITION II-LECTURE
Prerequisite: 248/548 and Concurrent: 480/580. Field placement in an agency offering nutrition services. Study of the agency's goals, organization, and philosophy of nutrition services. 1 credit

582 COMMUNITY NUTRITION II-LAB
Prerequisites: 480/580 and Concurrent: 482/582. Field placement in an agency offering nutrition services. Study of the agency's goals, organization, and philosophy of nutritional care. 1 credit

584 ORIENTATION TO THE HOSPITAL SETTING
Prerequisite: 265, comparable course or permission of instructor. Focuses on hospital as a major social institution; introduces procedures and functions of the hospital; role played by various hospital personnel plus cursory knowledge of medical terminology, common childhood diseases, illnesses and injuries. 2 credits

Graduate Courses

107
CHORAL LITERATURE 2 credits 
Prerequisite: permission of instructor. Study in depth of style, structure, technical demands, manner of setting text, and performance problems found in masterworks by great chorals composers of nine centuries.

DEVELOPMENT OF OPERA 2 credits 
Prerequisite: permission of instructor. Growth and development of opera from 1580 to present, includes detailed examination of structural and stylistic changes as well as performance practices.

BEGINNING ITALIAN I FOR SINGERS 2 credits 
Instruction is given in pronunciation, and syntax in the Italian language. Classroom drills will involve reading in Italian with special attention to pronunciation for singing.

BEGINNING ITALIAN II FOR SINGERS 2 credits 
Prerequisite: 605 or equivalent. Extension of pronunciation and syntax in the Italian language. Classroom drills will involve reading in Italian with special attention to pronunciation for singing.

SEMINAR IN MUSIC OF THE WESTERN HEMISPHERE 2 credits 
Prerequisite: permission of instructor. Designed to develop understanding of works and cultures of Western Hemisphere through study of music of each major area. Research and writing in areas of special interest.

PEDAGOGY OF JAZZ IMPROVISATION 3 credits 
A detailed study of the methods and materials as they relate to the teaching of jazz improvisation.

FOUNDATIONS AND PRINCIPLES OF MUSIC EDUCATION 3 credits 
Prerequisite: permission of instructor. Study of historical, philosophical, sociological and psychological concepts among which public school music programs function.

PRACTICES AND TRENDS IN MUSIC EDUCATION 3 credits 
Prerequisite: permission of instructor. In-depth exploration of innovative practices and trends in music education. Findings of research and practice related to prevailing situations in public school programs.

INSTRUCTIONAL PROGRAMMING IN MUSIC FOR THE MICROCOMPUTER 3 credits 
Prerequisite: 402/503/603 Introduction to programming languages for the microcomputer including BASIC, Pascal and Assembler. Programming will be directed toward music educational concepts.

MEASUREMENT AND EVALUATION IN MUSIC 3 credits 
Prerequisite: permission of instructor. Study and application of principles of music aptitude, music achievement, personality assessment, and research as a function of evaluation.

MUSICAL STYLES AND ANALYSIS I 3 credits 
Prerequisite: permission of instructor. Detailed study of compositional techniques and stylistic traits observed in Western music 1600-1800.

MUSICAL STYLES AND ANALYSIS II 3 credits 
Prerequisite: permission of instructor. Detailed study of compositional techniques and stylistic traits observed in Western music 1800-1900.

MUSICAL STYLES AND ANALYSIS III 3 credits 
Prerequisite: permission of instructor. Detailed study of compositional techniques and stylistic traits observed in Western music from Monteverdi through Beethoven and Strauss.

MUSICAL STYLES AND ANALYSIS IV 3 credits 
Prerequisite: permission of instructor. Methodology of theory teaching in 19th Century. Emphasis on applying philosophies of music theory instruction as noted from texts on subject. Recent innovations and techniques of teaching, as such programmed material, computer-assisted instruction, study.

COMPUTER ANALYSIS IN MUSIC 2 credits 
Prerequisite: a 100 level course in the 615-618 series. A systematic study of analytical techniques in music which make use of the computer, Hands-on experience with music encoding, and manipulation, interactive, systems and program writing as related to music analysis.

MUSIC HISTORY SURVEY: MIDDLE AGES AND RENAISSANCE 2 credits 
Prerequisite: permission of instructor. Historical and stylistic analysis of all aspects of music from Middle Ages and Renaissance. Research and writing in areas of special interest.

MUSIC HISTORY SURVEY: BAROQUE 2 credits 
Prerequisite: permission of instructor. Historical and stylistic analysis of Baroque music major musical periods and periods for Baroque music. Recent innovations and techniques of teaching, as such programmed material, computer-assisted instruction, study.

MUSIC HISTORY SURVEY: CLASSIC AND ROMANTIC 2 credits 
Prerequisite: permission of instructor. Historical and stylistic analysis of Classic and Romantic music major musical periods for Classic and Romantic music. Recent innovations and techniques of teaching, as such programmed material, computer-assisted instruction, study.

MUSIC HISTORY SURVEY: MUSIC SINCE 1900 2 credits 
Prerequisite: permission of instructor. Historical and stylistic analysis of music since 1900. Major celebrated composers and their works.

GRADUATE BIBLIOGRAPHY AND RESEARCH IN MUSIC 7-3 credits 
Prerequisite: graduate music degree of equivalent. Examination of all types of published music materials, research methods and professional publishing, field trips to music libraries, computerized music research.

COMPUTER STUDIO DESIGN 2 credits 
The design and maintenance of a computer lab. Emphasis on hardware and software setup to maximize function and minimize maintenance.

TEACHING AND LITERATURE: BRASS INSTRUMENTS 2 credits 
Prerequisite: permission of instructor. Research in current trends and issues in brass teaching techniques and appropriate literature.

TEACHING AND LITERATURE: WOODWIND INSTRUMENTS 2 credits 
Prerequisite: permission of instructor. Research in current trends and issues in woodwind teaching techniques and appropriate literature.

TEACHING AND LITERATURE: STRING INSTRUMENTS 2 credits 
Prerequisite: permission of instructor. Research in current trends and issues in string teaching techniques and appropriate literature.

640.123 ADVANCED ACCOMPANYING I, II, III, IV 1 credit each 
Prerequisite: Graduate standing in keyboard performance and/or accompanying with emphasis on the performance of the instrumentalist. An approach to the principles of accompanying: sight reading, standard repertoire, and transcription.

647 MASTER'S CHAMBER RECITAL 1 credit 
Prerequisite: permission of instructor. Composition student will present a recital of chamber music compositions of their own choosing for at least one-half hour in length written while in residence at the University. Student will actively organize and coordinate the recital and will also participate either as performer or conductor.

653 ELECTRONIC MUSIC 2 credits 
The theory and practice of electronic music composition. Developing a practical understanding of sound synthesis and MIDI in a digitized audio multi-track recording studio.

657 STUDENT RECITAL 6 credits 
Required of all music majors. Forum for student and faculty presenting lectures, recitals, and concerts is organized for students.

660 VOCAL PEDAGOGY 3 credits 
Prerequisite: permission of instructor. Indepth study of subjects dealing with teaching of voice and vocal production. Principles governing vocal production and application of vocal pedagogy.

661 ADVANCED SONG LITERATURE 3 credits 
Prerequisite: permission of instructor. Systematic study of song literature presented chronologically according to national worlds of composition. Stylistic compositional characteristics and representatives works of all major composers of solo song literature.

675 SEMINAR IN MUSIC EDUCATION 2 credits 
May be repeated for a total of 6 credits. Intensive examination of special topics in the field of music education.

676 WORKSHOP IN CHORAL MUSIC EDUCATION 2 credits 
A seminar dealing with the selection of choral literature for multiple-choral programs at all levels. Appraisal of score preparation, programming, rehearsal, and vocal techniques will be studied.

679 ADVANCED PROBLEMS IN MUSIC 2 credits 
Prerequisite: permission of instructor. Studies of research projects/research relating to problems in music.

680 GRADUATE RECITAL 2 credits 
Prerequisite: permission of instructor. Recital program and presentation as a requirement and any adequate degree option. If a recital document is to be written in conjunction with the recital, add 699 for the additional credit. Once passed, may not be repeated for credit.

699 MASTER'S THESIS/PROJECT 2 credits 
Prerequisite: permission of graduate advisor. Research related to the completion of the master's thesis, project, or recital document written in conjunction with the graduate recital, depending on the student's degree option.

MUSICAL ORGANIZATIONS 7510: 

521 GUITAR CHAMBER MUSIC 1 credit 
Prerequisite: Open to all upper class instrumentalists and vocalists. Guisarmists must have taken Guisarm 109, 7510. Study, coaching, and performance of major works for guitar with other instruments or voices. Major conducted ensemble for guitar majors.

522 AKRON SYMPHONY CHORUS 1 credit 
Open to University and community members who study. Prospective members should contact the music department before attending. Performs with Akron Symphony Orchestra.

523 UNIVERSITY SYMPHONY ORCHESTRA 1 credit 
Membership by audition. Organization devoted to study of orchestral literature. Full-length concerts as well as special University appearances. Major conducted ensemble.

526 SYMPHONIC BAND 1 credit 
Membership by audition. The University Symphonic Band is the most select band at the University and performs the most demanding and challenging music available.

527 VACCHAL CHAMBER ENSEMBLE 1 credit 
Membership open to those students in applied voice study. Coaching and rehearsal of solo and ensemble literature for voices from operatic, oratorio and lieder repertories.

528 BRASS ENSEMBLE 1 credit 
Membership open to those students in applied voice study. Coaching and rehearsal of solo and ensemble literature for voices from operatic, oratorio and lieder repertories.

529 STRING ENSEMBLE 1 credit 
Membership by audition. Indepth study and performance of chamber music literature with specific emphasis on string quartets and piano trio.

530 OPERA WORKSHOP 1 credit 
Membership by audition. Musical and dramatic group study of excerpts from operatic repertoire, including annual production of standard operas and/or contemporary chamber work with staging, costumes and scenery.

531 PERCUSSION ENSEMBLE 1 credit 
Membership by audition. Study and performance of literature for various percussion groups. Develops skill in ensemble performance.

621 WOODWIND ENSEMBLE 1 credit 
Membership by audition. Study and performance of wind literature from all periods and all combinations of woodwinds. Develops performance skills and knowledge of woodwind literature.

622 CHAMBER ORCHESTRA 1 credit 
Membership by audition. Organization designed to study for performance the substantial repertoire for small orchestra. Open to a student of advanced ability.

624 KEYBOARD ENSEMBLE 1 credit 
Membership by audition. Study and performance of literature for various percussion groups. Develops skill in ensemble performance.

710 SMALL ENSEMBLE-ADVENTURED 1 credit 
Co-directed Ensemble, Early Music Ensemble and Contemporary Music Ensemble. Each is a group of diverse instruments which rehearse and perform a selected body of music.

720 CONCERT CHORUS 1 credit 
Membership by audition. Highly select mixed choir. Performing choral literature from various eras, periods, repertory, campus, regional and national performances. "Major conducted ensemble" for vocal majors.

721 UNIVERSITY SINGERS 1 credit 
Membership by audition. Mixed ensemble devoted to performance of a wide variety of choral literature from classical to popular, "Major conducted ensemble" for vocal majors.
APPLIED MUSIC 7520:

521-569 APPLIED MUSIC FOR MUSIC MAJORS

The following courses are numbered for a student majoring in one of the programs in the Department of Music. Courses levels correspond approximately to class standing 100 for freshmen, 200 for sophomores, etc. A student may progress up one level by successfully completing an applied music jury, usually offered in the spring semester. No more than eight credits at the 100, 200 or 300 level may apply in music degree programs; no such limit exists for the 400 level.

521 PERCUSSION
522 CLASSICAL GUITAR
523 HARP
524 VOICE
525 PIANO
526 ORGAN
527 VIOLIN
528 VIOLA
529 CELLO
530 STRING BASS
531 TRUMPET OR CORNET
532 FRENCH HORN
533 TROMBONE
534 BARITONE
535 Tuba
536 FLUTE OR PICCOLO
537 OBOE OR ENGLISH HORN
538 CLARINET OR BASS CLARINET
539 BASSOON OR CONTRABASSOON
540 SAXOPHONE
541 HARPSCORD
542 PRIVATE LESSONS IN MUSIC COMPOSITION

2 or 4 credits each

(521-569) Prerequisites: 7500:250 and permission of instructor; 7500:452 recommended. Private instruction in composition: Primarily for student whose major is theory-composition.

569 JAZZ VOCAL STYLES

601-661 GRADUATE STUDY IN APPLIED MUSIC

2 or 4 credits each

(601-661) Prerequisites: 250 or equivalent. Graduate standing and/or permission of instructor determined through audition.

621 PERCUSSION
622 CLASSICAL GUITAR
623 HARP
624 VOICE
625 PIANO
626 ORGAN
627 VIOLIN
628 VIOLA
629 CELLO
630 STRING BASS
631 TRUMPET OR CORNET
632 FRENCH HORN
633 TROMBONE
634 BARITONE
635 Tuba
636 FLUTE OR PICCOLO
637 OBOE OR ENGLISH HORN
638 CLARINET OR BASS CLARINET
639 BASSOON OR CONTRABASSOON
640 SAXOPHONE
641 HARPSCORD
642 APPLIED COMPOSITION

661 JAZZ PERCUSSION

2 credits

Prerequisites: 526, 528, 530, 532, 534, 536 or equivalent, and/or equivalent. An introduction to the use of percussion techniques and styles in jazz performance.

662 JAZZ GUITAR

2 credits

Prerequisites: 526, 528, 530, 532, 534, 536 or equivalent. An introduction to the techniques and styles of jazz guitar performance.

663 JAZZ ELECTRIC BASS

664 JAZZ PIANO

665 JAZZ TRUMPET

666 JAZZ TROMBONE

667 JAZZ SAXOPHONE

668 JAZZ COMPOSITION

669 JAZZ VOCAL STYLES

COMMUNICATION 7600:

501 HISTORY OF JOURNALISM IN AMERICA

3 credits

A review and analysis of the historical evolution of journalism in America, focusing primarily on newspapers, magazines, radio, television.

508 WOMEN, MINORITIES, AND NEWS

3 credits

Study of images of women and minorities in U.S. news along with the power women and minorities exert as decision-makers in the news industry.

516 NEW MEDIA WRITING

3 credits

Prerequisite: 201 or permission of the instructor. A class that will look at new media's professional practice and online publishing. Students will work on writing and reporting skills needed in New Media.

517 NEW MEDIA PRODUCTION

3 credits

Prerequisites: 315 or permission of the instructor and 516. Covers practical application of software to create online multimedia documents and explore design ideas for New Media content.

520 MAGAZINE WRITING

3 credits

An advanced writing class designed to develop the specialized reporting, researching, and writing skills needed in consumer and specialized business magazines today.

525 COMMERCIAL ELECTRONIC PUBLISHING

3 credits

An advanced class that explores the principles and concepts in the design and delivery of electronic publishing of magazines.

535 COMMUNICATION IN ORGANIZATIONS

3 credits

Overview of the communication processes in organizations, including interdepartmental, network, superior-subordinate, formal and informal communication.

536 ANALYZING ORGANIZATIONAL COMMUNICATION

3 credits

Prerequisite: 535 or permission. Methodology for in-depth analysis and application of communication in organizations: team building, conflict management, communication flow. Individual and group projects, simulations.

537 TRAINING METHODS IN COMMUNICATION

3 credits

Prerequisites: 345 or permission. Principles and concepts in the design and delivery of communication training programs: integration of theory and methodology, presentation skills, matching methods and learner needs.

538 HEALTH COMMUNICATION

3 credits

This course presents an overview of health communication theory and research issues in interpersonal, small group, organizational, public relations, and mass media contexts.

545 THEORY OF GROUP PROCESSES

3 credits

Group communication theory and conference leadership as applied to individual projects and seminar reports.

557 PUBLIC SPEAKING IN AMERICA

3 credits

Survey and critical analysis of major speakers and speeches and speech movements in American history. Examines how style and content of American speaking influences events and reflected their times.

562 ADVANCED MEDIA WRITING

3 credits

Prerequisites: 201, 280, or equivalent. Practical applications of script writing principles and techniques, focusing on the skills and techniques required to finish an entire script.

566 AUDIO AND VIDEO EDITING

3 credits

Prerequisites: 280. Theory and practice of editing audio and video for broadcast and corporate applications.

568 NONLINEAR VIDEO EDITING

3 credits

Prerequisites: 280 or equivalent. Advanced nonlinear multi-track audio and video editing. Theory and practice of multi-track sound mix for video productions.

571 THEORIES OF RHETORIC

3 credits

An analysis of rhetorical theory, stressing the relationships among theories of rhetoric, oratory, and influence. Explores the formal laws that govern the film narrative and its stylistic elements.

590 COMMUNICATION WORKSHOP

13 credits

(590) May be repeated for a total of six credits. Group study or project investigating a particular phase of media not covered by other courses in curriculum.

593 PRODUCTION PRACTICUM

3 credits

Prerequisite: permission. Practical application of writing, directing, management, recording, and editing skills in problems in electronic media production.

601 INTRODUCTION TO GRADUATE STUDY IN COMMUNICATION

3 credits

Introduction to the ideas and scholarship that constitute the various research interests in the department.

603 EMPIRICAL RESEARCH IN COMMUNICATION

3 credits

An introduction to research methods and application of research and their application in studies of media research topics.

604 INTRODUCTION TO QUANTITATIVE RESEARCH IN COMMUNICATION

3 credits

Prerequisite: 603 or equivalent. An introduction to reading and understanding research designs and applying basic parametric and nonparametric descriptive and hypotheses testing statistical models in mass media communication.

606 COMMUNICATION PROBLEMS IN THE BASIC SPEECH COURSE

1 credit

Designed to train graduate students in methods and materials of introductory speech course. Required of all teaching graduate assistants.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>580</td>
<td>Early Intervention for Preschoolers</td>
<td>2 credits</td>
<td>Prerequisite: Graduate student. This course requires model programs currently being offered to at least five-year-old children, with and without disabilities at two levels. The course is designed for students interested in the aging population.</td>
</tr>
<tr>
<td>583</td>
<td>Communication Disorders, Geriatric Population</td>
<td>3 credits</td>
<td>(May not be repeated for a total of four credits.) Prerequisite: Permission. Group investigation of particular aspects of auditory-oral and auditory-perception not offered by other courses.</td>
</tr>
<tr>
<td>585</td>
<td>Teaching and Learning Strategies in Speech-Language Pathology</td>
<td>2 credits</td>
<td>Prerequisite: Graduate student. Current practice related to clinical intervention designed for individuals with developmental disabilities. Explores the use of the natural environment and the computer as intervention tools.</td>
</tr>
<tr>
<td>589</td>
<td>Workshop: Speech-Language Pathology and/or Audiology</td>
<td>1-3 credits</td>
<td>(May be repeated for a total of four credits.) Prerequisite: Permission. Group investigation of particular aspects of auditory-oral and auditory-perception not offered by other courses.</td>
</tr>
<tr>
<td>601</td>
<td>Administration and Supervision in Speech and Hearing Programs</td>
<td>4 credits</td>
<td>Prerequisite: Permission of instructor. Organization and management of speech and hearing programs in voluntary and official agencies. Philosophy and methodology in supervision of services.</td>
</tr>
<tr>
<td>610</td>
<td>Instrumentation in Speech Pathology and Audiology</td>
<td>2 credits</td>
<td>Prerequisites: Graduate status. Perusal of current theories and research related to neuropsychological, auditory, diagnosis, classification, and treatment of adults with neuropsychologically based communication disorders.</td>
</tr>
<tr>
<td>619</td>
<td>Research Methods in Communicative Disorders I</td>
<td>3 credits</td>
<td>Introduction to experimental design in field of communicative disorders.</td>
</tr>
<tr>
<td>621</td>
<td>Research Methods in Communicative Disorders II</td>
<td>2 credits</td>
<td>Prerequisite: Advanced methods in experimental design. Development and analysis of research questions.</td>
</tr>
<tr>
<td>621</td>
<td>Reading</td>
<td>2 credits</td>
<td>Prerequisite: Graduate status. Current practice related to clinical intervention designed for individuals with developmental disabilities. Explores the use of the natural environment and the computer as intervention tools.</td>
</tr>
<tr>
<td>624</td>
<td>Survey of Communication Theory</td>
<td>3 credits</td>
<td>(May be repeated for a total of four credits.) Prerequisite: Permission. Group investigation of particular aspects of auditory-oral and auditory-perception not offered by other courses.</td>
</tr>
<tr>
<td>625</td>
<td>Theory of Communication and Communication Systems</td>
<td>3 credits</td>
<td>Prerequisite: Graduate status. Current practice related to clinical intervention designed for individuals with developmental disabilities. Explores the use of the natural environment and the computer as intervention tools.</td>
</tr>
<tr>
<td>628</td>
<td>Contemporary Public Relations Theory</td>
<td>3 credits</td>
<td>Prerequisite: Demonstrated competence in either photography, film, or video production and performance of instructor. Analysis of communication principles and the design of solutions. Marketing of film, video, and television. Emphasis on production research and writing in various media formats. Design and production of a major project.</td>
</tr>
<tr>
<td>631</td>
<td>Seminar: Advanced Production Design I</td>
<td>2 credits</td>
<td>Prerequisite: Completion of projects in 631 and an opportunity for students to work on additional media.</td>
</tr>
<tr>
<td>635</td>
<td>Issues in Legal Regulation of the Media</td>
<td>3 credits</td>
<td>Prerequisites: Permission of instructor. A study of the role and function of ethical decision-making in affecting the media.</td>
</tr>
<tr>
<td>645</td>
<td>Intercultural Communication Theory</td>
<td>3 credits</td>
<td>Prerequisites: Analysis of the impact on the communication process of cultural difference between communicators; examination of the role of language in intercultural communication.</td>
</tr>
<tr>
<td>655</td>
<td>Theories of Argument and Persuasion</td>
<td>3 credits</td>
<td>Prerequisite: Undergraduate course in argumentation and persuasion, or permission of instructor. Analysis of persuasive relations related to attitude formation and change.</td>
</tr>
<tr>
<td>660</td>
<td>Communication Criticism</td>
<td>3 credits</td>
<td>Prerequisites: Demonstrated competence in either photography, film, or video production and performance of instructor. Analysis of communication principles and the design of solutions. Marketing of film, video, and television. Emphasis on production research and writing in various media formats. Design and production of a major project.</td>
</tr>
<tr>
<td>675</td>
<td>Seminar on Rhetorical Criticism</td>
<td>3 credits</td>
<td>(May be repeated for a total of six credits.) A discussion of special problems and methods involved in advanced rhetoric. Critical review of major topics of discourse.</td>
</tr>
<tr>
<td>676</td>
<td>Seminar in Rhetorical Theory</td>
<td>3 credits</td>
<td>Concentrated study and research of ancient, modern, or contemporary writers on some special topics in rhetoric.</td>
</tr>
<tr>
<td>680</td>
<td>Rhetorical Elements Social Movements</td>
<td>3 credits</td>
<td>Experiments to determine the role of comic rhetorical discourse in affecting change. Focus on various rhetorical methodologies for understanding social movements and civic studies.</td>
</tr>
<tr>
<td>683</td>
<td>Graduate Communication Internship</td>
<td>2 credits</td>
<td>Prerequisite: Permission of instructor. A study of advanced communication skills. Students are encouraged to develop personal professional viewpoints.</td>
</tr>
<tr>
<td>687</td>
<td>Studies in Communication Media/Television</td>
<td>3 credits</td>
<td>Prerequisites: Permission of instructor. A study of the role and function of ethical decision-making in affecting the media.</td>
</tr>
<tr>
<td>701</td>
<td>ADVANCED COMMUNICATION STUDIES</td>
<td>2 credits</td>
<td>Prerequisite: Permission of instructor. A study of advanced communication skills.</td>
</tr>
<tr>
<td>695</td>
<td>Graduate Research in Communication (May be repeated for a total of six credits.) Permission of instructor. A study of advanced communication skills.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>701</td>
<td>Master's Project/Production (May be repeated for a total of six credits.) Permission of instructor. A study of advanced communication skills.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>695</td>
<td>Master's Thesis (May be repeated for a total of six credits.) Permission of the school director.</td>
<td>2 credits</td>
<td>Master's Thesis. Theoretical basis for pure tone, speech tests, and acoustic impedance measurement. Review of clinical tests and current literature relative to above tests.</td>
</tr>
</tbody>
</table>

**Speech-Language Pathology and Audiology**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites/Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>508</td>
<td>Aspects of Normal Language Development</td>
<td>3 credits</td>
<td>(May not be repeated for a total of six credits.) Special topics in communication in areas of particular faculty expertise.</td>
</tr>
<tr>
<td>509</td>
<td>Augmentative Communication</td>
<td>3 credits</td>
<td>Prerequisite: 330 or 430/530 or permission of instructor. Overview augmentative communication system design, sound systems, and auditory-verbal education.</td>
</tr>
<tr>
<td>510</td>
<td>Multicultural Considerations for Communicators and Speech-Language Pathologists</td>
<td>2 credits</td>
<td>Prerequisite: 7700/570 or graduate standing. This course introduces the multicultural considerations faced by audiologists and speech-language pathologists providing services to families and individuals with multicultural backgrounds.</td>
</tr>
<tr>
<td>511</td>
<td>Speech-Language and Hearing Disorders in the Public Schools</td>
<td>2 credits</td>
<td>Prerequisite: 7700/570 or graduate standing. The course introduces the multicultural considerations faced by audiologists and speech-language pathologists providing services to families and individuals with multicultural backgrounds.</td>
</tr>
<tr>
<td>512</td>
<td>Organization and Administration: Public School Speech-Language Pathology Programs</td>
<td>2 credits</td>
<td>Prerequisites: Senior or graduate standing. For clinicians who plan to work in public school settings.</td>
</tr>
<tr>
<td>513</td>
<td>Organization and Administration: Public School Speech-Language Pathology Instrument Programs</td>
<td>2 credits</td>
<td>Prerequisites: Senior or graduate standing. For clinicians who plan to work in public school settings.</td>
</tr>
</tbody>
</table>
SOCIAL WORK

SOCIAL WORK I 7760:

501 SOCIAL WORK PRACTICE I 3 credits
Prerequisite: 276 or permission of instructor. Basic concepts and methods of social work practice, critical thinking skills, understanding and working with individuals and families.

502 SOCIAL WORK PRACTICE II 3 credits
Prerequisite: 401 or permission of instructor. Techniques and methods of social work practice for understanding and working with groups in various settings in our society.

503 SOCIAL WORK PRACTICE III 2 credits
Prerequisite: 401 or permission of instructor. Development of understanding and practice methods for utilizing community organization and social planning as social work process for problem solving and developing programs to meet needs.

504 SOCIAL WORK PRACTICE IV 3 credits
Prerequisite: 48 or permission of instructor. Professional social work practice with families in social agencies; the dynamics of family systems; assessment of family function and dysfunction, professional helping processes.

510 MINORITY ISSUES IN SOCIAL WORK 3 credits
Prerequisite: 276 or permission of instructor. Course open to prior or concurrently with 401 and one of the other courses (402, 403, 404). Racial, ethnic and cultural issues in social work related to various theoretical and practical perspectives, to various types of social problems, service agencies, individual family, group, community and societal contexts with an understanding of the methodological practices of the social work practitioners.

511 WOMEN'S ISSUES IN SOCIAL WORK 3 credits
Prerequisite: 276 or permission of instructor. Social work practice, knowledge and skills about welfare institutions and social policies in relation to women's issues and concerns in the United States.

525 SOCIAL WORK ETHICS 3 credits
Prerequisite: 276 or permission of instructor. Social Worker's code of ethics as applied to practice, problems and issues in social work.

527 HUMAN BEHAVIOR AND SOCIAL ENVIRONMENT I 3 credits
Prerequisite for 427; 276 or permission of instructor; for 527; permission of instructor. Social work perspective on human development across the life cycle. Human diversity approach consistent with the needs of social work students preparing for practice.

530 HUMAN BEHAVIOR AND SOCIAL ENVIRONMENT II 3 credits
Prerequisites for 430; 276, 427 or permission of instructor; for 530; permission of instructor. Emphasis on social work understanding of social development and growth within family as a system, groups, roles, organizations, community, and culture.

540 SOCIAL WORK RESEARCH I 3 credits
Prerequisite: 440 or permission of instructor. Human social work research. Role of social work researcher in the use of scientific methods in the conduct of practice and utilization of social work research as found in social work and social science literature for improvement and advancement of social work practice.

541 SOCIAL WORK RESEARCH II 3 credits
Prerequisite for 441-446 or permission of instructor; for 541; permission of instructor. Evaluation of social work intervention with individual, group and community. Process and critical judgment, decision making, and interpretation of research data involved in social work research.

545 SOCIAL POLICY ANALYSIS FOR SOCIAL WORKERS 3 credits
Prerequisite: 441, 276 or permission of instructor for 545; undergraduate social work degree or permission. Description, analysis and construction of social policy in social services; to understand forces and processes which maintain or change social policies, to predict consequences of social policies, and to establish goals for social policy development integrated in effective social work methodology.

546 SOCIAL NEEDS AND SERVICES FOR ELDERLY AND ADULTS 3 credits
Prerequisite: 276 or permission of instructor. Analysis of knowledge and principles of professional social work practice in understanding, development and provision of social services to meet needs of elderly and aged; social work in elderly welfare services; consideration of supportive, supplementary, and substitute services.

551 SOCIAL WORK IN CHILD WELFARE 3 credits
Prerequisite: 276 or permission of instructor. In-depth exploration of structure and functioning of social services designed to help children, and of practice of social work in child welfare services. Consideration of supportive, supplementary, and substitute services.

552 SOCIAL WORK IN MENTAL HEALTH 3 credits
Prerequisite: 276 or permission of instructor. Issues, organization, development, and methodologies of current professional social work practice in mental health settings.

553 SOCIAL WORK IN JUVENILE JUSTICE 3 credits
Prerequisite: 276 or permission of instructor. Understanding, development, and methodologies of current professional social work practice in juvenile justice settings. The theory and practice of juvenile justice work in the juvenile justice systems of the United States. Traditional procedures and recent developments, prevention, diversion and community outreach, legal concerns, case management, institutional functioning.

555 THE BLACK FAMILY 3 credits
Prerequisite: 276 or permission of instructor. Contemporary problems facing black families, male-female relationships, single parent households, race stress and identity, public policy, theoretical models, explaining development of the black family.

556 SOCIAL WORK IN HEALTH SERVICES 3 credits
Prerequisite: 276 or permission of instructor. Policies, programs and practice in health care setting: hospitals, mental health centers, internships in hospital or community settings, outpatient services, emergency services, clinics, visiting nurse services, nursing homes, pediatric services, self-help organizations.

557 ADVANCED PRACTICE WITH INDIVIDUALS 3 credits
Prerequisite: 401 or permission of instructor. Undergraduate social work advanced generalist or graduate. Advanced professional development of direct and indirect strategies for involvement to aid individuals in improving psychosocial functioning.

558 ADULT DAY CARE 3 credits
Prerequisite for 459: 276 or permission of instructor; for 558; permission of instructor. Planning, development, implementing, evaluating, and delivery of adult day-care services.

559 ADVANCE PRACTICE WITH THE MENTALLY ILL 3 credits
Prerequisite: 276 or permission of instructor. Application of social work principles in the provision of social services to meet the need of the mentally retarded and developmentally disabled, their families and their communities.

560 ADMINISTRATION AND SUPERVISION IN SOCIAL WORK 2 credits
Prerequisite: 401 or permission of instructor. Preparation for use of supervision; staff development in a social work agency. Examines the social work agency in its community as it functions as organizational goal-setting and program-implementation problems.

570 LAW FOR SOCIAL WORKERS 3 credits
Prerequisite: 276 or permission of instructor. Basic terminology, theories, principles, organization, and procedures of law will be explored along with the relationships between social work law and law and the responsibilities of the social worker.

575 SUBSTANCE ABUSE AND SOCIAL WORK PRACTICE 3 credits
Prerequisite: 276 or permission of instructor. Provides students with an understanding of the issues, skills and knowledge for successful social work practice with people involved in substance abuse.

580 SPECIAL TOPICS IN SOCIAL WORK AND SOCIAL WELFARE 1-3 credits
Prerequisite: permission of instructor. Analysis of current social work and social welfare theory, policy, and practice; innovative interventions and trends in delivery of services in relation to selected areas of concern. Topics and credits variable.

597 INDIVIDUAL INVESTIGATIONS IN SOCIAL WORK 1-3 credits
Prerequisites: permission of instructor. Examines the social work process with an emphasis on the value of critical thinking skills to engage in social problem/policy analysis.

601 FOUNDATION FIELD PRACTICUM 3 credits
Prerequisites: first of two field practicum courses to be taken in the first year of the MSW program. A two-semester, 400 clock hour supervised internship at a social service agency. Credit/noncredit. (Offered only fall Semester.)

602 FOUNDATION FIELD PRACTICUM 3 credits
Prerequisites: first of two field practicum courses to be taken in the first year of the MSW program. A two-semester, 400 clock hour supervised internship at a social service agency. Credit/noncredit. (Offered only spring Semester.)

603 ADVANCED FIELD PRACTICUM 3 credits
Prerequisites: first of two field practicum courses to be taken in the second year of the MSW program. A two-semester, 400 clock hour supervised internship in a social service agency based on the student's concentration and specialization. Credit/noncredit. (Offered only fall Semester.)

604 ADVANCED FIELD PRACTICUM 3 credits
Prerequisites: second of two field practicum courses to be taken in the second year of the MSW program. A two-semester, 400 clock hour supervised internship in a social service agency based on the student's concentration and specialization. Credit/noncredit. (Offered only Fall Semester.)

605 SOCIAL WORK PRACTICE WITH LARGE SYSTEMS 3 credits
Prerequisite: 501 or permission of instructor. Provides knowledge, skills, and strategies of social work practice with task groups, organizations and communities.

606 ADVANCED PRACTICE WITH SMALL SYSTEMS I 3 credits
Prerequisite: second level graduate student or permission of instructor. This course focuses on the professional assessment of individuals, families and small groups and the application of a range of theoretical perspectives.

607 ADVANCED PRACTICE WITH SMALL SYSTEMS II 3 credits
Prerequisite: 604 or permission of instructor. As a continuation of Advanced Practice with Small Systems I, this course focuses on the development and implementation of intervention strategies with and on behalf of small systems.

609 SOCIAL WORK PRACTICE WITH SMALL SYSTEMS 3 credits
Prerequisite: graduate student or permission of instructor. Provides the basic knowledge, skills, professional ethics and values necessary for effective social work practice with small client systems.

611 DYNAMICS OF RACISM AND DISCRIMINATION 3 credits
Prerequisite: graduate status or permission of instructor. Provides knowledge of analyzing and understanding the factors leading to racial, sex, gender, and the like, at micro and macro level.

622 FUNDAMENTALS OF RESEARCH I 3 credits
Prerequisite: graduate status or permission of instructor. This course provides an introduction to the concepts of scientific methodology, research processes, and the relationship between research and social work practice.

623 FUNDAMENTALS OF RESEARCH II 3 credits
Prerequisite: 622, statistics II, or permission of instructor. Provides students with an understanding of quantitative and qualitative methodologies and the use of descriptive and inferential statistics in analyzing research data.

631 HUMAN BEHAVIOR AND SOCIAL ENVIRONMENT: SMALL SOCIAL SYSTEMS 3 credits
Prerequisites: graduate status or permission of instructor. This course focuses on understanding the human behavioral and psychological development of people as individuals and as members of families and other small groups.

632 HUMAN BEHAVIOR AND SOCIAL ENVIRONMENT: LARGE SOCIAL SYSTEMS 3 credits
Prerequisites: 631 or permission of instructor. The course focuses on the human behavior of leaders as members of larger social systems including formal and informal organizations, communities and institutions.

646 SOCIAL WELFARE POLICY 1 3 credits
Prerequisite: graduate status or permission of instructor. Examines the historical, philosophical, and value bases of social welfare as well as the relationship between social work practice, public policy, and service delivery.

647 SOCIAL WELFARE POLICY II 3 credits
Prerequisite: 646 or permission of instructor. This course prepares students with the beginning skills to engage in social policy/analysis.
**ADVANCED STANDING INTEGRATIVE SEMINAR**  
6 credits  
Prerequisite: advanced standing. Provides an integrative view of social work practice with an emphasis on values, foundation knowledge and skills, and evaluation of professional interventions.

**SOCIAL WORK PRACTICE WITH GAYS AND LESBIANS**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course examines gay and lesbian culture and lifestyles, sexual orientation, discrimination based on sexual orientation, and intervention strategies appropriate to practice with gays and lesbians.

**PSYCHONOMICS AND SOCIAL WORK**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. An examination of the symptom, theories, and psychosocial aspects of mental illness, and the role of the social worker in the treatment of mental disorders.

**DIRECT PRACTICE RESEARCH**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. Provides students with advanced knowledge and skill in methodology of single system design and skills to implement an evaluation study of their intervention with clients.

**SUPERVISION AND STAFF DEVELOPMENT**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. An examination of the practice, functions, and theories of supervision: the impact of cultural, ethic, and racial differences in supervision/staff development and problems encountered.

**SOCIAL WORK ADMINISTRATION**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course focuses on supervisory and managerial roles and functions as they are carried out at different hierarchical levels in human service organizations.

**STRATEGIES OF COMMUNITY ORGANIZATION**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. Emphasizes the historical development and adoption of social community strategies used to identify community problems, and how to organize and empower diverse community groups.

**COMMUNITY ORGANIZATION AND PLANNING**  
3 credits  
Prerequisite: must have completed first year of master’s program. Required for all second year students concentrating on Macro Practice sequence. Prepares students to work in communities and in public and private agencies.

**COMMUNITY, ECONOMIC SYSTEMS AND SOCIAL POLICY ANALYSIS**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides an overview of a number of areas of study that are of concern to the community worker, and that form a basis for understanding economic systems and analyzing the political framework at federal, state, and local levels in the context of communities.

**PROGRAM EVALUATION**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides students with an understanding of evaluation methods and programs in the area of program evaluation and management, planning and development, and federal and state requirements.

**FISCAL MANAGEMENT OF SOCIAL AGENCIES**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides an introduction to the basic principles of fiscal management, including budgeting, financial planning, and management of social agencies.

**AGING AND SOCIAL WORK PRACTICE**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course focuses on the aging process and the changing role of social work service providers.

**AGING: POLICIES AND PROGRAMS**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides an examination and evaluation of aging programs and policies, demographic trends, and the changing role of social work service providers.

**SOCIAL WORK PRACTICE: FAMILY AND CHILDREN**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides an examination of the problems encountered by children and families during the life cycle, and explores intervention strategies and programs to address these needs and strengths.

**SOCIAL WELFARE POLICY AND SERVICES: FAMILY AND CHILDREN**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides an examination of the problems encountered by children and families during the life cycle, and explores intervention strategies and programs to address these needs and strengths.

**ADVANCED PRACTICE PERSPECTIVE IN SUBSTANCE ABUSE**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides an examination of the problems encountered by children and families during the life cycle, and explores intervention strategies and programs to address these needs and strengths.

**HEALTH CARE: PLANNING AND POLICY ISSUES**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides an examination of the problems encountered by children and families during the life cycle, and explores intervention strategies and programs to address these needs and strengths.

**EPIDEMIOLOGIC ANALYSIS OF HEALTH AND SOCIAL PROBLEMS**  
3 credits  
Prerequisite: second level graduate student or permission of instructor. This course provides an examination of the problems encountered by children and families during the life cycle, and explores intervention strategies and programs to address these needs and strengths.

---

**THEATER**  

**THEATRE**  

**THEATRE**  

**THEATRE**

---
Nursing

509 INTERNATIONAL HEALTH 3 credits
Preparation: Admission to MSN program. A comparison of nursing roles and responsibilities, in an international environment. The influence of education, ethics, government, demographics, and geography on health care will be considered.

553 SCHOOL NURSE PRACTICUM I 5 credits
Prerequisite: 550 or 555. Emphasis on primary health care nursing for primary school age children and adolescents with minor health/behavioral problems and chronic illnesses. The course focuses on specific nursing interventions related to primary health care settings. Multidisciplinary care planning and coordination are emphasized. The complex nature of these problems will be explored. May be repeated as new topics are presented. Group studies of special topics in nursing will be assigned.

562 ADVANCED PHYSIOLOGICAL CONCEPTS IN HEALTH CARE 3 credits
Prerequisite: 561. This course presents an in-depth study of physiological processes in the areas of normative, neuromuscular and cardiovascular physiologic alterations and their interrelationship with therapeutic agents.

589 SPECIAL TOPICS: NURSING 4 credits
May be repeated as new topics are presented. Selected topics in nursing. May not be used to meet requirements for the major in nursing. May be used for elective credit.

605 COMPUTER APPLICATIONS IN NURSING 2 credits
Prerequisite: Admission to Graduate Program. Computer systems influencing nursing practice, research, education, and national knowledge exchange are examined. The complex issues surrounding their use in nursing are explored.

607 POLICY ISSUES IN NURSING 2 credits
Prerequisite: Admission to Graduate Program. Policy analysis of policies issues that impact health care delivery to diverse population(s). Examine methods to shape policy, distribution, and allocation of resources.

608 PATHOPHYSIOLOGICAL CONCEPTS OF NURSING CARE 3 credits
Prerequisite: Admission to Graduate Program. Overview of human physiology and related ethical issues. The course focuses on specific nursing interventions related to physiological abnormalities.

619 ADVANCED ADULT/GERONTOLOGICAL ASSESSMENT 3 credits
Prerequisite: Admission to Graduate Program, permission of instructor; 609, 671. Advanced adult/gerontological assessment and clinical reasoning in primary health care nursing with introduction to differential diagnosis and clinical management.

612 ADVANCED CLINICAL PHARMACOLOGY 3 credits
Prerequisite: Admission to Graduate Program. Focuses on pharmacology and therapeutics for major pharmacologic agents used by Advanced Practice Nurses to manage adult/gerontological problems in primary health care settings.

625 NURSING INQUIRY I 3 credits
Prerequisite: Graduate level statistics, admission to Graduate Program. Concepts and ethical issues relating to scientific inquiry are examined, emphasizing the phases of the research proposal and student's role in critiquing analysis of research.

626 NURSING INQUIRY II 4 credits
Prerequisite: 608 or permission of instructor. Emphasis on development of competencies in scientific inquiry. Research practice will involve a pilot study, or bi preration in faculty research.

629 ADULT/GERONTOLOGICAL HEALTH NURSING I NP 3 credits
Prerequisite: Admission to Graduate Program; corequisite 620, 610. Research and theory integral to the nurse practitioner role of adults with selected common health problems. Emphasis on comprehensive assessment, health promotion, and risk reduction.

641 ADULT/GERONTOLOGICAL HEALTH NURSING II NP 4 credits
Prerequisite: 620, corequisite 692. Focuses on problems common to acute illness in adults in acute, chronic and residential care settings. Multidisciplinary care planning and coordination are emphasized, including transfers to community-based care.

642 ADULT/GERONTOLOGICAL HEALTH NURSING III NP 4 credits
Prerequisite: 620, 611; corequisite 692. Focuses on nursing care of middle aged/older adults and their families experiencing chronic illness. Emphasizes management of problems common to chronic care and rehabilitation.

655 PRACTICUM: ADULT/GERONTOLOGICAL HEALTH NURSING NP 4 credits
Prerequisites: 622; corequisite 694. Integration of nursing knowledge and skills with an adult/gerontological adult population and their families. Emphasis on implementation and evaluation of programmatic interventions.

662 POST-MSN ADULT/GERONTOLOGICAL PRACTICUM NP 3 credits
Prerequisite: 608, corequisite 680, 692. Primary health care with emphasis on complex acute and chronic illness states and acardiac/cardiomyopathic phenomena.

663 POST-MSN ADULT/GERONTOLOGICAL PRACTICUM II NP 4 credits
Prerequisites: 622, 680; corequisite: 694. Emphasis on very complex acute and chronic illness states and anorexia nervosa of the adult/gerontological adult.

664 RESOURCES MANAGEMENT IN NURSING SETTINGS 3 credits
Prerequisite: Admission to Graduate Program or permission of instructor. Examinations of financial and human resource management in nursing service settings, analyses impact of economic and labor relations on health care and nursing.

665 FISCAL MANAGEMENT IN NURSING ADMINISTRATION 3 credits
Prerequisite: Admission to Graduate Program or permission of instructor. Examinations of financial and human resource management in nursing service settings.

666 ORGANIZATIONAL BEHAVIOR IN NURSING SETTINGS 3 credits
Prerequisite: Admission to Graduate Program or permission of instructor. Examines organizational behavior theories related to systems analysis and assessment of organizational structure in nursing settings.

675 NURSE ANESTHESIA RESIDENCY I 4 credits
Prerequisites: 664, 685. The conceptual introduction to the second year student to the art and science of both obstetrical and pediatric anesthesia related theory, research, and practice.

678 PRACTICUM: NURSING ADMINISTRATION 5 credits
Prerequisite: Acceptance into Graduate School. This course presents an in-depth study of leadership and management theories are utilized to guide practice of the role of nurse administrator.

680 SCIENTIFIC COMPONENTS OF NURSE ANESTHESIA 3 credits
Prerequisite: Admission into the Nurse Anesthesia Program. The course presents content dealing with the chemical and physical components of anesthesia agents.

681 PHARMACOLOGY FOR NURSE ANESTHESIA 3 credits
Prerequisite: 680. The study of intravenous induction agents, injectable anesthetics and inhalation agents commonly used in the administration of general anesthesia. Includes use of muscle relaxants.

682 INTRODUCTION TO NURSE ANESTHESIA 2 credits
Prerequisite: Admission into the Nurse Anesthesia program. This course provides an overview of anesthetic concepts and test prepares students for their hospital residency. The course includes a lecture component and selected laboratory experiences.

684 PRINCIPLES OF ANESTHESIA 4 credits
Prerequisite: 680. This course focuses on the acquisition of basic skills related to nurse anesthesia care and administration of anesthetics agents, with a focus on equipment.

687 CLINICAL PHARMACOLOGY FOCUS 3 credits
Prerequisite: 684. Focuses on mechanisms of drug transport within the human body for inhaled and injected medications. The effects of ancillary drugs are also discussed.

690 PRINCIPLES OF PATHOPHYSIOLOGY 4 credits
Prerequisites: Admission to Graduate Program. Emphasis on major categories of pharmacologic agents used to manage acute/chronic health care problems. Consideration is given to differential diagnosis and clinical management.

693 ADVANCED PEDIATRIC/ADOLESCENT ASSESSMENT 3 credits
Prerequisite: Admission to Graduate Program. In-depth study of health care delivery to diverse populations. Focus is on the theoretical basis for specific nursing interventions and the rationale for their use in therapeutic, cardiac, cancer, vascular anesthesia, and neurosurgical management.

697 PRINCIPAL ROLE SEMINAR 2 credits
Prerequisites: 664, 645. Discusses issues, concepts and theories related to the professional role of nurse anesthetists. Focuses on advanced management content as well as professional ethical issues.

698 NURSE ANESTHESIA RESIDENCY III 4 credits
Prerequisite: 684. Focus on understanding of physiologic and pathophysiologic principles of particular organ systems and the relevant implication that shows anesthetic management.
865 BEHAVIORAL HEALTH NURSING II 5 credits
Prerequisites: 661, 660D-720 (DSM IV). Focus on liaison mental health nursing with families experiencing the treatment of mental or potential health problems. Theoretical frameworks, direct intervention examined.

867 BEHAVIORAL HEALTH NURSING III 5 credits
Prerequisites: 661, 665. Focus on consultation, collaboration and program development in behavioral health practice. Frameworks for practice in psychiatric and non-psychiatric settings are discussed.

880 PRACTICUM: BEHAVIORAL HEALTH NURSING 5 credits
Prerequisite: Admission to the Graduate Program. Focus on the role of the mental health nurse in consultation and collaborative intervention in behavioral health settings. Coordination of mental health services with other professions.

871 ADULT/GERONTOLOGICAL HEALTH NURSING C II 4 credits
Prerequisite: Admission to the Graduate Program. Focus on advanced practice nursing roles and responsibilities in adult and gerontological health settings. Emphasis on the use of evidence-based practice in clinical decision making.

872 INDEPENDENT STUDY 1-6 credits
Prerequisite: Permission of instructor. Opportunity for advanced graduate nursing practice in a specialized area of concentration.

875 ADULT/GERONTOLOGICAL HEALTH NURSING C III 4 credits
Prerequisite: 671. Focuses on problems common to adults in acute/subacute care settings. Multidisciplinary care planning and coordination are emphasized, including transition to community care.

876 ADULT/GERONTOLOGICAL HEALTH NURSING C IV 4 credits
Prerequisite: 675. Focuses on common mental disorders in adults and their families experiencing chronic illness. Emphasizes management of problems common to chronic care and rehabilitation.

879 PRACTICUM: ADULT/GERONTOLOGICAL HEALTH NURSING C V 4 credits
Prerequisite: 677. Focuses on the role of the advanced practice nurse in consultation and collaborative intervention in adult and gerontological health settings. Coordination of health services with other professions.

881 EDUCATIONAL METHODS IN NURSING EDUCATION 3 credits
Prerequisite: Admission to the Doctoral Program. Focus on the role of the advanced practice nurse in consultation and collaborative intervention in adult and gerontological health settings. Coordination of health services with other professions.

882 NURSING CURRICULUM DEVELOPMENT 3 credits
Prerequisite: Admission to the Doctoral Program. Focus on the role of the advanced practice nurse in consultation and collaborative intervention in adult and gerontological health settings. Coordination of health services with other professions.

883 EVALUATION IN NURSING EDUCATION 3 credits
Prerequisite: Admission to the Doctoral Program. Focus on the role of the advanced practice nurse in consultation and collaborative intervention in adult and gerontological health settings. Coordination of health services with other professions.

884 PRACTICUM: THE ACADEMIC ROLE OF THE NURSE EDUCATOR 3 credits
Prerequisite: Admission to the Doctoral Program. Focus on the role of the advanced practice nurse in consultation and collaborative intervention in adult and gerontological health settings. Coordination of health services with other professions.

891 ACUTE CARE NURSE PRACTITIONER I 3 credits

892 ACUTE CARE NURSE PRACTITIONER II 2 credits
Prerequisite: Admission to the Adult/Gerontological Nurse Practitioner track. Focus on the role of the advanced practice nurse in consultation and collaborative intervention in adult and gerontological health settings. Coordination of health services with other professions.

893 ACUTE CARE NURSE PRACTITIONER III 4 credits
Prerequisite: 691; corequisite: 692. Focus is on advanced nursing interventions related to systemic organ dysfunction and multisystems organ dysfunction in acute care settings.

894 COMMUNITY NURSE PRACTITIONER 3 credits
Prerequisites: 671; corequisite: 672. Focus is on advanced nursing interventions related to systemic organ dysfunction and multisystems organ dysfunction in acute care settings.

895 PRIMARY CARE NURSE PRACTITIONER 3 credits
Prerequisite: 691; corequisite: 692. Focus is on advanced nursing interventions related to systemic organ dysfunction and multisystems organ dysfunction in acute care settings.

896 CRITICAL REASONING 1 credit
Prerequisite: 693; corequisite: 695. Focus is on critical thinking skills and problem-solving skills as they relate to advanced nursing care of the acutely ill individual.

897 MASTERS THESIS 1-3 credits
Prerequisite: 898. Supervised research in a specific area of advanced nursing.

898 DOCTORAL DISSERTATION 1-15 credits
Prerequisite: 899 and permission of the dissertation chairperson. Continuation enrollment to complete the doctoral dissertation research.

899 HISTORY AND PHILOSOPHY OF NURSING SCIENCE 2 credits
Prerequisite: Admission to the Ph.D. Program or permission of the professor. Examines the history and philosophy of nursing science.

900 THEORY CONSTRUCTION AND DEVELOPMENT IN NURSING 3 credits
Prerequisites: Admission to the Ph.D. Program and 671. Focuses on the role of the advanced practice nurse in consultation and collaborative intervention in adult and gerontological health settings. Coordination of health services with other professions.

901 NURSING INTRODUCTION TO NURSING KNOWLEDGE DOMAINS 3 credits
Prerequisite: Admission to the Ph.D. Program. Focus on the role of the advanced practice nurse in consultation and collaborative intervention in adult and gerontological health settings. Coordination of health services with other professions.
POLYMER ENGINEERING 10

INTRODUCTION TO BLENDING AND COMPOUNDING POLYMERS

Prerequisite: 4200:321 or 460:310 or permission. Nature of polymer blends and compounds and their applications. Preparation and technology of Rheology and compound, blending and processing, mixing equipment, mechanical alloying, compounding and extrusion.

6 credits

MSD MOLD DESIGN

Prerequisite: 4200:321 or 4600:310 or permission. Molding methods to manufacture polymer products. Molding techniques, molding equipment, computer-aided design.

3 credits

ENGINEERING PROPERTIES OF POLYMERS

Prerequisite: 4200:310. Introduction to engineering properties and polymer processing. Analyzing mechanical polymer tests in glassy, rubbery, and fluid states. Product design, rheology, thermodynamics, and polymer processing.

3 credits

POLYMER ENGINEERING LABORATORY

Prerequisite: 4200:321. Emphasis on experimental methods. Design of experiments, testing fatigue and fracture, die-shear, and vulcanization testing methods. Hazard and computer-assisted design.

3 credits

POLYMER PROCESSING AND EQUIPMENT

Prerequisite: permission of instructor. Modelling of processing operations including extrusion, fiber and film processing, computer-aided design.

2 credits

POLYMER TESTING AND ENGINEERING

Prerequisite: permission of instructor. Analyses of processing operations including through-space, injection molding, and molding events. System development and vulcanization molding.

2 credits

ADVANCED EXTRUSION AND COMPONDING

Principles of design and flow in single and twin screw extruders, screw design, characteristics of internal mixers, analysis and simulation of flow.

2 credits

CHEMOMETRIC PROCESSING OF THERMOSOFTS

Prerequisite: 4200:321 or permission. Rheological behavior of rubber melts, viscoelasticity, and rheology of rubber melts focusing on methodologies in rheometry, reaction-injection molding, compounding, and rubber molding, vulcanization.

2 credits

ADVANCED RHEOLOGY

Prerequisite: 4200:310 or permission. Second course in non-linear constitutive equation for viscoelastic, viscoplastic, viscoelastic-plastic, and rubbery-plasticity materials. Utility and applicability to polymers.

2 credits

NUMERICAL ANALYSIS OF POLYMER PROCESSING OPERATIONS

Prerequisite: permission of instructor. Analyses of polymers flow through channels of metals and combinations and with the aid of commercial softwares such as Polyflow and Moldflow.

2 credits

STRESS ANALYSIS OF POLYMERS AND COMPOSITES

Prerequisite: 4200:321. The design of rubber mountings, rubber inserts and rubber components with new element methods. Rubber static, and dynamic properties with applications to elastomers.

2 credits

PHASE TRANSFORMATIONS IN POLYMERIC MATERIALS

Prerequisite: permission of instructor. Thermodynamic, kinetic, and growth of phase transitions, spinodal decomposition and nucleation, crystalline, crystal-crystal transformation.

2 credits

POLYMER BLENDS AND ALLOYS

Thermodynamics of miscibility and relationship to structure of polymers, compatibilizing and processing techniques, procedures, mechanical properties, and thermal behavior of polymers.

2 credits

LIQUID CRYSTALS

Prerequisite: permission of instructor. Structure of low molecular weight and liquid crystalline materials, characterization of physical properties including optical properties, phase transitions, structure-property relations, processing of polymeric materials.

2 credits

BLOW MOLDING AND THERMOFORMING

Prerequisite: permission of instructor. Introduction to blow molding and thermforming concepts. Material structure-property development. Cooling and trimming in a final product.

2 credits

ADVANCED TOPICS IN POLYMER ENGINEERING

Prerequisite: permission of instructor. Advanced special topics intended for Ph.D. students in polymer engineering.

2 credits

PRELIMINARY RESEARCH

May be repeated. Prerequisite: completion of qualifying examinations, approval of Student Advisory Committee. Preliminary investigation of Ph.D. dissertation subject.

1-3 credits

DOCTORAL DISSERTATION

May be repeated. Prerequisite: completion of candidacy examination of Student Advisory Committee. Original research by Ph.D. candidate.

1-15 credits

POLYMER SCIENCE 11

INTRODUCTION TO ELASTOMERS

Prerequisite: Physical Chemistry is equivalent to permission. An introduction to the science and technology of elastomeric materials. Lecture and laboratory.

3 credits

INTRODUCTION TO PLASTICS

Prerequisite: Physical Chemistry or equivalent to permission. An introduction to the science and technology of plastic materials. Lecture and laboratory.

3 credits

POLYMER SCIENCE

Prerequisite: 4200:311 or 3690:301 or permission. Principles of polymerization reactions and relationships between molecular structure and physical behavior of polymers. Molecular weight distribution of macromolecules discussed and methods of determining molecular weight.

4 credits

MOLECULAR STRUCTURE AND PHYSICAL PROPERTIES OF POLYMERS

Prerequisite: 4200:301 or permission. Interdisciplinary course involving the principles of chemistry and physics are brought to bear on relationships between molecular structure and physical properties. Basic principles of statistical mechanics and their application to polymer science.

3 credits

MOLECULAR STRUCTURE AND PHYSICAL PROPERTIES OF POLYMERS A

Prerequisite: 4200:301 or permission. Interdisciplinary course involving the principles of chemistry and physics are brought to bear on relationships between molecular structure and physical properties. Basic principles of statistical mechanics and their application to polymer science.

2 credits

RHEOLOGY AND PROCESSING TWO-PHASE POLYMER SYSTEMS

Prerequisite: 4200:321 or equivalent. Particle-particle interactions, mixing devices and design, rheological behavior of suspensions of rigid particles. Experimental assessment of the rheological behavior, phenomenological theories representing suspension behavior, dispersion of droplets solids to form emulsions, phase morphology development and rheological properties of blends.

2 credits

ADVANCED MODELLING OF POLYMER PROCESSING

Prerequisite: permission of instructor. Modelling of processing operations including extrusion, fiber and film processing, computer-aided design.

2 credits

RHEOMECHANICS AND PROCESSING OF THERMOSOFTS

Prerequisite: 4200:321 or permission. Rheological behavior of thermosofts, viscoelasticity, and rheology of rubber melts focusing on methodologies in rheometry, reaction-injection molding, compounding, and rubber molding, vulcanization.

2 credits

SYNTHESSES AND CHEMICAL BEHAVIOR OF POLYMERS

Prerequisite: 4200:321 or permission. Introduction to fundamentals and practical aspects of polymer synthesis and mechanisms of polymer general properties and some of the physical properties.

2 credits

SPECIAL PROJECTS IN POLYMER SCIENCE

Prerequisite: permission. Research project of limited size assigned to student emerging polymer science program. Trained to familiarize student with typical problems and techniques in this field.

1 credit
605 POLYMER CHEMISTRY LABORATORY
Prerequisites: basic knowledge of organic chemistry and 602, or equivalent. The preparation and identification of polymers to illustrate different methods of polymerization such as radical, ionic, and identification of polymerizations and chain reaction.
2 credits

618 POLYMER SCIENCE SEMINAR I AND II
Prerequisites: Invited to first- and second-year resident graduate students. Participants are to present a 25-minute lecture on some aspect of polymer science to participate in discussion of lectures presented by other seminar participants.
1 credit each

630 INORGANIC POLYMERS
Prerequisites: 3150:472/572 or 3940:563 or permission. Survey course designed to broaden outlook of typical graduate student beyond chemistry and physics of carbon chains.
2 credits

613 POLYMER SCIENCE LABORATORY
Prerequisites or corequisites: At least one of the courses 601, 611, 611, or 701, or permission of instructor. Laboratory experiments in synthesis, characterization, physical properties and processing of polymers.
3 credits

615 LABORATORY: COMPUTER APPLICATIONS IN POLYMER SCIENCE
Prerequisites: Basic knowledge of computer programming and permission of instructor. Laboratory use of computers in polymer science research for data acquisition, data analysis, graphing and preparation of reports and thesis.
3 credits

611 PHYSICAL PROPERTIES OF POLYMERS I
Prerequisite: permission of instructor. Thermodynamic and molecular basis of rubber elasticity, time-dependent mechanical properties of polymeric materials, melt flow and deformation, the morphology of crystalline polymeric materials, fracture of polymers.
2 credits

632 PHYSICAL PROPERTIES OF POLYMERS II
Prerequisite: 611 or permission of instructor. Normal-coordinate theories of molecular motion and applications to time-dependent mechanical, electrical, and scattering properties of polymeric systems. Time-temperature superposition, free volume, WLF relation, fracture, glass transition.
2 credits

645 SYNTHESIS AND TECHNOLOGY OF ELASTOMERS
Prerequisites: 350:333 and 350:340 or permission of instructor. The preparation of both natural and synthetic elastomers. Emphasis on polymerization methods, polymer structure and methods of vulcanization. The modification of vulcanizates and their effects on physical characteristics of the polymers described.
2 credits

674 POLYMER STRUCTURE AND CHARACTERIZATION LABORATORY
Prerequisites: 611 or permission of instructor. Laboratory analysis of polymers by fractionation, microscopy, swelling, X-ray diffraction, microscopy, thermal analysis, spectrosopy and chromatography.
2 credits

675 POLYMER THERMODYNAMICS
Prerequisite: EN or permission of instructor. Presentation of the theories and experiments concerning polymer solutions, polymers phase equilibria, and polymeric phase transitions and dilute solution steady-state transport.
2 credits

676 POLYMER CHARACTERIZATION LABORATORY
Prerequisite: EN or permission of instructor. Laboratory analysis of polymers by fractionation, microscopy, swelling, X-ray diffraction, microscopy, thermal analysis, spectrosopy and chromatography.
2 credits

690 POLYMER PROCESSING
Prerequisite: permission. Study of process engineering in polymer conversion industry, emphasizing analytical treatment of heat transfer, mass flow, mixing, shaping and molding of polymeric materials.
2 credits

891 DESIGN OF RUBBER COMPONENTS
Prerequisite: 611 or permission. Principles of design of elastomer products, emphasizing analytical treatments of elastic behavior and mechanisms of failure of resilient mountings, springs, seals, bearings and tires.
2 credits

699 MASTER'S THESIS
Prerequisite: permission. For properly qualified candidate for master's degree. Supervision original research in polymer science, under direction of faculty member, followed by submission of thesis.
1-6 credits

701 POLYMER TECHNOLOGY I
Principles of compounding and testing, processing principles and types of operation, design principles.
2 credits

702 POLYMER TECHNOLOGY II
Prerequisite: 701 or permission of instructor. Rubber industry, rubber compounding and processing, vulcanization methods, physical testing, plastics preparation and compounding, manufacturing processes. Lecture/laboratory.
2 credits

703 POLYMER TECHNOLOGY III
Prerequisite: 702 or permission of instructor. Flow properties, extrusion, calendaring and milling, molding, mixing, solid operations, engineering properties, rubber springs, viscoelastic analysis design consideration. Lecture/laboratory.
2 credits

704 CONDENSATION POLYMERIZATION
Prerequisite: 350:462/563 or permission of instructor. Survey of the theory and practice of condensation polymerization. Numerous commercial examples are presented with special emphasis being placed on the properties and applications of polymers prepared by this technique. Structure-property relationships are highlighted for each major polymer class.
2 credits

705 FREE RADICAL REACTIONS IN POLYMER SCIENCE
Prerequisite: 392:462/562 or permission of instructor. Survey of the theory and practice of free radical reactions encountered in polymerization, including polymerization mechanisms, detailed considerations of the initiation, propagation and termination steps in vinyl polymerization, co-polymerization, preparation of block and graft copolymers by free radical initiated reactions and the mechanisms of free radical induced polymer degradation reactions.
2 credits

706 IONIC AND NONIONIC INSERTION REACTIONS
Prerequisite: 350:462/562 or permission of instructor. Covers the scope, kinetics and mechanisms of polymerizations initiated by cations, zwitter ions and anions as well as polymerization-induced by covalent catalysis. Living polymers, molecular weights, molecular weight distribution, stereo-chemistry, solvent effects, counter-ion effects, temperature effects, Ziegler-Natta catalysis, dielectric metathesis, functionalization of polymers, graft and copolymer synthesis.
2 credits

707 KINETICS OF POLYMERIC PROCESSES
Prerequisites: 632 and 675 or permission of instructor. Principles of kinetic theory and statistical mechanics are applied to a polymer diffusion, polymerization kinetics, polymer aggregation, membrane transport, polymeric phase transformations, gel formation and colloidal destabilization.
2 credits

708 MACROMOLECULAR CHAIN STRUCTURE
Prerequisites: either 350:301, 3550:300, or 4200:300 or permission. Chain-like structure of large molecules, fundamental theories of chemical conformation and statistical mechanics developed to degree and their applications to polymeric problems can be discussed.
2 credits

709 MACROMOLECULAR CHAIN STRUCTURE
Prerequisite: 708 or permission. Continuation of topics in 708 including experimental techniques used in elucidation of chain structure.
3 credits

711 SPECIAL TOPICS: POLYMER SCIENCE
Prerequisite: permission. Topics of current interest in polymer science, encompassing chemistry, physics or technological aspects of macromolecular substances, including laboratory work where applicable.
13 credits

712 SPECIAL TOPICS: POLYMER SCIENCE
Prerequisite: permission. Topics of current interest in polymer science, encompassing chemistry, physics or engineering aspects of macromolecular science.
2 credits

713 CHAIN STRUCTURE LABORATORY
Prerequisite or corequisite: 708 or permission of instructor. Designed to apply principles discussed in 708 to laboratory determination of polymer structure.
2 credits

899 DOCTORAL DISSERTATION
Open to properly qualified students accepted as candidates for Doctor of Philosophy in Polymer Science depending on the availability of staff and facilities.
1-9 credits
Grievance Procedures for Graduate Students

Purpose

The procedures set forth in this document are intended to provide graduate students with a formal channel of appeal and redress of grievances arising out of their academic and/or employment relationship with the University.

Procedures

1. Any graduate student who believes that he or she has valid grounds for a complaint shall attempt to resolve the problem through a conference with the faculty member involved, the department head, and/or the graduate advisor. Following that, the student may attempt to resolve the problem with the assistance of the academic dean. A graduate student presenting a case to the academic dean must provide a full written statement of the grievance, together with all appropriate supporting material. When the problem has not been adequately solved at that level, the student wishes to appeal that decision, the student shall prepare a written statement of the complaint setting forth clearly and specifically the allegations and shall hand deliver the written complaint to the Dean of the Graduate School. The Dean of the Graduate School shall notify the complainant confirming the receipt of the complaint and shall request all materials from the Dean of the complainant's college.

2. Within one week of receipt of the complaint, the Dean of the Graduate School shall communicate with all parties in an attempt to informally resolve the problem. The result of this process will be a recommendation by the Dean of the Graduate School which will be communicated in writing to all parties, including the Senior Vice President and Provost.

3. The complaint shall become a grievance to be filed with the Senior Vice President and Provost if: 1) the Dean of the Graduate School wishes to have a Hearing Committee render a recommendation on the grievance; or 2) the student wishes to appeal the recommendation of the Dean of the Graduate School. The student must notify the Senior Vice President and Provost in writing within one week of notification of the Dean of the Graduate School's decision on the complaint.

4. Upon receipt of the grievance, the Senior Vice President and Provost shall notify in writing the President of the Graduate Student Government that a Hearing Committee should be constituted. The Hearing Committee shall be organized in no more than two weeks.

5. When the grievance has been filed with the Chairperson of the Hearing Committee, it shall be the responsibility of that Chairperson to notify in writing all parties involved in the grievance within five working days. This notification shall include the following information: that a grievance has been filed; the nature of the grievance; and the parties involved.

6. If the charged party in that grievance admits the validity of the grievance, the Chairperson of the Hearing Committee shall waive the hearing and shall direct an appropriate resolution in consultation with the Hearing Committee.

7. If the party charged in the grievance denies the validity of the grievance, the Hearing Committee shall conduct the hearing.

8. At any point in the grievance process, the Chairperson may extend the deadlines with the mutual consent of all parties.

Hearing Committee

A Hearing Committee shall be established as follows:

1. Chairperson - The Chairperson shall be a member of the graduate faculty with full membership, but not from a department involved in the proceedings. This Chairperson shall be chosen at random from an established pool selected by the Graduate Council and shall serve for only one grievance proceeding. The Chairperson shall conduct the hearing and shall vote only in the case of a tie.

2. Members - Four members shall be selected as follows:
   a. A graduate student not involved with the complainant and not from the complainant's department, selected jointly by the Department Chair and the President of the Graduate Student Government. If the grievance is filed against the Department Chair, the Academic Dean shall substitute for the Department Chair. If the complaint is filed against the department, the Senior Vice President and Provost shall substitute for the Department Chair.
   b. A faculty member not involved with the complainant and not from the complainant's department, selected jointly by the Department Chair and the President of the Graduate Student Government. If the grievance is filed against the Department Chair, the Academic Dean shall substitute for the Department Head. If the grievance is filed against the department, the Senior Vice President and Provost shall substitute for the Department Chair.
   c. A graduate student not involved with the complainant and not from the complainant's department, selected by the Vice Chairperson of the Graduate Council.
   d. A member of the graduate faculty with full membership not involved in the complaint nor from the complainant's department, selected by the Senior Vice President and Provost.

3. A Hearing Committee shall be organized anew each and every time a grievance is brought forth. A Hearing Committee shall serve through the adjudication and resolution of the complaint.

Hearing Procedure

1. The hearing must take place within three weeks of the Hearing Committee's formation.

2. At least three working days prior to the hearing, the Hearing Committee Chairperson shall provide the Hearing Committee and the parties involved with:
   a. The student's written statement of the grievance.
   b. Written notification of when and where the Hearing Committee shall meet.
   c. A copy of "Grievance Procedures for Graduate Students" and all relevant documents.

3. Each party shall be required to appear in person before the Hearing Committee to present his/her case. Each party may have an advisory colleague present to protect his/her rights if so desired. However, the parties shall speak and act on their own behalf. Witnesses may be called to present evidence at the hearing of the complainant or the charged person. The use of tape recorders is prohibited except as may be required to accommodate persons with disabilities.

4. All parties shall be entitled to an expeditious hearing. In the case of a violation it is alleged that a regulation, administration decision, or action threatens immediate and irreparable harm to any of the parties involved, the Hearing Committee shall expedite the hearing and disposition of the case. The Hearing Committee is empowered to recommend to the Dean of the Graduate School that an individual, department, or college discriminate or postpone any action which threatens to cause irreparable harm, pending the final disposition of the case.

5. The burden of proof shall be on the complainant and the standards of justice and fair play shall prevail in the adjudication of violations and grievances.

6. If necessary, the Hearing Committee may consult with the University's Office of General Counsel for advice at any time throughout this process.

Decisions and Actions

1. The Hearing Committee shall decide as follows: there has been a violation of the complainant's rights, or there has been no violation of the complainant's rights.

2. Should the Hearing Committee determine that a violation of the complainant's rights occurred, the Committee shall, if practical, recommend a resolution to the Senior Vice President and Provost.

3. The Senior Vice President and Provost, exercising his/her judgment, shall act on the implementation of the resolution recommended by the Hearing Committee.

Record Keeping

The Chairperson of the Hearing Committee shall be responsible for keeping a summarized, written record of all the proceedings. This record shall be prepared by the secretarial personnel of the Graduate School. Copies of all proceedings shall be distributed as follows:

a. To all parties involved in the proceedings.
   b. To the Hearing Committee members.
   c. To the President of the Graduate Student Government.
   d. To the Dean of the Graduate School.
   e. To the Senior Vice President and Provost.

2. A copy of all proceedings shall be kept in the office of the Dean of the Graduate School pursuant to the University's record retention proposal.

Appeal

An appeal may be made to the President of the University after all of the above procedures have been followed. The President of the University shall assess each case on an individual basis and his/her decision shall be considered final.
Family Educational Rights and Privacy Act (FERPA)

A student has a right to:

• Inspect and review education records pertaining to the student;
• Request and amendment to the student's records; and
• Request a hearing (if the request for an amendment is denied) to challenge the contents of the education records, on the grounds that the records are inaccurate, misleading, or violate the rights of the student.

The parent or eligible student has a right to:

• Inspect and review the student’s education records;
• Request the amendment of the student's education records to ensure they are not inaccurate, misleading, or in violation of the parent's privacy or other rights;
• Consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent.
• File with the U.S. Department of Education a complaint concerning alleged failures by the school to comply with the requirements of FERPA; and
• Obtain a copy of the school's FERPA policy.

Disclosure of Personally Identifiable Information

• FERPA regulations list conditions under which “personally identifiable information” from a student’s education record may be disclosed without the students prior consent.
• Disclosure may be made to authorized representatives of the U.S. Department of Education, the Office of Inspector General, or state and local education authorities. These officials may have access to education records as part of an audit or program review, or to ensure compliance with Student Financial Assistance program requirements. Representatives of the Department include research firms that are under contract with the Department to conduct studies of financial aid procedures, using student information provided by the schools selected for the study. The term also includes the Student Financial Assistance program public inquiry contractor.
• Disclosure may be made if it is in connection with financial aid that the student may receive a request from the Immigration and Naturalization Service (INS) or the Federal Bureau of Investigation (FBI) for access to a student's records. Such a request may be granted only if the student information is needed to determine the amount of the aid, the conditions for the aid, the student’s eligibility for the aid, or to enforce the terms or conditions of the aid.
• Disclosure may be made to the student’s parent, if the student is dependent on the parent, as defined by the Internal Revenue Service. If the student receives more than half of his or her support from the parent, under the IRS definition, the student is a dependent of the parent. (Note that the IRS definition is different from the rules governing dependency status for the Student Financial Assistance programs.)
• Disclosure may be made to organizations that are conducting studies concerning the administration of student aid programs on behalf of educational agencies or institutions.

 Intellectual Property Rights and Obligations

During your graduate study at The University of Akron and your professional career thereafter, you may become involved with at least one of the three main forms of intellectual property matters: copyrights, patents, and proprietary information/trade secrets. It is possible that certain discoveries may have commercial value, and therefore may invoke one or more of the above forms of intellectual property ownership.

Copyright

Copyright, by law, is automatically owned by the author or the authors, employer or sponsor from whom the work is placed in a fixed form (e.g., the University). The University of Akron’s Board of Trustees automatically waives any claim of the University to copyright in books, texts, or articles of a purely academic nature authored by faculty or students except when the material is prepared as a sponsored project in which case it is the property of the University. Ownership would then be assigned to the University or its designee as the Board of Trustees directs. Questions of ownership are often best handled informally between potential joint authors.

Patents

All discoveries and inventions made by you while associated with The University of Akron must be reported to your faculty advisor, and through your advisor to your department chair, dean, and thereafter to the Office of Research Services and Sponsored Programs using the standard University of Akron invention disclosure form. This form provides a guide to describing and identifying the invention broadly and referencing specific results. Those persons thought to be possible inventors should also be identified on this form.

Patents on inventions made by University faculty, staff, students or anyone using University facilities are automatically owned by The University of Akron, as provided by Ohio Revised Code Section 3345.14. The final decision as to inventorship is technical and legal conclusion and will be made in the course of preparing a patent application by the patent attorney handling the application.

Proprietary Information

Those engaged in sponsored research may also be involved in developing or receiving proprietary information owned by others outside the University (e.g., sponsors such as corporations and individuals seeking certain research from the University). The University and the principal investigator may have agreed to maintain this proprietary information in confidence. In some situations, proprietary information of a sponsor may be provided to you or other project investigators during a research project. The sponsor desires, in these situations, to keep the information confidential (or secret) for as long as possible.

You are free to use the confidential information in the course of the project and discuss it with other students or faculty members engaged in that project. However, you may not use the information on other projects, nor may you discuss it with other individuals not involved with that project. While these commitments could delay public access to your thesis for a specified time, it will not delay acceptance or approval of your thesis/dissertation nor delay your graduation date.

The University and principal investigator must have written commitments from anyone working on a project involving proprietary information. Therefore, all research students are required to execute the Confidentiality Agreement (sample form attached to this page). Prior to the start of your research, it is the responsibility of the research director to inform you in writing of any restrictions on the research with a copy also sent to the Office of Research Services and Sponsored Programs. If your research is subject to confidentiality provisions, you are also to be informed by the research director about the scope of the research that is covered by any confidentiality provisions.

If you have any questions as to what information is proprietary, seek guidance from your project’s principal investigator or your faculty research advisor.

Questions of Authorship and Inventorship

In the event you think you have been improperly omitted from the list of authors, you should first discuss the matter with your faculty advisor. If you have further questions or consider the matter unresolved, you should inform in the following order the appropriate department chair, the college dean, and finally the Dean of the Graduate School. (Questions are usually, and most quickly, resolved at the lowest administrative levels.)

In the event you think you have been omitted as an inventor on a patent application, you should first discuss the matter with your faculty research advisor and, thereafter, your department chair and finally with your academic dean. Following such consultations, either you and/or your faculty advisor, or your department chair, or your dean can request the patent attorney who prepared the application to recheck the findings and then prepare a formal report on inventorship. The whole patent application file may then be referred to the Office of General Counsel for a re-evaluation of valid inventors. However such as re-evaluation by patent counsel shall only occur with the prior knowledge of your faculty advisor, Department Chair and Dean.
(Sample)

THE UNIVERSITY OF AKRON
INVENTION PATENT AGREEMENT

Name: ____________________________

Social Security No.: ____________________________

The University of Akron graduate students are required to sign this form as a condition of being permitted to participate in any research activity at the University.

1. As a condition of and in consideration of my participating in sponsored research or other financially supported activity at The University of Akron, I hereby agree to communicate fully with my Faculty Advisor, including discussing the details of any work conducted by me and the results which flow therefrom. I recognize that this communication is essential as it relates to any sponsored research, to any course and thesis/dissertation research, and to my safety and the safety of everyone else using the same facility that I use.

2. I further agree to disclose promptly to the director of the research and to my faculty research advisor any invention conceived and/or reduced to practice by me whether jointly with others or solely, which results in whole or in part from such sponsored research or financially supported activity. I agree that I will comply with the provisions of any agreement between The University of Akron and any sponsor for any information and laboratory practice to which I am privileged to know. I will cooperate in assuring that the sponsor's rights, including rights in inventions, patents, copyrights, are fully protected. Further, I hereby assign all rights, title and interest to The University of Akron for its disposal at its sole discretion.

3. I also acknowledge that certain technical information that may arise as a result of the sponsored research or supported activity may be of a confidential nature. I agree to be bound to the reasonable terms of any nondisclosure agreement as it has been agreed to by the University.

4. Finally, I acknowledge and agree that any rights which arise as a result of the sponsored research or supported activity belong to The University of Akron or to the sponsor as determined by agreement between The University of Akron and the sponsor.

Date ____________________________ Student's Signature ____________________________
BOARD OF TRUSTEES

August 2001

Dr. Mark N. ApTe, 33 North Avenue Suite 103, Tallmadge, Ohio 44278 (Term expires 2009)

Dr. William F. Demas, Akron City Hospital, 525 East Market Street, Akron, Ohio 44304 (Term expires 2006)

Dr. Donald E. DemKee, 1450 Christmas Run Boulevard, Wooster, Ohio 44691 (Term expires 2005)

Dr. John Fink, 75 Arch Street, Suite #407, Akron, Ohio 44304 (Term expires 2006)

Mrs. Diana C. Fisher, The University of Akron, Board of Trustees Office, Akron, Ohio 44325-4705 (Term expires 2009)

Mrs. Patricia L. Graves, 525 St. Andrews Drive, Akron, Ohio 44303-1227 (Term expires 2004)

Mr. John V. Heider, 2440 Stockbridge Road, Akron, Ohio 44313 (Term expires 2007)

Mr. Phillip S. Kaufmann, The University of Akron, Board of Trustees Office, Akron, Ohio 44325-4705 (Term expires 2006)

Mr. David D. (Gene) Waddell, 707 Society Building, 159 South Main Street, Akron, Ohio 44308 (Term expires 2002)

STUDENT TRUSTEES

Ms. Meghan X. Markovich, The University of Akron, Board of Trustees Office, Akron, Ohio 44325-4705 (Term expires 2003)

OFFICERS OF THE BOARD

Mr. Ted A. Mallo, Secretary of the Board of Trustees, The University of Akron, Akron, Ohio 44325-4705

Ms. Cristina C. Pastore, The University of Akron, Board of Trustees Office, Akron, Ohio 44325-4705 (Term expires 2003)

PRESIDENT AND VICE PRESIDENTS

President, September 2001

Luis M. Proenza, President of the University, Ph.D.

Theodore Curtis, Vice President for Capital Planning and Facilities Management, B.S.

Thomas Gaylord, Vice President for Information and Instructional Technologies, Libraries & Instructional Planning (CI), Ph.D.

Terry L. Hickey, Senior Vice President and Provost, Ph.D.

John A. LaGuardia, Vice President for Public Affairs and Development, M.A.

Ted A. Mallo, Vice President and General Counsel, J.D.

Henry Nettling, Vice President for Business and Finance, B.S.B.A.

George R. Newkome, Vice President for Research and Dean of the Graduate School, Ph.D.

Marcia A. Roney, Vice President for Student Affairs, Ph.D.

Russell D. Sibert, Vice President, Board Operations, M.S.

DEANS

Mark S. Auburn, Dean of the College of Fine and Applied Arts, Guarantee Hall 202, 972-7564

Richard A. Youngs, Dean of the School of Law, McDowell Law Center, 972-7331

William H. Beisel, Interim Dean of the Community and Technical College, Polsky Building 215, 972-4678

William H. Beisel, Dean of Continuing Education and Spring Division, Polsky Building 466, 972-7577

Cynthia F. Capers, Dean of the College of Nursing, Mary Gladowin Hall 101, 972-7552

Roger B. Creel, Dean of Combined College of Arts and Sciences, Ox Hall 101, 972-7880

Stephen F. Hallam, Dean of the College of Business Administration, College of Business Administration 419, 972-7041

Frank N. Kelley, Dean of the College of Polymer Science and Polymer Engineering, Goodyear Polymer Center 325, 972-7500

S. Graham Kelley II, Interim Dean of the College of Engineering, Auburn Science and Engineering Center, 972-7816

John F. Kristopolsky, Dean of Wayne College, 1901 Smurker Road Criville 44667, 1400-224-6308

Karen T. Mugler, Dean of the University College, Space Hall 120, 972-7066

George R. Newkome, Vice President for Research and Dean of the Graduate School, Goodyear Polymer Center 529, 972-6458

Elizabeth J. Stroble, Dean of the College of Education, Zoek Hall 218, 972-7600

Delmus Williams, Dean of University Libraries, Bevery Library 161D, 972-7497

GRADUATE COUNCIL

George R. Newkome, Vice President for Research and Dean of the Graduate School, Chair

Term expires August 31, 2002

Kenneth E. Appelre, Ph.D., College of Business Administration

J. Thomas Dukes, Ph.D., College of Arts and Sciences: Humanities

George C. Giakos, Ph.D., College of Engineering

Evangelene Newton, Ph.D., College of Education

Kathleen M. Ross-Alaolomi, Ph.D., College of Nursing

Diane L. Sotnak, 2001-2002 President, Graduate Student Government

DIRECTOR OF RESEARCH COUNCIL

George R. Newkome, Vice President for Research and Dean of the Graduate School, Ph.D.

Constance B. Bouchard, Ph.D., History

Roger B. Creel, Dean of the College of Arts and Sciences

Frank N. Kelley, Ph.D., Dean, College of Polymer Science and Polymer Engineering

S. Graham Kelley II, Interim Dean, College of Engineering

Tedd A. Mallo, J.D., Vice President and General Counsel, Secretary, Board of Trustees

Isadora Newman, Ph.D., Education, Associate Director, Life-Span Development and Gerontology

Genal M. Parker, M.A., Director, Research Services and Sponsored Programs, Secretary, ex officio

James L. White, Ph.D., Director, Institute of Polymer Engineering

GRADUATE FACULTY*

September 2001

Luis M. Proenza, President (January 1999) B.A., Emory University; M.A., The Ohio State University; Ph.D., The University of Minnesota, 1971.

Rula Abisaab, Assistant Professor of History (1996) B.A., American University of Beirut; M.A., California State University at Fullerton; M.A., Ph.D., Vrije University, 1998.

Stephen H. Avy, Education Bibliographer, Associate Professor of Bibliography (August 1980) B.A., University of Texas at Austin; M.A., University of Houston; Ph.D., State University of New York at Buffalo; M.L.S., Kent State University, 1984.

Maria Adamowicz-Harazie, Assistant Professor of Modern Languages (1995) M.A., Maria Curie-Skodowska University, Poland; M.A., University of Pennsylvania, 1994.

Jeffrey D. Adler, Assistant Professor of Mathematics (1998) A.B., Princeton University; M.S., Ph.D., University of Michigan, 1998.

Aigbe Akhigbe, Professor of Finance, Franklin W. Moyer Chair in Finance (2000) B.S., Business University of Ibadan; M.S., University of Southwestern Mississippi; M.B.A., Ph.D., University of Houston, 1991.

Ray Allderman, Professor of Education (1979) B.S., University of Southern Mississippi; M.Ed., University of Texas at Austin; Ed.D., University of Houston, 1976.

Sonia Alemagno, Assistant Professor of Public Administration and Urban Studies; Associate Director, Center for Social and Health Policy (1998) B.A., John Carroll University; M.A., Kent State University; Ph.D., Case Western Reserve University, 1961.

Tana F. Alexander, Associate Professor of Music (1978) B.M., The Ohio State University; M.M., University of Louisville, 1974.


Alfred J. Anderson, Professor of Music (1965) B.M.E., Mississippi College; M.M., Indiana University, 1979.

Carolyn M. Anderson, Associate Professor of Communication (1999) B.A., University of Detroit; M.A., Wayne State University; Ph.D., Kent State University, 1992.

Jerome E. Apple, Assistant Professor of Accounting (August 1996) B.A., The Ohio State University; J.D., Cleveland State University; M.T., The University of Akron, 1987.

William B. Arbuckle, Associate Professor of Civil Engineering (1982) B.S.C.E., Ohio University; M.S.E.E., Ph.D., University of North Carolina, 1976.


Mark S. Auburn, Dean of Fine and Applied Arts: Professor of English; Professor of Dance, Theater and Arts Administration, NCA Self Study Liaison (1991) B.S., B.A., The University of Akron; M.A., Ph.D., University of Chicago, 1971.

Kenneth E. Appelre, Professor of Management (1980) B.A., M.A., Western Michigan University; M.B.A., Kent State University; Ph.D., University of Georgia, 1982.

David S. Baker, Director of Archives of History of American Psychology, Associate Professor of Psychology (1999) B.A., Millsaps College; M.Ed., University of Texas at Austin; Ph.D., Texas A&M University, 1998.

Christopher P. Banks, Associate Professor of Political Science (1995) B.A., University of Connecticut; J.D., University of Dayton; Ph.D., University of Virginia, 1995.


Emigotuta C. Barrera, Associate Professor of Geology (1998) B.A., University of Washington; M.A., M.S., Ph.D., Case Western Reserve University, 1987.


Abe A. Bartley, Associate Professor of History (1994) B.A., Ph.D., Florida State University, 1994.

Celal Batur, Department Chair of Mechanical Engineering, Professor of Mechanical Engineering (February 1990) B.S., M.S., The Technical University of Istanbul; Ph.D., The University of Laces­ter, 1976.

* The dates in parentheses indicate the beginning of service at The University of Akron; unless otherwise stated, service began in the month of September.
JAMES R. KATHLEEN L. ENDRES. GERALDINE VIRGINIA ELAINE MATTHEW P. ESPE. XIAOSHENG GAO. PAMELA G. GARN-NUNN. LA VERNE M. FRIBERG. LAURA D. GELFAND. RAY GEHANI. OF CONNECTICUT; M.A., M.S., Ph.D., Case Western University; M.A., M.S., Ph.D., University of Akron. 1993.

J. CHRISTOPHER EUSTIS, Professor of Modern Languages, Chair of the Department of Modern Languages (2003) B.A., Brown University, M.S. Middlebury College; B.A., Indiana University. 1977

EDWARD A. EVANS, Assistant Professor of Chemical Engineering (1997) B.A., Dartmouth College, M.S., Ph.D. University of Wisconsin. 1993.

R. FRANK FALK, Professor of Sociology, Fellow for Life-Span Development and Gerontology (1988) A.A., Oakland City College; B.A., San Francisco State University; Ph.D., University of Minnesota. 1969.

J. CLAYTON FANT, Associate Professor of Classical Studies; Associate Professor of History (1984) B.A., Williams College; Ph.D., University of Michigan. 1976.

GERALDINE FARIA, Professor of Social Work (1987) B.A., Rhode Island College; M.S.W., University of Connecticut; Ph.D., University of Denver. 1985.

RICK FARMER, Assistant Professor of Political Science; Fellow, Ray C. Bliss Institute of Applied Politics (1999) B.A., Ph.D., Northern Oklahoma College, 1999.

KATHLEEN M. FELTEY, Assistant Professor of Sociology (January 1991) B.A., M.S., Case Western Reserve University; B.A., M.S.; Dartmouth College; M.A., Indiana University. 1971


YVONNE M. GILLETTE, Associate Professor of Speech-Language Pathology and Audiology (August 1990) B.A. Ed University of Toledo; M.A., Ph.D., The Ohio State University, 1969.


IRENE GLANVILLE Assistant Professor of Nursing (1982) B.S.N., The Ohio State University; M.S.N., Ph.D. The University of Akron. 1982.

LILY GOETTLER, Professor of Engineerering; Chair, Department of Polymer Engineering (July 2002) B.Ch.E. Cornell University; Ph.D., University of Delaware. 1967.

LATHARDUS GOOGINS, Associate Dean of the Graduate School; Professor of Geography and Planning (1962) B.A., Central State University; M.A., The Ohio State University; Ph.D.; St. John's University; Ph.D., Kent State University; E.D.D.; M.T.E., The University of Akron. 1963.


LESLEY J. GORDON, Associate Professor (1994) A.B., The College of William and Mary; M.A., Ph.D. The University of Georgia. 1995.

SAMUEL GORDON, Professor of Music; Director of Choral Studies (July 1994) B.S., University of Pennsylvania; M.M., Ph.D., Indiana University. 1972.

MICHAEL GRAHAM, Assistant Professor of History; Course Director, Humanities in the Western Tradition (1999) B.A., M.A., Ph.D. University of Virginia. 1953.


JOHN C. GREEN, Professor of Political Science; Director of the Ray C. Bliss Institute of Applied Politics (1987) B.A., University of Colorado; Ph.D., Cornell University. 1983.

LAURA K. GROSS, Assistant Professor of Applied Mathematics (1977) B.A., Yale University; M.S., Ph.D., Rensselaer Polytechnic Institute, 1997.

RICHARD J. GROSS, Associate Professor of Mechanical Engineering (1967) B.S.E., University of Michigan; B.S., M.S., Ph.D., University of Technology. 1978.

WILLIAM K. GRIEGLOSE, Professor of Music; Director of the School of Music (1991) B.M., Capital University; M.M., Ph.D. Kent State University. 1989.

PURUSHOTTAM DAS GUJARATI, Professor of Physics; Professor of Polymer Science (1983) B.S., Jai Hind College; Ph.D., Polytechnic Institute; M.S., Ph.D., University of California. 1978.

VINCENT F. GARRISON, Professor of Speech-Language Pathology and Audiology (1996) B.S., University of Delaware; M.S., Ph.D., University of Akron. 1991.

MOHAMED G. ELGANNAH, Assistant Professor of Computer Science and Engineering (2004) B.S., Ain Shams University; M.S., Ph.D., University of Delaware. 1998.

YVONNE M. GILLETTE, Associate Professor of Speech-Language Pathology and Audiology (August 1990) B.A. Ed University of Toledo; M.A., Ph.D., The Ohio State University, 1969.


IRENE GLANVILLE Assistant Professor of Nursing (1982) B.S.N., The Ohio State University; M.S.N., Ph.D. The University of Akron. 1982.

LILY GOETTLER, Professor of Engineerering; Chair, Department of Polymer Engineering (July 2002) B.Ch.E. Cornell University; Ph.D., University of Delaware. 1967.

LATHARDUS GOOGINS, Associate Dean of the Graduate School; Professor of Geography and Planning (1962) B.A., Central State University; M.A., The Ohio State University; Ph.D.; St. John's University; Ph.D., Kent State University; E.D.D.; M.T.E., The University of Akron. 1963.


LESLEY J. GORDON, Associate Professor (1994) A.B., The College of William and Mary; M.A., Ph.D. The University of Georgia. 1995.

SAMUEL GORDON, Professor of Music; Director of Choral Studies (July 1994) B.S., University of Pennsylvania; M.M., Ph.D., Indiana University. 1972.

MICHAEL GRAHAM, Assistant Professor of History; Course Director, Humanities in the Western Tradition (1999) B.A., M.A., Ph.D. University of Virginia. 1953.


JOHN C. GREEN, Professor of Political Science; Director of the Ray C. Bliss Institute of Applied Politics (1987) B.A., University of Colorado; Ph.D., Cornell University. 1983.

LAURA K. GROSS, Assistant Professor of Applied Mathematics (1977) B.A., Yale University; M.S., Ph.D., Rensselaer Polytechnic Institute, 1997.

RICHARD J. GROSS, Associate Professor of Mechanical Engineering (1967) B.S.E., University of Michigan; B.S., M.S., Ph.D., University of Technology. 1978.

WILLIAM K. GRIEGLOSE, Professor of Music; Director of the School of Music (1991) B.M., Capital University; M.M., Ph.D. Kent State University. 1989.

PURUSHOTTAM DAS GUJARATI, Professor of Physics; Professor of Polymer Science (1983) B.S., Jai Hind College; Ph.D., Polytechnic Institute; M.S., Ph.D., University of California. 1978.

VINCENT F. GARRISON, Professor of Speech-Language Pathology and Audiology (1996) B.S., University of Delaware; M.S., Ph.D., University of Akron. 1991.

MOHAMED G. ELGANNAH, Assistant Professor of Computer Science and Engineering (2004) B.S., Ain Shams University; M.S., Ph.D., University of Delaware. 1998.

YVONNE M. GILLETTE, Associate Professor of Speech-Language Pathology and Audiology (August 1990) B.A. Ed University of Toledo; M.A., Ph.D., The Ohio State University, 1969.
College of Education

W. J. BANKS*, 1921-1931, M.A.
HOWARD R. EVANS*, 1933-1942, Ph.D.
h. ALMER W. D. T. DIossat*, 1942-1944, Ph.D. (acting)
HOWARD R. EVANS*, 1944-1956, Ph.D.
CHESTER T. McCURR, 1959-1966, Ph.D., LL.D.
H. KENNETH BARKER, 1966-1969, Ph.D.
JOHN S. WATT, 1966-1969, Ph.D. (acting)
CONSTANCE COOPER*, 1966-1968, Ed.D.
JOHN S. WATT, 1968-1969, Ph.D. (acting)
RITA S. SASLAW, 1968-1969, Ph.D. (interim)
LARRY A. BRADLEY, 1999-2000, Ph.D. (interim)
ELIZABETH J. STROBLE, 2000-present, Ph.D.

College of Business Administration

WARREN W. LEGH*, 1953-1962, Ph.D.
RICHARD C. REIDENBACH, 1962-1967, Ph.D.
WILBUR EARLE BENSON*, 1969-1970, Ph.D.
JAMES W. DUNLAP, 1970-1969, Ph.D.
RUSSELL J. PETERSEN, 1969-1974, Ph.D.
JAMES INMAN, 1994-1995, LL.M. (interim)
STEPHEN F. HALLAM, 1995-present, Ph.D.

School of Law

STANLEY A. SAMAD*, 1955-1979, J.S.D.
ALBERT S. RAKAS*, 1979-1981, J.D. (interim)
DONALD M. JENKINS, 1981-1991, LL.M.
ISAAC C. HUNT, JR., 1967-1966, LL.B.
RICHARD L. AYRES, 1995-present, J.D.

Graduate School

CHARLES BULGER*, 1953-1951, Ph.D., Litt.D. (Dean of Graduate Work)
ERNST H. CHERINGTON, JR., 1955-1960 (Director of Graduate Studies); 1960-1967 (Dean of the Graduate Division), Ph.D.
ARTHUR K. BRINTALL, 1967-1968, Ph.D. (Dean of Graduate Studies and Research)
EDWIN L. Lively, 1968-1974, Ph.D. (Dean of Graduate Studies and Research)
CLAIBOURNE E. GRIFFIN*, 1974-1977, Ph.D. (Dean of Graduate Studies and Research)
JOSEPH M. WALTON, 1977-1984, Ph.D. (Dean of Graduate Studies and Research)
ALAN N. GENT, 1979-1986, Ph.D. (Dean of Graduate Studies and Research)
JOSEPH M. WALTON, 1986-1989, Ph.D. (Dean of Graduate Studies and Research)
PATRICIA L. CARRELL, 1989-1990, Ph.D. (Dean of the Graduate School)
CHARLES M. DYE, 1993-2000, Ph.D. (Dean of the Graduate School)
GEORGE R. NEWCOMBE, 2001-present, Ph.D. (Vice President for Research, and Dean, Graduate School)

University College (formerly General College)

THOMAS SUMNER*, 1962-1973, Ph.D.
PAUL S. WINGARD, 1977-1979, Ph.D. (acting)
MARION A. RUEBEL, 1978-1983, Ph.D.
NANCY K. GRANT, 1990-1990, Ph.D. (acting)
THOMAS J. VUKOVICH, 1990-1990, Ph.D. (acting)
KARLA T. MUGLER, 1993-present, Ph.D.

Continuing Education and Evening Division (formerly Evening College)

L. L. HOLMES, 1932-1934, M.A. (Director)
LESLIE P. HARDY*, 1934-1953, M.S.Ed., L.H.D. (director)
CAESAR A. CARRICO, 1973-1988, Ph.D. (dean)
WILLIAM H. BEISEL, 1996-present, Ph.D. (dean)

Community and Technical College

W. M. PETTY*, 1964-1976, M.S., M.S.E.
HOWELL C. WYVERN, 1976-1987, M.S.
JAMES P. LONG, 1987-1989, Ph.D.
DEBORAH S. WEBER, 1995-96, M.A. (interim)
WILLIAM H. BEISEL, 2000-present, Ph.D. (interim)

College of Fine and Applied Arts

RAY H. SANDEFU, 1967-1978, Ph.D.
GERARD L. KNIGHT, 1978-1986, Ph.D.
RICHARD M. ROBERTS, 1986-1981, J.D.
LINDA L. MOORE, 1992-1998, Ph.D.
T. MARK S. AUBURN, 1999-2000 (interim); 2000-present, Ph.D.

College of Nursing

ESTELLE B. NAYS, 1967-1975, Ph.D.
LILLIAN J. DEYOUNG, 1975-1991, Ph.D.
ELIZABETH J. MARTIN, 1991-1992, Ph.D.
JANINE R. DUNHAM-TAYLOR, 1996-1997, Ph.D. (interim)
CYNTHIA CAPERS, 1997-present, Ph.D.

Wayne College

MARVIN E. PHILLIPS, 1972-1974, M.A. (acting director)
JOHN G. HEDRICK, 1974-1979, M.A. (director)
JOHN R. KRISTOFOC, 1997-present, Ph.D. (dean)

College of Polymer Science and Polymer Engineering

FRANK N. KELLEY, 1989-present, Ph.D. (dean)
INDEX

A
Academic Dishonesty, 19
Academic Requirements, 22
Admission, 22
Advancement to Candidacy, 22, 23
Continuous Enrollment, 22, 23
Credits, 22, 23
Dissertation and Oral Defense, 23
Doctoral, 22
Graduation, 22, 23
Language Requirements, 23
Master’s, 22
Optional Departmental Requirements, 22, 23
Residence Requirement, 22
Time Limit, 22, 23
Transfer Credit, 22, 23
Accessibility, Office of, 14
Accounting, 50, 52, 53, 104
Accreditation, 5
Addiction Counseling certificate, 67
Administrative Specialists, 44
Educational Research, 44
Educational Staff Personnel Administration, 44
Instructional Services, 44
Pupil Personnel Administration, 44
School and Community Relations, 44
Admission, 17, 22
Doctoral Program, 22
International Student, 18
Master’s Program, 22
Transfer Student, 17
Adult Fitness, 47
Adult Gerontological Health option, 63
Adult Gerontological Health Nurse Practitioner option, 63
Adult Gerontological Nurse Practitioner certificate, 67
Advancement to Candidacy, 22, 23
Anesthesia option, Nurse, 63
Anthropology, 78
Applied Mathematics, 30
Applied Music, 110
Applied Politics, 31, 67
Applied Politics, Ray C. Bliss Institute of, 11, 31, 67
Archaeology, 78
Art, 107
Arts and Sciences, Buchtel College of, 7, 24, 76
Anthropology, 78
Applied Mathematics, 30
Applied Politics, 31, 67
Archaeology, 78
Biology, 27, 70, 77
Chemical Physics, 24, 31
Chemistry, 24, 27, 77
Classics, 77
Computer Science, 30, 83
Counseling Psychology, 24, 39
Courses, 76
Doctor of Philosophy Degree, 24
Economics, 27, 78
Engineering Applied Mathematics, 30, 35, 85
English, 27, 79
French, 85
Geography and Planning, 28, 79
Geology, 29, 80
German, 85
Greek, 78
History, 25, 29, 81
Latin, 78
Master’s Degree, 26
Mathematics, 30, 82
Mission Statement, 24
Modern Languages, 85
Philosophy, 85
Physics, 24, 31, 86
Political Science, 31, 87
Psychology, 25, 32, 97
Public Administration and Urban Studies, 26, 32, 90
Sociology, 25, 33, 89
Spanish, 33, 85
Statistics, 33, 84
Urban Studies, 32
Urban Studies and Public Affairs, 26
Audiology, 59
Audit Policy, 22
Authorship/Inventorship, 119

B
Background, University, 4
Behavioral Health Nursing option, 63
Behavioral Health Nurse Practitioner certificate, 68
Biece Library, 6, 10
Biology, 27, 76, 77
Biology, NEUCOM, 77
Biomedical Engineering, 37, 96
Biomedical Engineering Research, Institute for, 11
Bliss, Ray C., Institute of Applied Politics, 11, 31, 67
Board of Trustees, 122
Buchtel College of Arts and Sciences, 7, 24, 76 (see Arts and Sciences)
Buildings, Campus, 6
Business Administration, College of, 8, 49, 104
Accounting, 50, 52, 53, 104
Accounting Information Systems, 52
Admission, 50
Courses, 104
Electronic Business, 50, 69
Entrepreneurship, 50, 105
Finance, 50, 53, 105
Global Sales Management, 50, 70
Health Care Management, 50
Human Resources Management, 52, 53
Information Systems Management, 52
International Business, 51, 53, 106
International Finance, 51
Joint Law Program, 52
Management, 51, 52, 53, 106
Management of Technology, 51
Management of Technology certificate, 71
Marketing, 55, 53, 106
Master’s Degree, 49
MBA, 50
Mission Statement, 49
Professional, 106
Professional Accounting, 52
Requirements, 50
Second Degree, 50
Supply Chain Management, 51
Taxation, 52
Transfer Policy, 50

C
Calendar, 2
Campus, 6
Buildings, 6
Location, 6
Map, 121
Campus Safety and Security Information, 14
Case Management for Children and Families, 68
Center for Child Development, 14
Centers (See Research Centers and Institutes), 11
Certificate Programs, 67
Acute Care Nurse Practitioner, Post-Master’s, 67
Addiction Counseling, 67
Adult/Gerontological Nurse Practitioner, Post-MSN, 67
Applied Politics, 67
Behavioral Health Nurse Practitioner, 68
Case Management for Children and Families, 68
Child and Adolescent Health Nurse Practitioner, Post-MSN, 68
Composition, 68
Divorce Mediation, 69, 75
Electronic Business (E-Business), 69
Environmental Studies, 69, 76
Gerontology, 69, 75
Global Sales Management, 70
Higher Education, 70
Home-Based Intervention Therapy, 70, 75
Management of Technology and Innovation, 71
Mid-Careers in Urban Studies, 71
Motion and Control Specialization, 72
New Media Technologies, 72
Dance, 113
Dance Performance, 113
Deans, 122, 128

Dietetics (see Nutrition and Dietetics), 35
Disabilities (see Office of Accessibility, 19
Dishonesty, Academic, 19
Dismissal (see Probation and Dismissal, 19)
Dissertation and Oral Defense, 23
Dissertation Credits (see Thesis and Dissertation Credits, 19)
Divorce Mediation certificate, 69, 75
Doctoral Degree Requirements, 22
Doctoral Programs
Chemistry, 24
Counseling Psychology, 24, 39
Educational Administration, 40
Elementary Education, 38
Engineering, 30, 35, 96
Guidance and Counseling, 40
History, 25
Nursing, 61
Polymer Science, 65
Psychology, 25
Secondary Education, 36
Sociology, 25
Urban Studies and Public Affairs, 26

E

Earth Science, 29
E-Business (see Electronic Business), 50, 69
Economic Education, Center for, 11
Economics, 27, 76
Ed D. Program, Educational Administration, 40
Education, College of, 8, 38, 97
Addiction Counseling certificate, 67
Administrative Specialists, 44
Certification/Licensure Standards, 41
Classroom Guidance for Teachers, 41
Community Counseling, 41
Continuous Enrollment, Doctoral, 38
Counseling and Special Education, 41
Counseling Psychology, Collaborative Program, 24, 39
Courses, 97
Curricular and Instructional Studies, 36, 99
Doctor of Education, 40
Doctor of Philosophy, 38
Educational Administration, 40, 43
Educational Foundations, 45, 97
Educational Psychology option, 45
Social Psychological Foundations of Education option, 46
Research Methodology and Evaluation option 46
Elementary, 38, 46
Exercise Physiology/Adult Fitness, 47
General Administration, 43, 98
Guidance and Counseling, 40, 101
Health Education, 101
Higher Education Administration, 45, 99
Higher Education certificate, 79
Instructional Technology option, 45, 99
Marriage and Family Counseling/Therapy, 42
Master's Degree, 41
Mission Statement, 38
New Media Technologies certificate, 72
Outdoor, 47, 101
Outreach Master's in Education Program, 41
Physical, 47, 100
Postsecondary Technical Education, 48, 99
Guidance option, 49
Teaching option, 49
Training option, 49
Postsecondary Teaching certificate, 73
Principalship, 44
School Counseling, 42
School Nurse, 48
School Psychology, 42, 103
Secondary, 38, 49
Special Education, 43, 102
Special Educational Programs, 103
Sports Science/Coaching, 47
Superintendent, 45
Educational Administration, 40, 43
Educational Foundations and Leadership, 40, 43, 97
Educational Guidance and Counseling, 40, 101
Electrical Engineering, 34, 36, 93
Electronic Business, 50, 69
Elementary Education, 38, 46
Index 133

N
NEOUCOM (Northeastern Ohio Universities College of Medicine) Biology/NEOUCOM courses, 77
M.D./Ph.D. in Engineering with NEOUCOM, 35
New Media Technologies certificate, 72
Non-Accredited American School Graduates, 17
Nurse Anesthesia option, 63
Nursing, Center for, 11
Nursing, College of, 10, 61, 114
Administration option, 63
Admission, 61, 63, 64
Adult Gerontological Health option, 63
AdultGerontological Nurse Practitioner option, 63
AdultGerontological Nurse Practitioner certificate, 67
Behavioral Health Nurse Practitioner certificate, 68
Behavioral Health Nursing option, 63
Characteristics of the Graduate, 62
Child and Adolescent Health Nurse option, 63
Child and Adolescent Health Nurse Practitioner certificate, 77
Courses, 114
CRNA-MSN Anesthesia option, 63
Doctoral Program, 61
Instructional Program, 63
Master of Science Degree, 62
Mission Statement, 61
Nurse Anesthesia option, 63
Nurse Education certificate, 72
Philosophy, 61
Public Health, Consortia M.P.H., 65, 115
R.N.-M.S.N. Program, 65
Nutrition and Dietetics, M.S. Program, 55

O
Office of Accessibility, 14
Ohio Residency Requirements, 19
Organizational Development, Center for, 12
Organizations, Graduate Student, 16
Orientation, International Students, 18
Outdoor Education, 47, 101
Outreach and Consulting Service, 13
Outreach Master's in Education Program, 41

P
Parent and Family Education certificate, 72
Parking Fees, 21
Parking Lots (see Campus Map), 121
Patents, 119
Performance option, Music, 57
Ph.D. Programs
Chemistry, 24
Counseling Psychology, 24, 39
Elementary Education, 38
Engineering, 30, 34, 35, 66
Guidance and Counseling, 40
History, 25
Nursing, 61
Polymer Science, 65
Psychology, 25
Secondary Education, 38
Sociology, 25
Urban Studies and Public Affairs, 26
Philosophy, 85
Phone Numbers, 3
Physical and Health Education, 47, 100
Exercise Physiology/Aerobic Fitness option, 47
Outdoor Education, 42, 101
Sports Science/Coaching option, 47
Physics, 24, 31, 86
Planning (see Geography and Urban Planning), 28
Policy Studies, Center for, 12
Political Science, 31, 67
Polymer Engineering, Institute of, 13
Polymer Engineering, 37, 65, 66, 116
Polymer Science and Polymer Engineering, College of, 10, 65, 116
Admission, 65
History, 65
Description, 65
Doctor of Philosophy, 65
Master's, 66
THE UNIVERSITY OF AKRON IS AN EQUAL EDUCATION AND EMPLOYMENT INSTITUTION . . .


It is the policy of this institution that there shall be no discrimination against any individual at The University of Akron because of age, color, creed, disability, national origin, race, religion, veteran status, or sex.

The University of Akron prohibits sexual harassment of any form in its programs and activities and prohibits discrimination on the basis of sexual orientation in employment and admissions.

Complaint of possible discrimination, including sexual harassment, should be referred to:

Director, Equal Employment Opportunity and Training
Leigh Hall 202
The University of Akron
Akron, Ohio 44325-4709
330-972-7300

Information on Title IX (sex discrimination) may be obtained from
Title IX Coordinator
330-972-7300